

Architecture as profession: the construction of workplace practice

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ABSTRACT

With reference to Jean Lave's and Etienne Wenger's (1991) learning theory and its later development in advocating Communities of Practice (CoPs), this research aimed to explore how architects learn through participation in CoPs in the construction of workplace practice. It has been identified that the Development and Construction Division of the Hong Kong Housing Authority (HA) characterizes a social practice, in which the situated nature of architects' learning is realized through accomplishments amongst professional stakeholders who engage jointly in an enterprise with shared repertoire (Wenger 1998, p. 36) where the Project Development Process is central. Architects' minds develop, reflect and interact mutually in social situations in which groups of professionals share their concerns or passions for knowledge of architecture and learn how to do it better as they interact regularly (Wenger 2007) in multiple CoPs.

A qualitative methodological approach was adopted, involving semi-structured interviews using a purposeful sample of architects. Saturation analysis was used to identify patterns in the data. Based on the findings, it is evident that architects participate in various CoPs to learn and, through multi-membership, they negotiate their individual meanings of professional practice. As well, the dynamism coupled with different modes of belonging under CoPs (Wenger 2000) form the major structuring elements of architect's social learning system in the HA.

This research makes the original contribution of a lens, based on the social practice theory of Lave and Wenger (1991) and Wenger's CoP (1998) concept to understand how architects learn in the workplace practice for knowledge generation and management.

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CHAPTER 1: INTRODUCTION

This chapter first illuminates an account of the architecture profession and then sets the context of the study by describing the architects' workplace practice in the Hong Kong Housing Authority (HA) – the government organisation that build public housings for general public. Second, it follows with a statement of the problem that led to formulating the research questions about how architects learn as member of Communities of Practice (CoPs) in the workplace. Third, it elucidates the significance of the study with respect to its aim. At the end of this chapter, the theoretical framework and methodology are outlined.

1.1 Statement of the Problem

The architecture profession is at a cross road in today's world. Explanations for this include individual competence, the out-dated skill and knowledge of the profession itself and the fact that the organisations employed for delivering services generally lack professional development and systematic workplace learning strategies (Blau 1988). However, these explanations assume that each element in the complex task is an autonomous unit, separate and uncontaminated (Larson 1993). Hence, it is not effective to use traditional responses or traditional perceptions and ideas to deal with these basically external changes.

Architecture has received relatively little attention in the academic literature, yet its diversity in terms of organisational context, its role within the construction industry and, more generally, its vulnerability to changes in the political, economic and social climate make it an appropriate subject for study. What is basically

missing, then, is an understanding of how differently situated architects learn to account for the work they do in their changing contexts, both in terms of what they see as its fundamental purpose and how they see it as being enacted on a day-to-day basis (Cohen et al. 2005).

As a result of increased interest in CoPs across the learning and knowledge management literature, organisations are seeking actively to maximize the potential of their CoPs by leveraging them to support organisational performance actively (McDermott 1999). In particular, Wenger et al. (2002) suggested that the CoP is considered to be the best-suit tool for codifying knowledge, due to its ability to combine both tacit and explicit aspects of knowledge, where tacit knowledge plays an important role in the artistry side of architectural practice. In a sense, the CoP framework may act as a knowledge container for bridging the architect profession's performance with the organisational demands of architectural practices.

There is on-going debate over the manageability of CoPs and the impact this has on their ability to support organisational performance. On one hand, some authors are of the view that CoPs are naturally forming, self-organizing groups (Gongla and Rizzuto 2001) that are resistant to management (Venters and Wood 2007); on the other hand, others consider that CoPs should be an integral part of the business, which should be set up intentionally and managed by the organisation (Dube, Bourhis and Jacob 2005). However, these debates have inclined to focus on managerial intentions rather than actual CoP practices, and risk threatening the authenticity of the CoP. While in the context of the HA, there are structured Project

Team, semi-structured workgroups and unstructured communities; architects' CoPs were found as being more emergent, organic and intangible. Therefore, this research aimed to address this knowledge gap and to study the reality of the CoP in the context of the architects' workplace.

1.2 Formulating the Research Question

In the current climate of keen competition and the extraordinary demand for resources, the effective mobilisation of architectural knowledge is of extreme importance for the Development and Construction Division (DCD) in the HA. As well, there is always a need to give the senior management confidence in an organisation's competence in specific working areas by deploying suitable knowledge to develop new ideas and retain skills developed in earlier building projects. This issue has, all along, been surrounded by controversy and strongly held opinions that conventional learning organisation and knowledge management (KM) frameworks alone cannot fix it, whereas the CoP may provide a framework for understanding the social nature of the architects' workplace practice and benefiting the organisational performance.

Within the organisational context of the HA, for the architects' learning of architectural practices is a matter of social process, mainly through engaging in a variety of CoPs, besides involving as members of units, sections, divisions, committees, groups, taskforces, etc. With reference to the rethinking of social learning theory proposed by Jean Lave and Etienne Wenger (1991), this study investigated architect's practice within the HA, specifically probing the situated

nature of architects' learning involved in the Project Development Processes (PDPs).

Against this background, the research was framed as an inquiry exploring how architects learn through participation in CoPs. The epistemological position assumed for this interpretivist paradigm was based on the idea that knowledge can be acquired by investigating the phenomena in many ways, because the social context is different from that of natural science (Kangai 2012), where stress is placed on the understanding of the social world through a qualitative-inductive examination of the interpretation of that world by its participants (Bryman 2008). As such, the other side of the inquiry grew out of sub-questions including:

- a) What constitutes the HA architects' CoP and how does belonging to a CoP affect their work practice?
- b) What is the nature of situated learning and individual experiences? and
- c) What are the implications for widening our knowledge and understanding of the concept and how it can be applied to the profession?

1.3 Significance of the Study

Following the original concepts proposed by Lave and Wenger (1991), various disciplines and fields of practice appear to have taken a variety of definitions and there is a lack of clarity about what CoPs are understood to be. There has been less exploration of the more subjective aspects of CoPs, such as the acquisition of knowledge by individual participants and the nature of individual learning

experiences, and little that connects the theoretical level with the participants' lived experiences, leaving individual meaning-making relatively unexamined (Cohen et al. 2005). There was no CoP literature on the architecture profession at the time of this research. Consequently, this research makes an original contribution by using the CoP framework to study architects' workplace learning.

Keeping in mind the unequivocal definitions of CoP as "a system of relationship between people, activities and the world", and which "develops with time, and in relation to other tangential and overlapping communities" (Lave and Wenger 1991, p. 98), the value of this study comes in using theories of CoP and situated learning to illuminate understanding of workplace practice in architecture. It also establishes some understanding of the ways in which interactions are formed, between and amongst architects in a design-oriented architectural organisation and furthered the foundation of a CoP. There is also value in determining if a CoP has emerged in an architectural organisation and, if so, in considering the interactions and artifacts that influence the learning (Gee 1996; Greeno 1998; Wenger 1998) of architects in the HA.

1.4 Selecting of Research Methodology

To seek an answer to the research question, this study considered the data generated by architects within an architectural organisation, the HA. With Wenger's (1998) definition of CoP in mind, the research interest was the emergence of a CoP in an architectural organisation. The researcher was aware that some sorts of communities exist within this particular architectural organisation in addition to the Project Teams (PTs) in the structure of

division/section/unit; what was not known was whether the community evolved and interacted in any particular ways that reflect the CoP framework.

The purpose of the research question was to establish an ontological position about the reality of social phenomena concerning architects' relational participation in communities of professional practice. This led to an epistemological examination of architects' subjective and individual knowledge about this reality which a quantitative method could not provide.

The initial insights were drawn from the researcher's own immersion in an architectural organisation as an architect. Knowledge and understanding were gained from this first-hand experience as observer-participant to give an initial understanding of the discourse about learning that may or may not have ensued from the interactions within communities embedded in the HA. Observation was used to inform the formulation of the research question. After having established the question, the researcher used an inductive qualitative approach with semi-structured interviews from the purposely selected sample to collect the data. Although data transcription takes a rather long time, this process served as an opportunity to embed the researcher into the social system, and this really enabled the researcher to be familiar with the big picture. Through this, the researcher was able to establish a descriptive understanding of CoP in an architectural organisation and to apply a rough initial coding scheme. Then an inductive interpretation of the data and subsequent category identification were carried out, based on saturation of the data collected.

1.5 Conclusion and Organisation of the Remaining Chapters

This chapter has provided a background to this research study as well as the study's aims and subsequent research questions arising as a consequence of considering this background. The chapter has also presented the scope and significance of this study, as well as a short exposition of the analytical framework to be adopted for this research.

The intent of the literature review in Chapter 2 is twofold. First, it will provide a cogent but expansive overview of the CoP framework in order to establish the foundational context of the thesis. A detailed discussion of the CoP framework, including its evolution and application to aspects of learning through legitimate peripheral participation (LPP) and situation learning theory will be explained. Second, since there is no direct literature on CoPs in architecture, and that for the building sector is relatively sparse, the review seeks to highlight other literature related to the thread of workplace-learning literature in relation to the organisational context.

Chapter 3, on research design, will be comprised of three sections. First, it will provide a philosophical discussion of the research topic, to derive an appropriate approach and design. Second, following the description of a pilot study informed by preliminary observation and interviews, it will discuss the main fieldwork that involved semi-structured interviews with a purposive sample of architects and subsequent data analysis procedures based on data coding and saturation. Third, it will provide a critical analysis of the ethical considerations about the selected research methodology.

The findings will be presented in two chapters. Chapter 4 will offer some broad observations about how architects learn in the workplace. This will present data relating to attributes of CoP domains in HA architects' communities that relate to Wenger's (1998) description of mutual engagement, joint enterprise and shared repertoire. Chapter 5 will follow with a discussion of the nature of architects' situated learning and individual experiences by presenting data demonstrating their modes of belonging to different CoP entities. Based on the data analyses in both chapters, a model of a CoP of architects will be presented based on the characteristics of HA's double-knit (McDermott 1999) organisational context.

The first part of Chapter 6, the Conclusion, will recapitulate some of the broad conclusions that may be drawn from the findings. The second part will detail the modelling emerged from the research. The third part will outline the significance of the study in contributing to the body of knowledge about CoPs, and the fourth and fifth sections will discuss the limitations of the research and opportunities for future research.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

The principal focus of this research was to examine a CoP of architects at the Hong Kong Housing Authority (HA). To use the CoP concept as a lens for understanding architectural practice and to identify what it means for the research questions, this review first discusses the basic CoP dimensions of situated learning and legitimated peripheral participation (LPP) in order to indicate how these concepts have contributed to the emergence and evolution of CoPs to help the researcher to formulate a situated and relational account of the architect's situated learning. As well, this chapter discusses the limitations of the CoP framework that had a bearing on the CoP in architecture.

At the time of conducting this research, there was no CoP literature relating specifically to the architectural profession. Consequently this chapter considers the strengths and limitations of CoP models in other professions. As well, this chapter discusses the context of architectural practice in the HA and in the problems associated with an organisational hierarchy affecting workplace learning; this discussion contributes to understanding how a CoP might emerge in a community of architects.

This review is intended to sensitize the unique aspects of the architecture profession to help to determine how the researcher may be able to use a CoP lens to view this profession. As a whole, this review is meant to draw on existing literature to suggest a possible bridge between the theoretical concept of CoP and

the reality of architects' situated learning. At the end of this chapter, a short summary of major issues covered and concluding remarks is included to set the stage for the research.

2.2 Communities of Practice

Social Nature of Learning

In trying to understand how architects learn as members of CoPs, this section of the review discusses the concepts of situated learning and LPP to pave the way for subsequent discussion of CoPs. This unfolding discussion is meant to contribute an understanding of the constitution and diverse meanings of CoP in order to reflect the attributes that are relevant in the architectural workplace. The fundamental contention of these two concepts is that most learning theory, by focusing primarily on the individual's acquisition of knowledge, ignores or significantly underplays the essential role of social participation in the acquisition or creation of knowledge. In this sense, learning is a social act, involving not just an individual engaging in specific activities, but active participation in a social community and construction of an individual's identities in relation to these communities (Wenger, 1998). Learning and creation of the individual's identity is an ongoing part of social participation, therefore participants continue to evolve identities relative to the communities in which one practices. Studies of apprentices (Lave 2011; Lave and Wenger 1991) explain that the relationship between apprentice and master varies over time, that both appear to have an effect on the other, and that a significant

amount of learning takes place through the apprentice's relationships with other apprentices and with other masters.

Situated Learning

With regard to situated learning, Lave and Wenger (1991) concluded that it implies "emphasis on comprehensive understanding involving the whole person rather than 'receiving' a body of factual knowledge about the world; an activity in and with the world; and on the view that agent, activity, and the world mutually constitute each other" (p. 33). In this sense, people and their social worlds cannot be isolated if the meaning of knowledge is to stand. Furthermore, Lave and Wenger moved well beyond the conventional notion that "situated learning" connotes the sense that individuals learn "in social situations" to arguing that the individual, the learning, and the social engagement become inextricably intertwined. Also they contended that "learning is not merely situated in practice... learning is an integral part of generative social practice in the lived-in world" (p. 35). In an attempt to break with the dualisms of thinking that keep people reduced to their minds and mental processes, they insisted that the "historical nature of motivation, desire, and the very relations by which socially and culturally mediated experience is available to persons-in-practice is one key to the goals to be met in developing a theory of practice" (p. 50). Whilst stress was placed upon the importance of "social cohesion", situated learning is "enabled because actors operate within a seemingly virtuous circle of cooperation, mutual benefit and shared purpose" (Kakavelakis and Edwards 2011, p. 475). Hence, Lave and Wenger envisaged that their

theoretical approach would be relevant to all areas of social practice and “inevitably involve learning” (Fuller et al., 2005, p. 51).

Through incidental social interactions, practice is culturally sustained and possibly extended (Lave and Wenger 1991). In a sense, situated learning theory is based on an understanding of practice as procedural, as tacitly social and constituted in specific cultural-historical contexts (Nicolini, Gherardi and Yanow 2003). Therefore, practice can be understood as socially situated at an occupational level, and at the level of specific workgroups, with the latter being influenced to varying degrees by the former (Hager 2004). The situativity and distribution of practice implies the existence of communities as locales of practice (Hodkinson and Hodkinson 2004). Thus, Lave and Wenger (1991) expressed a view that a community is an intrinsic condition for knowledge to exist. Individuals cannot learn, without “belonging to something” (Hodkinson, Biesta and James 2004), and learning is an incidental but inevitable occurrence when individuals participate in social practice: that is, when they belong to a community (Warhurst 2008). In a sense, communities are found as being more emergent, organic and intangible, besides which can form around or within formal structure, but they can also form independently.

Therefore, learning in a community of social practice is generally a phenomenon which involves participation. Research and theorising about learning invariably locates around a comparison between two rival metaphors of learning: the older, once-dominant metaphor of acquisition, and the challenger, participation (Stard 1998). Situated theorising highlights how patterns of participation in community

practice significantly influence a newcomer's ability to construct meaning from practice. Situated theorising thus broadens the focus of workplace learning research, from an examination of communicative interactions to a consideration of the nature of participation in practice and regulation of the employment relationship (Evans and Rainbird 2002). There seems to be an assumption that participation is straightforward and unproblematic; however, on the contrary, some say it depends upon where one's learning trajectory is located. For example, Eraut (2008) presented the view that "situational understanding tends to be taken for granted by all but newcomers" (p. 9), since there may not be much information to help them to "learn about the situations and contexts that are so familiar to those around them" (p. 9), making learning difficult and challenging. Based on this, situational understanding is a critical aspect of professional work, and probably the most difficult (Eraut 2008). In the context of architecture, this should include the architect and the subject in focus. The nature of situated learning can also be extended to include "situatedness". As Edwards (2005) noted, "situated learning does not imply that when one is removed from the situation one ceases to call upon the intellectual resources made available there. Rather, acting in our worlds requires us to read the situation and draw on the most effective resources available in it to support our actions" (p. 60), which requires a strong, active sense to grasp for resources available to learners.

Legitimate Peripheral Participation and Social Practice

In addition to situativity, it is people who make learning come to light. In certain circumstances, newcomers' learning is enhanced if they are able to experience LPP

in a community's practice (Lave and Wenger 1991). First, a newcomer experiences a progressive trajectory of participation from the periphery of practice towards full engagement. Second, LPP requires that the newcomer has legitimacy through access to the genuine work of the community and from being accepted by the community. Through LPP, the newcomer accesses learning in such a way that the meaning underpinning the practice can be appropriated effectively (in situated theorising, the newcomers' learning is understood to involve a largely incidental process of the "appropriation" of practice or knowledge, rather than a deliberative process of "acquisition") (Warhurst 2008). However, Lave and Wenger (1991) only focused their theory of learning on novices and largely ignored the effect on communities when they import "old timers" from elsewhere (Fuller et al. 2005).

Lave and Wenger (1991) described a framework of learning of LPP, which means to capture the "engagement in social practice that entails learning as an integral constituent" (p. 35). While conventional explanations view learning as a process by which a learner internalizes knowledge, whether discovered, transmitted from others, or experienced in interactions with others, (p. 47), the concept of LPP provides a framework for bringing together theories of situated activity and "theories of social practice in which learning is viewed as an aspect of all activity" (p. 38). The framework outlines how individuals begin their journeys of learning by first being accepted as legitimate members of a group devoted to a particular skill, occupation or craft. Then, individuals become engaged at the periphery of the group and, through their participation, begin to move from the periphery to full participation with master status. This however, does not address people-to-people issues. The authors argued that "legitimate" refers to the defining characteristic of

belonging to a group. In defining “periphery” they suggested a variety of ways to be positioned within the practice community in the social world, envisaging that their LPP concept would be relevant to “social structure” and “social relations” (Fuller et al. 2005, p. 51). However, they failed to discuss the details and to generalize situations which are actually quite different between practices. As there is not necessarily a real centre for the community, the individual does not move to the centre. Instead of a linear process, individuals change location and perspective based on their individual learning and developing identities within the community. This framework, however, hints that peripheral participation leads to full participation in capturing the range of relationships and forms of membership that may be present within a given community. In a way, this ambiguous participation increases the provision of “access to a nexus of relations otherwise not perceived as connected” (Lave and Wenger 1991, p. 36) and the notion that “LPP obtains its meaning, not in a concise definition of its boundaries, but in its multiple, theoretically generative interconnections with persons, activities, knowing, and world” (p. 121). However, there is a lack of explanation about why the learning of experienced workers differs from that of new comers, and this leaves a significant theoretical gap, about the “extent to which it is ‘peripheral’” (Fuller et al. 2005, p. 52).

Emergence of Community of Practice and the Framework

The emergence of a CoP framework from the work of Lave and Wenger (1991) can be understood as an acknowledgement of the limitation of their model of situated learning and LPP, in which the issues of social community and introduction of the

“old-timer” from elsewhere (Fuller et al., 2005) are not factored in, and in which the “learning of novices is stretched to encompass all learning situations” (p. 52). Lave and Wenger (1991, p. 98) defined CoP as “a system of relationships between people, activities, and the world”, which “develops with time, and in relation to other tangential and overlapping communities”. The concept of CoP was introduced to highlight that practitioners learn with and from each other in practice, an idea which was originally developed in a study of situated learning. The CoP approach focuses on the social interactive dimensions of situated learning (Roberts 2006); both terms “community” and “practice” are considered to be linked inevitably and communities emerge out of interactions among people engaged regularly in similar practices (Lee-Kelley, Turner and Ward 2014).

In a subsequent study of an insurance claims processing office, Wenger (1998) offered a more thorough exploration of socially construed learning of CoP. He described CoPs as important places of negotiation; learning; meaning; and identity (pp. 72-84). Wenger (p. 5) developed a more engaging and complete explanation of the “interconnected and mutually defining” components of learning central to his analysis. By “meaning”, he was describing a way of talking about our changing ability to experience life and the world individually and collectively as meaningful. By “practice”, he was referring to the concept of “social practice” which “emphasizes the relational interdependency of agent and world, activity, meaning, cognition, learning, and knowing ... This view also claims that learning, thinking, and knowing are relations among people in activity in, with, and arising from the socially and culturally structured world” (p. 50). It is a way of talking about the shared historical and social resources, frameworks, and perspectives that can

sustain mutual engagement in action. “Community” refers to “participation in an activity system about which participants share understandings concerning what they are doing and what that means in their lives and for their communities” (p. 98). But it does not “imply co-presence, a well-defined, identifiable group, or socially visible boundaries” (p. 98). Also, it is a way of talking about the social configurations in which enterprise is defined as worth pursuing and participation is recognized as competence. “Identity” is a way of talking about how learning changes who one is and creates personal histories of becoming in the context of one’s communities.

Wenger (1998) further stated that CoPs are universal, “CoPs are an integral part of our daily lives. They are so informal and so pervasive that they rarely come into explicit focus, but for the same reasons they are also quite familiar” (p. 7), and he suggested the CoP is a useful construct for integrating the components of experience in his social perspective on learning. In support of his social participation theory of learning, Wenger (1998) asserted that “learning cannot be designed ... it belongs to the realm of experience and practice ... negotiation of meaning ... moves on its own terms” (p. 225). While a CoP can be seen as a vehicle for learning within an organisation, its functioning and outcomes are not easily controlled. With the purpose of describing how learning takes place rather than how to make it happen, Wenger (1998) emphasized the inherent emergent and evolving nature of a CoP as well as the difficulty in maintaining control or direction. According to Wenger (1998, p. 55), meaning is negotiated through a “process of participation and reification” within CoP. As well, he defines the concept of reification as the process of “giving form to experience by producing objects” (p.

58). Alternatively, any CoP produces “abstractions, tools, symbols, stories, terms, and concepts that reify something of that practice in a congealed form” (p. 59). Upon progression, such forms “take on a life of their own outside their original context, and their meaning can evolve or even disappear” (Robert, 2006, p. 624).

Wenger (1998, p. 125) noted that, even though CoP may not be evident to its members: “a community of practice need not be reified as such in the discourse of its participants”. However he argued that a CoP does display a number of characteristics and he identified fourteen indicators relating to CoP domains in the following table:

List of Indicators that a CoP has Formed
1. Sustained Mutual Relationships – Harmonious or Conflictual
2. Shared Ways of Engaging in Doing Things Together
3. Rapid Flow of Information and Propagation of Innovation
4. Absence of Introductory Preamble, as if Conversations and Interactions were merely the Continuation of an Ongoing Process
5. Very Quick Setup of Problem to be Discussed
6. Substantial Overlap in Participants' Descriptions of Who Belongs
7. Knowing What Others Know, What They Can Do, How They Can Contribute to Enterprise
8. Mutually Defining Identities
9. Ability to Assess the Appropriateness of Actions and Products
10. Specific Tools, Representations, and Other Artifacts
11. Local Lore, Shared Stories, Inside Jokes, Knowing Laughter
12. Jargon and Shortcuts to Communication as well as the Ease of Producing New Ones
13. Certain Styles Recognized as Displaying Membership
14. A Shared Discourse Reflecting a Certain Perspective on the World

Table 1: List of Indicators of Community of Practice

[Adapted from Wenger (1998, p. 125)]

Through this modified view of construction of communities, Wenger (1998) explained that CoP has three identifying domains – “mutual engagement”, “joint

enterprise” and “shared repertoire” – which work together in an intelligible manner but are specific to context in the forming of the CoP: first, members interact with each other, establishing norms and relationships through mutual engagement; second, they are bound together by an understanding of a sense of joint enterprise; and third, they produce a shared repertoire of communal resources over time, including, language, routines, stories and artifacts (Wenger, 1998, cited in Robert, 2006, p. 624). Within this context, practice refers to the source of coherence of a community with regard to the people-to-people relationship. Joint enterprise is constituted by interpretations and ideas created by the people involved in the community, and a shared repertoire of events and things produced along the way of the history of the community. For these indicators together with the domains, they form the categories, which were used to operationalize the concept of architects’ CoPs with data presented in the chapters of findings.

In subsequent studies, Wenger (2000) described knowing as an act of participation in social learning systems and that an organisation, therefore, depends on social learning systems to enhance its members’ knowing. He distinguished amongst three modes of belonging to social learning systems (Wenger 2000). First, “engagement is achieved through doing things together”, for example, talking and producing artefacts. Second, “imagination involves constructing an image of ourselves, of our communities, and of the world, in order to orient ourselves, to reflect on our situation, and to explore possibilities”. Finally, “alignment involves making sure that our local activities are sufficiently aligned with other processes”

so that they can be effective beyond our own engagement” (Wenger, 1998, cited in Robert, 2006, p. 625).

In a sense, a CoP framework yields a more tractable characterization of the concept of practice by distinguishing it from less tractable terms like culture and activity. Because of this very nature, a CoP approach is regarded as a “social interactive dimension of situated learning” (Roberts 2006, p. 624) which has been regarded as an intrinsic condition of the existence of knowledge. Roberts did not elaborate on this any further; hence, the aim of this research was to fill this gap by presenting architectural knowledge generation through social interactions in groups of architects.

Cultivating Community of Practice

With a framework put in place, the theory of CoP was developed further by Wenger et al. (2002) to focus on its benefits for management knowledge in an organisation. The definition of CoP was then refined as “groups of people informally bound together by shared expertise and passion for joint enterprise” and the output is knowledge (Wenger and Snyder 2000, pp. 139-140). With a focus more directly about professional practice than social practice (Wenger, McDermott and Snyder 2002) and a move “from theory to practice” (p. xi), upon further development for a view to managing knowledge, CoP was further defined as “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 on-going basis” (p. 4).

Even though it is a departure from the discussion of earlier rich foundations of learning; social practice; meaning-making; and identity creation, this definition distinguishes CoPs from work teams, project teams and informal networks. In this stage of development, CoP was originally an intuitive construct offered to provide access into a new understanding of learning framed as a “new frontier” (Wenger et al. 2002, p. 145). Nevertheless, they claimed that there had not been sufficient discussion about how CoPs have improved organisational performance by providing values to drive strategy, start new lines of business, solve problems quickly, transfer best practices, develop professional skills, and help companies recruit and retain talent. In order to address this gap by providing authentic examples to demonstrate the theoretical assertion, this research aimed to look at the real situation of architects’ communities.

In a more practical sense, Wenger et al., (2002) explained that people participate in CoP to find value in their interactions. The formation of a CoP could develop as follows: people spend time together and typically they share information, insight and advice; they help each other to solve problems; they discuss their situations, their aspirations and their needs; they ponder common issues, explore ideas, and act as sounding boards; they may create tools, standards, generic designs, manuals, and other documents; or they may simply develop a tacit understanding that they share; they accumulate knowledge; they become informally bound by the value that they find in learning together; they develop a unique perspective of their topic as well as a body of common knowledge, practice, and approaches; they also develop personal relationships and established ways of interacting; and they may even develop a common sense of identity (Wenger, McDermott and Snyder 2002).

From all of this, they become a CoP. Based on these general meanings, CoPs do exist in architects' communities. However, this view of a CoP framework is still underdeveloped (Fuller et al. 2005) since the communities are described as "rather stable, cohesive and even welcoming entities" (Fuller et al. 2005, p. 53). In addition, Wenger failed to adequately assess the "historical and cultural sensitivity of situated learning within organisation" and yet to be adequately explained "the relationship between continuity and change" (Kakavelakis and Edwards 2011, p. 476). This research aimed to explore the reality of this view in the architects' CoP, when power of ranking, organisational directive and personal orientation all exert their effects.

CoPs cannot be formed and they are not stable or static entities (Lave and Wenger 1991). This means they evolve over time as new members join and others leave. An architectural organisation can establish a team for a particular project, which may not emerge as a CoP, since Wenger et al., (2002) emphasised that the management "cannot" establish a CoPs. However, if the management of an organisation looks for a chance to structure spontaneity, it is playing a pivotal role in structuring fragmented practice across the organisation. To support the development of a CoP, the management can encourage an alignment of changing practices between communities, thereby assisting the transfer of knowledge across the organisation (Brown and Duguid 2001). Nevertheless, the original CoP articulation "failed to adequately explain the importance of context in examining organisational learning" (Lave, 2008, cited by Kakavelakis and Edwards, 2011, p. 477). The assertion that a CoP can be cultivated and leveraged for strategic

advantage (Wenger, McDermott and Snyder 2002) is still a hot debate; and this is very much dependent upon the management's capability and courage.

Throughout the discussions of the nature of social learning, CoP continues to be described in the literature as ubiquitous. The reason why it is essential for organisations to embrace and cultivate CoPs, according to Wenger et al., (2002, p. 6), is attributed to the rapidly emerging knowledge-based economy and globalization. In the light of CoP potential in a more practical sense, their discussion of "life-cycles" offers an understanding of how CoPs may evolve and change over time and provide insights into how a "facilitator" may identify or remediate problems (p. 68). Thus, there is a need to explore the dynamic settings more, hence this research aimed to do so in the architectural organisation, to present a range of CoP formats, inter-organisation or intra-organisation, etc., to present a contradiction about whether a CoP can be cultivated but not mandated by managers, as well as addressing power relations and inequalities.

The CoP lens (Wenger et al., 2002) focuses on participation and is a way in which knowledge may be understood. With more focus on knowledge management (KM) and organisation, in the later developments, CoP is further defined as "groups of people who share a passion for something that they know how to do, and who interact regularly to do it better" (Wenger 2004, p. 2). Social learning spaces, therefore, exist in the context of institutional accountability structures (Wenger 2004). Even though the constructed social learning theory enables an examination of both the formal organisational mechanisms to put in place to aid the KM process and the informal ways in which knowledge is shared, it does not really address the

possibility of conflicting and multiple identities (Hong and O 2009) embedded in “power differentials across different communities of practice” (p. 311), since, it may likely “distract the collective learning and participation process and finally undermined the potential of creating a coherent learning community” in the end (p. 312).

The above discussion has traced the historical development of the CoP concept, from what theoretically might be happening in the social nature of workplace learning and the constructs provided for talking about its properties, to a description of its domain and then to an approach to cultivate its attributes for the benefit of the organisation. From another perspective, the next section discusses the practical aspects of CoPs in organisations in more detail and the limitations of its applications.

Communities of Practice in Organisations

The theory underpinning the CoP framework has been described in detail in the previous section, but when it is applied to real life, it could be another story. This section, therefore, focuses on elucidating aspects of CoP application in organisations. According to Wenger et al., (2002), the need for organisations to become more intentional and systematic about managing knowledge gives CoP a new and central role in business nowadays. Companies need to understand precisely what knowledge will give them a competitive advantage and then need to keep this knowledge on the cutting edge, deploy it, leverage it in operations, and spread it across the organisation. Therefore, Wenger et al., (2002) stressed that

cultivating CoP in strategic areas is a practical way to manage knowledge as an asset, just as systematically as companies manage other critical assets.

Wenger et al. (2002) were inclined to suggest that the cultivation of a CoP is a matter to be decided by management, but they failed to elaborate more about how CoPs can be enhanced in knowledge-based organisations, such as a professional service conglomerate like the HA, in which the workers generally encounter difficulties in the “collaboration process” (Bishop et al. 2008a), where issues are “overcome through collective knowledge-sharing and problem-solving” (p. 5). In this context of CoP application, there seems to be greater potential for the “cultivation” of CoP extended to its participants through collaborative efforts. Follow this viewpoint provides an opportunity for further research to probe into this gap of knowledge, in the case of this study in the reality of architects’ communities in the HA.

CoPs are unique among organisational structures in their ability to deal with a broad variety of knowledge-related issues. According to Wenger (2002), CoPs can: connect local pockets of expertise and isolated professionals; diagnose and address recurring business problems whose root causes cross team boundaries; analyse the knowledge-related sources of uneven performance across units performing similar tasks and work to bring everyone up to the highest standard; and link or coordinate unconnected activities and initiatives addressing a similar knowledge domain, etc. It has been identified by Wenger (2004) that several pivotal success factors are vital for achieving successful cultural change, for example, creating the right vision; establishing quick-wins and demonstrate successes; establishing a

high level of commitment and senior-level support; empowering people and ensuring that they have the appropriate skills and capabilities; implementing the right systems and processes; and seeking to anchor new approaches within organisation cultures.

Although CoPs may move from one state to another (Gongla and Rizzuto 2001) during their lifetimes and situations, they are not intended to replace business units (Wenger et al., 2002) in organisations. The issue of how to expose the benefits of CoP to organisations has been a long debate. In the course of its development and evolution, this “balance” for the CoP was once overturned as a result of an increased organisational expectation of the value it could provide (Gongla and Rizzuto 2001). Some researchers, however, see collaboration as extremely valuable to the CoP and organisational support as comparatively less important (Bishop et al. 2008b). Hence for CoPs to have maximum benefit, it is imperative to address the issues affecting collaboration and provide organisational support purposely.

As a result of the quest for leverage of organisational performance through the use of CoPs, research efforts often tend to focus more on the results and less on the CoP dynamics (Cothrel and Williams 1999). Boundaries will sometimes be blurred, with CoPs and business units both having functions that are important to the organisation, especially the occurrence of multi-membership (Handley et al. 2006) in a knowledge-based organisation, which can lead to a broader socio-cultural context (Handley et al. 2006, p. 645) in which heterogeneity in “cultural richness or multiplicity” (Handley et al. 2006, p. 646) could generate a conflict in

engagement. Hence the following section provides a further examination of CoP usage versus theory, in order to identify how this research about architects' learning can address this knowledge gap.

Critique about Manageability of Communities of Practices

Despite the fact that Wenger (2000) and Wenger et al. (2002) examined the use of CoPs, there has been a continuing debate about their manageability and ability to support organisational performance; this may be because there has been not enough empirical and practical feedback collected about their application. The views have been diverse. Some researchers are of the view that CoPs should be naturally forming (Gongla and Rizzuto 2001), self-organizing groups (Lesser and Storch 2001) that are resistant to management, so that they can be free from external forces and powers to enable natural growth of knowledge. On the other hand, others consider CoPs to be an integral part of a business, and that they should be set up intentionally and managed by the organisation (Dube, Bourhis and Jacob 2005; Venters and Wood 2007), in order to couple its benefit with the organisational directives.

Although recommendations regarding management intervention in the operation of CoPs have become more common within KM literature, these debates have tended to focus on managerial intentions rather than actual practices, and this may detract from their legitimacy (Swan, Scarbrough and Robertson 2002). Due to a lack of analysis of the differences and similarities, differentiated views about CoP formats for use in organisations have resulted in adverse impacts on organisational learning (Hong and O 2009, p. 321). In reality, there may be issues

like identity conflicts for different groups of participants in the same community, due to power inequalities (pp. 318-320).

There is an increased awareness that CoP can be managed and leveraged for competitive advantage by creating knowledge resources for teams and business units, creating opportunities to capture and consolidate knowledge across business units, and supporting business strategy (Roberts 2006; Swan, Scarbrough and Robertson 2002; Wenger, McDermott and Snyder 2002). Organisational managements are increasingly seeking to develop and support CoPs as part of their KM strategies (Wenger, McDermott and Snyder 2002) and, simultaneously, CoPs are viewed as a supplementary organisational form, which can create value and improve performance (Lesser and Storch 2001). However, they have failed to provide answers for the management of professional organisations, especially, there is a lack of “explanatory processes that operate across a multiplicity of social situation” (Emirbayer, 1997, p. 308, cited by Kakavelakis and Edwards, 2011, p. 476) and “the role of on-the-job experience in a multiplicity of settings” (p. 477). For business organisations to leverage their knowledge capacities fully, they must seek to “harness CoPs that are both within and beyond their organisational boundaries”(Roberts 2006 p. 635).

Establishment of the right communication channels and regular interactions with CoPs to keep track of their activities and progress (Gongla and Rizzuto 2001) can help to establish the right processes and environment to encourage a culture that acknowledges the CoP as a valuable resource (Bishop et al., 2008b). However, CoPs may be resistant to over-supervision, which means that their management cannot

be carried out in conventional ways (Wenger, McDermott and Snyder 2002). It has been suggested that the management of CoPs could be centred around creating and promoting the right conditions, time and space rather than following directives from the senior management (Ardichvili et al. 2006). Cautions have also been raised about the effects of “compartmentalisation” of CoPs (Handley et al., 2006, p. 647).

While some researchers have suggested facilitating the spontaneous emergence of CoPs while avoiding excessive managerial pressure (Roberts 2006), others have pointed out that highly functional CoPs can be upset by active reorganisations by the senior management (Brown and Duguid 1991). One situation was described in which the CoP in an organisation was used as a rhetorical tool to facilitate the control of a professional group over which the management had little authority (Swan, Scarbrough and Robertson 2002). This suggests that authoritative control, like ranking, in an organisational hierarchy such as that of the HA may exert bearing upon the blossoming of its CoPs, because the mode of LPP may “not necessarily be constructed in a positive manner” (O'Donnell and Tobbell 2007, p. 318) in such a context as that originally asserted by Lave and Wenger (1991).

Since the development of a CoP arises due to the interest of its members in a particular subject area, rather than for the purpose of performing a specific task, it has been suggested that the organisation focuses on recognizing and supporting the CoPs rather than trying to create and manage them (Brown and Duguid 1991). The CoP is still a controversial, multifaceted and complicated issue (Swan, Scarbrough and Robertson 2002) with no one-size-fits-all solution (Gongla and

Rizzuto 2001) to fit an organisational context by way of management, because each community has its own unique culture, strengths and challenges (Bishop et al. 2008b). Therefore, a further examination is warranted of the impact that CoPs have on organisation in reality, in order to establish a better understanding of how businesses can accommodate and contribute to CoP development (Gongla and Rizzuto, 2001; Roberts, 2006). This study of architects' CoPs was intended to provide the empirical reality missing from abstracted notions of CoPs and activity systems and to explain what sorts of CoPs may be suitable for architectural organisational settings.

Notion of Collaboration in Communities of Practice

Though CoPs have received considerable attention in research on learning and have generated significant interest and activity across many disciplines, the concept of "community" is itself problematic (Warhurst 2008). It has been described as an "ill-defined nature of the concept" (Klein, Connell and Meyer, 2005, cited by Warhurst 2008, p. 456); newcomers might thus be "purposefully situated on the periphery of activity, and allocated safer or less intensive tasks to match their current capability" (Hasrati, 2005, p. 558, cited by Warhurst, 2008, p. 456). Warhurst (2008) went on to criticise patterns of participation and the "degree of their legitimacy, issues of power", which are generally "neglected in the theorisation of learning" and thus restricted by "workplace power structure" (Hodkinson, 2005, p. 525, cited by Warhurst, 2008, p. 457). In a sense, efforts need to be invested in collaboration in order to achieve collectively.

As noted from the study by O'Donnell et al. (2007) of adults' transitions to higher education, collaboration may be haphazard. O'Donnell et al. found that adult learners perceived themselves to be peripheral participants in the community, but sometimes "undermined their feelings of legitimacy" (p. 312) due to external factors like regulations and academic procedures. Participation, hence collaboration is not necessarily "constructed in a positive manner" by those who experience it. On the other hand, they also found that individuals' experiences of CoPs were mediated by individual, shifting identities and sense of belonging, which go beyond mere engagement in practice and begin to involve "creative images of the world and of ourselves, thus affecting identity" (p. 323). Thus, under predisposition of identity, community members "confront conflicting demands and changing social expectations" (Kakavelakis and Edwards, 2011, p. 476) in their participation.

The leader of a CoP is viewed as performing both management and leadership activities and should bring in drive, vision and enthusiasm (Wenger, McDermott and Snyder 2002). The same is true for an architect leading a team of multi-disciplinary professionals in a Project Development Process (PDP). The effectiveness of a CoP has been considered to be determined by the degree of guidance from its leaders or coordinators, which could work to the extent that, even in a constraining environment with a lack of organisational support, a well-suited leader can still bring a CoP to success (Ardichvili et al., 2006). It has also been suggested that a CoP leader needs to work in close collaboration with middle and senior management (Garavan, Carbery and Murphy 2007), for the sake of community coherence. Despite the fact that there have been widespread

observations of CoPs, there has been little interest in the impact of leadership on them (Ryan and Bernard 2003). It has been suggested that CoP leaders should have established reputations and should contribute to the organisation by examples of leadership and providing a consistent vision of aims and objectives (Muller 2006). In addition, there is the view that well-suited leaders should be elected (Ardichvili et al., 2006) and require different skills and competencies at different stages in the life span of a CoP (Gongla and Rizzuto 2001). Talented leaders who demonstrate the characteristics outlined above are likely to be people who are in demand within the organisation (Bishop et al., 2008b) and suitable as CoP leaders. Therefore, the study of architects as leaders of project teams and other CoPs in the HA was considered to be useful for filling in this gap in CoP theory.

As considered by some authors, the engagement and involvement of CoP members may be the most important factor that contributes to its success (Bishop et al., 2008b). A consistent CoP management theme will enable people to contribute willingly. In the literature, the need for organisational recognition of the value of CoPs (Lesser and Storch 2001) and the necessity for CoP activity to contribute to career progression and professional development have been given much weighting (Cothrel and Williams 1999). It has been suggested that organisations characterised by swift and continuous change tend to be more active, since people are obligated to seek out others with more experience (Cothrel and Williams 1999) to tackle complex requirements, new product needs, or even innovation. Therefore, the extent to which interest and commitment are encouraged from CoP

members suggests that the way in which management intervention is perceived is critical.

On the other hand, a CoP produces knowledge that is “concrete and contextual”. Practitioners are enabled to discuss and reflect on meaningful issues by sharing “anecdotes and stories” which are relevant sources of knowledge because they are located within specific contexts and produce a “large amount of practical wisdom” (Abma 2007, p. 44). However, most of the identified motives for participating in knowledge sharing tend to support rationally oriented or cognitive accounts, whereas emotional and affective aspects (Sie and Yakhlef 2013); identification and power relations for staff from different CoPs (Hong and O, 2009, p. 322); issues of transition in informal adult educational change; and personal experiences due to identity shifts and sense of belong (O'Donnell and Tobbell 2007) are typically excluded.

Another crucial managerial consideration is the adoption of face-to-face and virtual CoP collaborations (Bishop et al., 2008b). While some researchers consider face-to-face meetings as critical to the success and accomplishment of a CoP (Lesser and Storch 2001), in a sense, technical systems alone are insufficient to enable the development of a mutually supportive knowledge-sharing community (Lee-Kelley et al., 2014) for CoP benefits to surface. Some point out that face-to-face collaboration can turn out to be a slow, costly and time-consuming activity once members are separated geographically. However, new collaborative technologies, such as email, discussion groups and chat rooms, have been identified as a possible solution to overcome geographical constraints

(Lesser and Storch 2001). Recently, virtual CoPs have also emerged as a strategy for integrating the human side of KM in the relevant literature. Information on existing face-to-face communities or semi-formal groups still contributes to the CoP's value to the organisation (Ardichvili et al., 2006).

Experienced workers also “learn through their engagement with novices” and, for many novices, the process of LPP is to “help other workers to learn” (Fuller et al., 2005, p. 64). This provides a view of changing CoP. Many authors, with an interest in best practice for implementing and managing organisational change, are recommending a holistic approach to address the impact of change at the different levels within an organisation (Bishop, Bouchlaghem and Matsumoto 2008). In that sense, any necessary change in the way a CoP operates will need on-going support from its members. Handley et al. (2006, p. 646) see that “considerable variation exists around how CoPs are described and characterized”, and hence the term “CoP” is ambiguous because “potential for tension and conflict exists” as “individuals participate not within one community (or collective or network) but within several – each with different practices and identity structures” (Handley et al., 2006, p.647). It is, therefore, imperative to understand the requirements of those involved with CoPs directly, prior to the initiation of a drive for cultural change (Bishop et al., 2008b). Because this factor of early-socialized “dispositions” (Handley et al., 2006, p. 647) involves a broader consideration of the socio-cultural context in which a CoP is embedded, participants are no longer “homogeneous individuals” and there may be “considerable diversity” (Handley et al., 2006, p. 648). It has been claimed that CoPs are not a matter of “attainment of consensus among stakeholders, but that learning processes are stimulated through

confrontation with diversity”; meanwhile, “multiplicity is considered to be a source of innovation and dynamics” (Bodenrieder, 1998, cited in Abma, 2007, p. 45).

This section of the discussion of CoPs has focused on a review of evolving frameworks and process of theorizing in order to provide a thorough understanding about the background and theory behind this subject in order to inform this study of CoPs in architecture. In particular, the embedded issue of CoP application in an organisation is reviewed here. This has included discussion of multi-membership, early socialized dispositions which lead to possible tensions and conflicts in participation and the collaboration process, all of which may pose management issues. In addition, there have been some discussions about the need for themes and objectives in a CoP for it to be beneficial. Besides, the review has also covered the issue of self-disposition in transition in a CoP with regard to adult learning experiences, conflicts in the identities of different communities due to power relations and nature, pointing out that a CoP is not an unchanging object. All of these issues will be useful for exploring how architects learn as members of CoPs in the HA.

The third part of this literature review chapter provides a background about architectural practice in the HA in order to set the scene for linking the various meaning and discussion emanated from CoP literatures for this research. Most importantly, it is intended to provide a better understanding of the context in which the data were collected for this study.

2.3 Architect's Practice in HA

In trying to understand the research question concerning how architects learn through participation in CoPs, this section is dedicated to a discussion of the organisational context of the HA in order to find out what has been socially constructed and the intangible structures that have emerged. A closer examination of the professional practice will shed light on the relationship between a project and the division/section/unit.

Like the field of design, architecture is currently undergoing a paradigm shift (Cramer and Simpson 2007) in what Nicol and Pilling (2000) described as “new professionalism”; design changes everything with new technology, because we have finally learned that if we can imagine something, we can create it. It is this intangible properties, there have been on-going debates as far as architecture as a subject is concerned (Larson 1993): “architecture as it is practiced, taught, and talked about generally assumes an autonomy that is in conflict with the notion of architecture as a service profession, integral to the society and culture, embedded in everyday life” (p. xii).

Project Development Process

The subject of the marginality of architecture stems both from the fact that architects themselves have tended, defensively, to keep their own processes of inquiry private, tacit, and sometimes even mystical, in order to emphasize their differences from other professionals in the industry (Schön 1985) to protect themselves from reflecting on their own skilful practice.

People need places - private and public, indoors and outdoors, buildings and complexes, neighbourhoods and towns, suburbs and cities - in which they live, work, play, learn, worship, meet, govern, shop, sleep and eat, etc. Architects are professionals trained in both the art and the science of building design and licensed to protect public safety, health and welfare by transforming these needs into concepts and then developing the concepts into building images that can be constructed by contractors and specialists. In designing buildings, architects communicate amongst stakeholders with various needs – clients, developers, the public and collaborate with project managers, engineers, surveyors, planners and those who will make the spaces that satisfy these needs – builders and contractors, plumbers and painters, carpenters, and air conditioning mechanics. Whether the need is for a room or a city, a new building or renovation from an old one, architects provide the professional services – ideas and insights, design and technical knowledge, drawings and specifications, administration, coordination and decisions – whereby an extraordinary range of functional, aesthetic, technological, economic, human, environmental and safety factors is melded into a coherent and appropriate solutions for the problems in the hands of the architects (Waldrep 2006).

Architects sometimes refer to themselves as “jacks of all trades but experts of none” and “masters of knowing a little bit of everything”. Architects’ skills and competence in arts and design are entangled with their capabilities to manipulate the sciences in management of a number of factors: time in supervising temporal stages of design from a feasibility study, through tendering to completion; cost in terms of material prices and service fees for different professionals involved;

finance for collaboration with developer's banker to facilitate unobstructed monetary flow for payment for quantum work done; administration of timely monitoring of authority submission; and even politics in the participation of forums for the engagement of the local community. The monitoring and executing of these diverse features of project development process (PDP) are multi-faceted aspects of an architect's professional practice.

Typical PDP is comprised of the following sequential phases: the feasibility study and inception stage; the scheme design stage; the detailed design and tender drawing preparation stage; the tendering stage; the construction contract administration stage; and the completion and maintenance stage [Figure 1]:

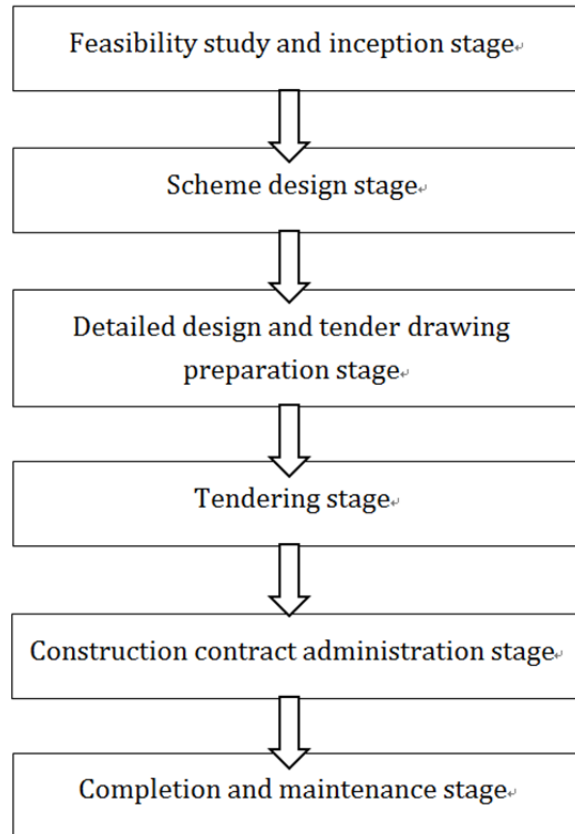


Figure 1: Typical Project Development Process

When this process is followed, the building project becomes a unique piece of architecture. However, even though this is a major aspect of the architect's work, it is only one aspect.

Dilemmas

A variety of forms of risk structure is inherent in architecture, and these relate to the dilemmas that confront contemporary architects so prominently. They include dependence on commissions; a poor distinction between architecture and building; the lack of congruence between those to whom the architect is ethically responsible and those to whom the architect is accountable; the constraints

imposed on design practice by the increasing size and complexity of architectural organisations; and the lag between plans and their fully realized built forms. (Blau 1988). Another important dilemma is that architecture provides services that are not mundane and which are not vital to people's health and welfare in the same sense of those provided by doctors, or even lawyers or dentists; Blau (1988) further pointed out that many of these dilemmas result from the fact that much of the building field is controlled not by architects but by engineers, developers and building contractors – at least in the sheer numbers of buildings for which they are responsible. Economic fluctuations also create other distinctive dilemmas for architects. While they create general conditions of vulnerability, it is also apparent that the artery origin and the above-mentioned “non-business” features of architectural organisations make them most vulnerable. All these dilemmas come to the vanishing point of the very nature, but stagnant position of the practice of the architecture profession.

The situation of predicaments started to deteriorate gradually along with other professions (Larson 1993) in the twentieth century, and abruptly since the turn of last century when education became more reachable by the general public and information became easily accessible with the help of personal computers and the advent of the Internet. In the building construction industry nowadays, an architect's design decisions on a building project are subject to public question and can easily be challenged or overturned by stakeholders or even laymen, let alone other specialists involved in the complicated and lengthy design process.

Recently there has been evidence that, after a long period of struggling with other specialists, professional work seems to be facing an uncertain future (Cohen et al. 2005, p. 776) and architects have been making a retreat within the industry, even though reluctantly. Without the proper skill and competence, it appears that the architect's role and position in the PDP have been declining from mastery, in the past, to merely a task executor or conventional designer. Even though design plays a significant role, it is just one part of the whole complicated economic process of realty development. Without a proper, authoritative knowledge of the whole PDP, the architect cannot contribute satisfactorily to complicated procedures overseen by stakeholders who have different perspectives or beliefs.

As PDP become more complicated, it involves multi-disciplinary of professionals forming Project Team (PT) for coping with the demand of individual project. At the same time in coalescence, architects communities emerged around, within or independent of their own PT with a view for sharing of project information as well as knowledge beyond one's acquaintance. New collaborative digital delivery methods and technologies, such as Building Information Modelling (BIM), are changing how design ideas are developed and tested and how information flows not only within the design team but also back and forth to the construction site (Cramer and Simpson 2007). All of this poses both a challenge and an opportunity, and in the midst of it is the challenge of the architect's skill and competence. The situation becomes more intricate when the subject of stewarding knowledge is placed in a double-knit organisational context (McDermott 1999). An example of such a context is the Development and Construction Division (DCD) in the HA, in which architects are, on one hand, responsible for developing design and technical

knowledge which needs to be aligned with the intrinsic value of architecture and, on the other hand, also responsible for line operations subject to ever-changing client briefs, bureaucratic red tape and decisions affected by other professional stakeholders from various disciplines. Because of a lack of vision when searching for knowledge empowerment and a proper organisational learning system for knowledge retention and sharing or community learning entities enabled by the management, architects, as PT leaders, find it very hard to balance both design and project management duties. Consequently, the HA could lose its power and be downgraded merely to building production lines, if nothing is done to go deeper than a single social structure or social system. Thus one of the aims of this research was to identify what this “going deeper” involves for architects in the HA, with a view to rectifying the situation.

Organisational Hierarchy and Project Team

The HA produces residential buildings for general public family groups under the prescribed income and capital requirements; otherwise referred to as public housing estates. A public housing estate generally consists of domestic blocks, a commercial centre; carports; estate roads; a public transport terminus; and recreation areas, etc. Some estates include specific welfare facilities, such as a residential care home for the elderly, an integrated family services centre, or a community hall. The architect’s basic task is to design a building according to the requirements of the client brief.

However, the HA architects are required to do far more than this. In addition to carrying out design tasks, architects in the HA are also responsible for monitoring

project development programmes and budgets. Together with multi-disciplinary professionals, HA architects in the participation of PTs lead the production of public housing estates. The process of architectural design cum project management involves a complex and unique PDP process. Every architect is responsible for managing certain PDPs assigned by the management according to his/her position in the organisational hierarchy of division/section/unit.

Under this hierarchical organisational structure, a DCD forms sections, which are headed by Chief Architect grade professionals. Within each section, there are units, which are headed by Senior Architect grade professionals. Normally the Chief Architect will assign his experienced Senior Architects the task of overseeing several projects, which in turn are passed onto teams of architects to monitor the day-to-day operation of the PDP of each project. In this structural setting of DCD, a further detailed division of labour or task specialization is established. Indeed, the “explosion in science and technology creates a difficult paradox”, meanwhile, the increasing complexity of knowledge requires “greater specialisation and collaboration” (Wenger, McDermott and Snyder 2002). As well, appreciating the collective nature of architectural knowledge is especially important in an age at HA when almost every field changes too much, too fast for individuals to master. In response to high demand in the workplace, unstructured architects’ CoPs emerged around, within or independent of PTs in the DCD, whereby project information is shared, and at the same time, architectural knowledge is being fostered.

The architects are involved in a complicated hierarchical structure of division/section/unit and PTs [Figure 2] for monitoring PDPs, and such

engagement is envisioned as the underlying condition that shapes the social interactions within or amongst architects' CoPs and which, in consequence, determines the reality of social structures and systems for the division/section/unit in return. In a sense, the PT is a sub-set of the division/section/unit with CoPs working at different layers not usually depicted at DCD's conventional organisation chart.

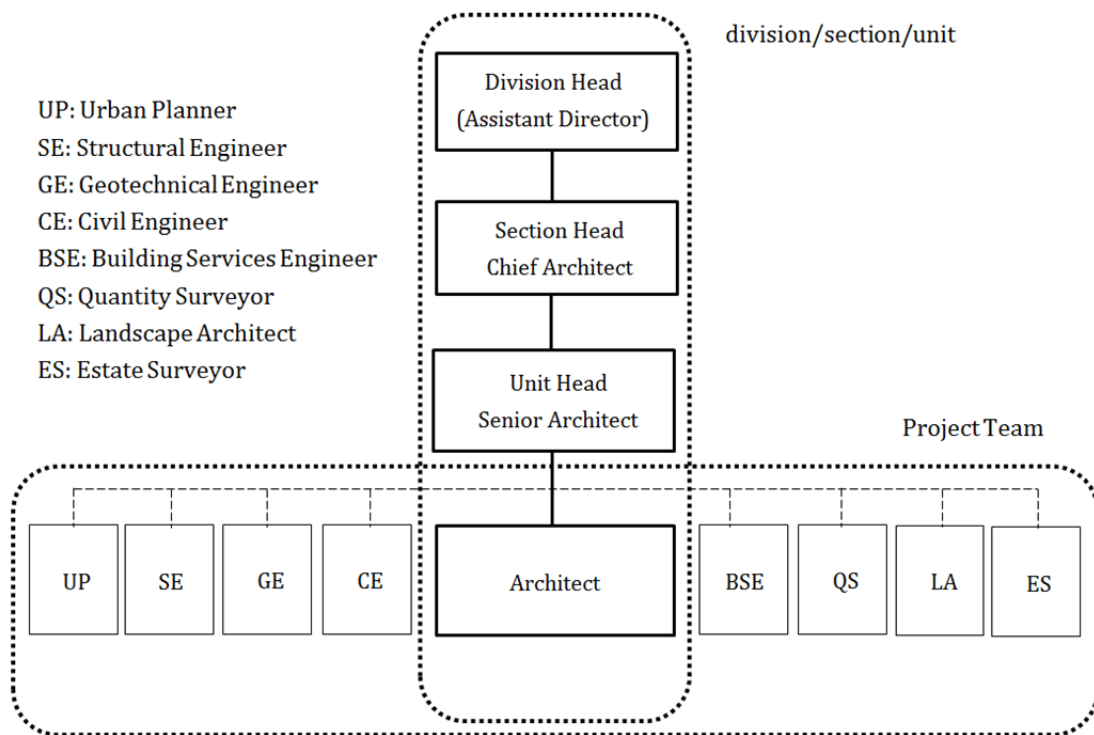


Figure 2: Conventional "division/section/unit" Structure

The PT, as a kind of social structure for monitoring a PDP, is also unique by itself. When a project is commissioned, a corresponding PT will be set up. Depending on the scale and complexity of the project, a PT is normally composed of the professional members, such as the architect or project manager as the client's

representative, the urban planner, the quantity surveyor, the estate surveyor, the maintenance surveyor, the structural engineer, the civil engineer, the geotechnical engineer, the landscape architect and even the estate manager, to name a few, who are charged with the corresponding responsibility. Communications between the architects and the afore-mentioned stakeholders are mainly by means of meetings, email exchanges and telephone calls, where drawings, letters and various proforma are the media as well as the products of the communication. Working relationships are subject to formalities vested with the PT structural hierarchy, but they are always affected by different team cultures, work time differences and politics for working in collaboration (Bishop et al., 2008a).

When rules and resources, or sets of transformation relations are embedded in a division/section/unit as properties of a social system, PTs are meant to work under the system with reproduced relations between actors or collectives, and organised as regular social practices running in a collaborative manner.

The unique structuration of PTs in architectural practice is coupled with the preposition that each building is an individual research project (Valence 2003) and that architectural education comes from a long tradition of “learning-by-doing” (Hoepfl 1997); architectural knowledge is generated naturally during the process by which a group of professionals from different backgrounds gathers together, collaborates and learns to build for a particular site and situation under different constraints. The application of conventional management strategies or business tactics to enhance the “efficiency” of an architectural organisation without accounting for particular structure-agency dilemmas is bound to fail. Even though

a lot of learning happens in business units and terms, it can be lost easily (Wenger, 2002). When PTs are temporary due to one-off contracts (Bishop et al. 2008a p. 29), their knowledge is essentially lost when they disband; ongoing divisions'/sections'/units' operational teams are focused on their own tasks, so their knowledge often remains local. As businesses focus largely on immediate risks and opportunities in the market in order to achieve business goals, learning usually takes the back seat. By assigning responsibility to the architects themselves to generate and share the knowledge they need, these PTs provide social forums that support the living nature of knowledge. No longer is it sufficient to draw neat boxes with connecting lines to depict DCD organisation, since clear boundaries simply do not exist. The highly complex organisational structure, coupled with the layered decision-making structures of the HA, will require a carefully crafted research strategy.

Knowledge and Learning in Architectural Practice

A sustainable architectural workforce has a continuous need for enhanced knowledge and skills to keep pace with technological and economic change. The organisational leadership of the architectural organisation depends upon the commitment of its architects to continue to learn new skills, deal with constant change and apply new technologies in the workplace. Architects and employers have come to recognize that they have a common interest to encourage learning as both a workplace requirement and an employment benefit. The increase in interest is due, in part, to heightened awareness that workplace skills and knowledge contribute to organisation performance. It is also due to an increased focus on the

connections made between theory and practices as part of an education or training experience (Smith 2003).

The ways in which architects' workplace learning impacts upon performance, the extent of this impact are difficult to identify. The purported link between workplace learning and organisational performance can be understood by examining the empirical evidence (Cohen et al. 2005, pp. 779-782), even though the impacts generated tend to be indicative, qualitative and indirect. Furthermore, the act of organisational learning does carry with it a kind of freedom from hierarchically controlled organisations and, to a certain extent, stimulates greater self-governance and responsibility (Dixon 1999). Meanwhile, there is evidence that learning does promote performance; even though this is difficult to measure and quantify, there have been organisations (Pak and Snell 2003) trying to gauge the link between workplace learning and performance outcome systematically and scientifically. When performance is a multi-dimensional construct, its measurement varies, depending on a variety of factors such as goals, context, competence and value chain (Armstrong and Baron 1999).

People will learn something new much more easily if it can be hooked on to existing knowledge and understanding. This is a particular principle of workplace learning. This aspect of learning content has been labelled as the "instructional phase". In the learning of practical skills like architectural drawing techniques, a "practice phase" is entered during which particular procedures have to be learned and the crucial requirement is for feedback (Annett 1969). It is probably impossible to learn any practical skills without getting regular feedback about

one's progress and the correction of inevitable mistakes – from an instructor, whether human or mechanical (Statt 1994). While the need for feedback may be quite obvious in the learning of practical skills, it is just as important in social or human-relation skills. In a general organisational learning context, the knowledge required by trainees can be divided into three categories, general, functional and task knowledge (Stammers 1987). "General knowledge" sets the task in the context of the system. "Functional knowledge" is about why the task is being done rather than how it is done. "Task knowledge" focuses on the rules governing the way in which the task is actually performed.

According to Eraut (1994), the conception of knowledge has led to two parallel definitions. "Codified knowledge" is defined as public or propositional knowledge, which is subject to quality control by editors, peer review and debate and given status by incorporation into educational programmes, examinations and courses. It includes propositions about skilled behaviour, but not skills or knowing how. "Personal knowledge" is defined as the cognitive resources which a person brings to a situation that enables him/her to think and perform. Designing is fundamental to all professions (Simon 1976). However, Simon saw designing as a form of "problem solving" - in its purest form, optimization - thereby ignoring situations of uncertainty, uniqueness and conflict where "instrumental" problem solving occupies a secondary place and problem setting a primary one. In its most generic sense, designing consists of making representations of things to be built. In contrast to analysts or critics, designers put things together and make new artefacts. They juggle variables, reconcile conflicting values, and manoeuvre around constraints; there are no unique right answers and no moves that have

only their intended consequences. With its webs of moves, discovered consequences, and implications, designing is a reflective conversation with the materials of a situation (Schön 1988). In contrast with engineers, architects work differently and work with both codified knowledge that is always “triggered” by personal knowledge. Different architects produce different designs to address a problem (even the same architect will produce different designs for the same problem at different times), and this is understood as a matter of problem setting instead of problem solving (Schön 1985).

2.4 Conclusion

This chapter has attempted to establish the context for the proposed research by exploring the existing literature related to CoPs. A review of the relevant literature has covered theoretical aspects of CoP frameworks proposed by scholars from various disciplines. It has also considered the application of CoPs within certain sectors. This review has raised questions in regard to the theory underlying CoPs and how the concept has been applied and studied. This review has two aspects: first, it provides the researcher with a foundation of what CoPs are considered to be and how they have been used; and second, it makes sense of issues that support the data collection and analysis processes utilised in this.

CoP was initially described from a theoretical perspective as a container for situated learning and LPP (Lave and Wenger 1991) to a more instrumental perspective in application (Wenger, 1998, 2002, 2007). There is a sense of open-endedness about how CoPs have been defined and reified, making it difficult to compare how they have been used, but which may, in turn, contribute to a

variety of applications. Nevertheless, CoP's very definitions as "a system of relationship between people, activities and the world", and which "develops with time, and in relation to other tangential and overlapping communities" (Lave and Wenger 1991, p. 98) did provide a consistent approach for understanding architects' workplace practice in the HA.

Several writers have commented on the lack of consistency in CoP definitions and application; some have used the concept as a theoretical construct to explore the development of identity and relationships. Some have used it as a lens to describe or understand a phenomenon better, and yet others have used the concept as a tangible entity with which organisations can easily resolve issues related to knowledge sharing. A number of the empirically based articles supported the argument that the CoP is a valuable tool for policy development, but others noted challenges in the use of CoPs, including multi-membership, early social disposition, inter-personal tension, heterogeneity of individuals, transition of adult education, conflict in identity related to power relation; and the changing nature of CoPs. These challenges all seem to underscore the complexity of the architectural activities taking place within CoPs and the apparent connection between the rhetoric of workplace learning and the actual practice in an architectural community. However an aspect that appears to have remained broadly consistent is the social one, that CoPs cannot be managed, directed or controlled overtly. While some level of support or facilitation may be of benefit, each CoP will discover its own unique path.

There does not appear to have been any detailed exploration of the experience of participants in architects' CoPs. Much of the literature on CoPs raises issues of how other theories, concepts, and approaches relate to or are embedded in our understanding of CoPs. The difficulty experienced with CoPs is related to the superficial understanding and application of these evolving concepts. It was considered that the experiences of individual participants within CoPs could be important to a better appreciation or understanding of the various complex interactions amongst and between participants, an insight which this research aimed to explore within the architectural sector. While Chapter 1 outlined the motivation for this research, situated the researcher, and identified the research questions, this chapter has provided the foundation for the research and is a bridge to Chapter 3, in which a detailed discussion of the research methodology will be presented.

CHAPTER 3: METHODOLOGY

3.1 Introduction

The literature that supports the research has been considered in Chapter 2. Accordingly, the research has been framed as an inquiry into sub-questions about a) the Hong Kong Housing Authority (HA) architects' CoP and how architects learn in their practice through being members of a CoP; b) the nature of their situated learning and individual experiences; and c) the implications of these issues for widening our knowledge and understanding of the concept and how it can be applied to the profession.

First, the outline of this chapter is described, followed by an account of the key research questions that arose from the literature review. Subsequently, this chapter goes on to describe and justify the theoretical framework pertaining to the philosophical orientation underpinning this study and the research design. Then, the discussion moves on to elaborating the sampling strategy and then the data gathering techniques of the pilot study and main fieldwork about semi-structured interviews used in the research. This is followed by a description of the analysis and data processing procedures. In addition, this discusses the ethical considerations throughout the study, as well as the ethical issues that arose in the process of carrying out of the fieldwork.

3.2 Research Approach

Chapter 1 highlighted the claim that, under keen competition and the extraordinary demand for the mobilisation of knowledge in the construction industry, it is of great importance for architects to seize the knowledge generated in practice for on-going reference. This led to a discussion, in Chapter 2, of the literatures about concepts of situated learning, legitimated peripheral participation (LPP) and CoP frameworks in relation to learning in an organisation. This discussion revealed that it would be difficult for architects to obtain information and share tacit design expertise effectively under the HA's hierarchical organisational structure, and it was noted that architects seek to share knowledge informally within their communities. Based on this background, the research has developed into a qualitative inquiry for seeking to know how architects learn their knowing through participation in CoPs.

Philosophical Orientation

Social relations are concerned with relationships between constructs formed by human social behaviour. This suggested that the research should look at architects' social selves to examine the qualitative constituent therein. The research method chosen was formulated based on the ontological understanding about the reality in the social practice of an architectural organisation. Therefore the selected method needed to provide support for an epistemological basis (Grix 2002) concerning the subject of architects' learning in CoPs, the difficulties encountered during participation, and how they attempt to solve the social problems embedded in their communities.

The theoretical framework of this study included considerations about the epistemology of “knowledge claim” embedded within the research, which led to the “theoretical perspective” or “philosophical stance”, appropriate methodology and methods (Crotty, 1998, cited in Creswell, 2003, pp. 4-5) accepted for the research. Therefore, the theoretical framework that informed both the choice of methods and the approach to interpreting the data needed to be in line with the main research question and the sub-questions that emerged in the study of the social relation about learning in architects’ communities.

Epistemological Consideration

Epistemology is about “what and how can we know about it” (Grix, 2002, p. 175); and epistemological issues are concerned with the question of what is or should be regarded as acceptable knowledge in a discipline (Bryman 2008). Given the above position about architect’s communities, the researcher considered that knowledge about how architects learn in the workplace should be reached via a view of interpretivism in the gathering of facts that provide the basis, rather than employing a natural science model in positivism.

An interpretive approach not only sees people as a primary data source, but seeks their perceptions of what Blaikie (2000) noted as the inside view of the human mind. Instead of imposing an outside view for exploring people’s individual and collective understandings, reasoning processes and social norms, “interpretivists are concerned with understanding the social world people have produced and which they reproduce through their continuing activities ... social actors have to interpret their activities together, and it is these meanings, embedded in language,

that constitute their social reality” (Blaikie, 2000, cited in Mason, 2006, p. 115). Based on this view, the research position needed to be based on this philosophical stance of inquiry about how the knowledge will be demonstrated (Mason 2006). In this case, emphasis was placed on understanding the architects’ learning behaviours. This links to the interpretivist epistemology position, that knowledge can be acquired by investigating the social domain in many ways (Kangai 2012) because the social context is different from natural science, where stress is placed on the understanding of the social world through an examination of the interpretation of that world by its participants (Bryman, 2008).

With reference to Lave’s and Wenger’s (1991) studies of different participants’ subjective views for understanding the reality in different workplaces, focus was placed on “the specific contexts in which people live and work in order to understand the historical and cultural settings of the participants” (Creswell 2003, p. 8), hence, architects’ personal stories and experiences embedded and developed in the larger social domain had to be explored. To ensure that the social domains were reflected “through the eyes of the people,” when they were involved within their communities (Bryman 2008, p. 385), the exploration of the architects’ participatory practices was based on their own roles within communities.

Ontological Consideration

Ontological is about “what is out there to know about” (Grix, 2002, p.175). Questions of social ontology are hence concerned with the nature of social entities (Bryman, 2008). Therefore, the central point of ontological orientation for a study of architects’ communities is the question of whether social entities can and should

be considered as social construction built up from the perceptions and actions of social actors or in the status of constructivism (Grix, 2002). The study of reality in gaining evidence and knowledge has led to debates concerning positions between subjectivists, who assume the necessity of “mutual influences of a researcher on the studied field” and objectivists, who believe that the objective truth can be measured and explained (Ammenwerth, Mansmann and Iller 2003, p. 238).

Instead of taking the view that architects’ learning in practice is a pre-existing characteristic whereby learning is of a metaphor of acquisition, it is argued that architects’ learning in practice is situated and is a participation metaphor (Hodkinson and Hodkinson 2003, p. 3). Therefore, when it was meant to explore the reality in architects’ learning in the workplace and the construction of “self” socially, this social order of practice in an architectural organisation was considered as an outcome of agreed patterns of action that were themselves the products of negotiations amongst different parties engaged. In enquiring into knowledge about architects’ behaviour, the researcher has paid attention to the views of architects about their daily practice by exploring subjective meanings formed through interactions with others (Creswell, 2003, p. 8). Hence, the main research focus was established as being on gaining an understanding of architects’ reflections on certain subjects and objects (Creswell, 2003) and developed within the institutional context, since the prospective knowledge claim about the individual learning experience would be situated and contextual (Mason, 2006).

Based on this subjectivist ontological position, this study aimed to explore perceptions and meanings in connection to architects’ attachments to reality,

because “people’s knowledge, views, understandings, interpretations, experiences and interactions are meaningful properties of the social reality” (Mason, 2006, p.63). This led to the primary assumption that knowledge about the nature of social reality would be according to their individual cognitions, backgrounds and emotions and that the evidence of the existence might vary between people depending on the context and time (Creswell, 2003). Consequently, this subjectivist, constructivist consideration of the ontology position regarding the nature of architects’ workplace learning enabled the study to probe into the participatory practices of architects in the HA.

Social Constructivism

Social constructivism rests on the philosophical assumptions that multiple versions of the world are legitimate, in which texts are open to multiple readings and language is non-representational (Mason, 2006). A major focus of social constructivism is to uncover the ways in which individuals and groups participate in the construction of their perceived social reality (Bryman, 2008). As such, a social construct is a concept or practice that is the construct of a particular group, a by-product of countless human choices, rather than laws resulting from human judgment (Fuller et al. 2005). With reference to the concept of CoPs in architects’ communities, when situated learning is constructed by the participating learners, social construction is not only in relation to “wordly” items, like things and facts (Hong and O 2009), but also to beliefs about the architects in practice. This research study, therefore, involved looking at the ways in which architects’ social phenomena were created, institutionalized and known.

Qualitative Inductive Approach

A positivist approach was not appropriate for this study because the main rationale was not to get a statistical account of the research question concerning aspects of architects' lives. Furthermore, a quantitative approach does not enable an understanding of very complex social and political situations with very superficial analysis (Mingers 2001, p. 255). Unlike quantitative research methods, which rely on causal determination, prediction, and generalization of findings, the qualitative approach adopted for this research emphasised seeking instead of illumination; understanding; and careful extrapolation to similar situations (Hoepfl 1997). From an interpretivist epistemological viewpoint, the researcher explored the relationships using textual rather than quantitative data. In this case, the real-world setting being an architects' workplace, where, the researcher did not manipulate the phenomenon of interest (Patton 2002).

By using qualitative research analysis, the researcher was able to employ interview details and other aspects of the apparent compatibility of the research methods, enjoying the rewards of both numbers and words (Glesne and Peshkin 1992). Based on this view, this research study was developed in a qualitative framework concerned with how the social world is interpreted, understood, experienced, produced and constituted (Mason, 2009, p. 3) with respect to the learning culture of architects' communities, their behaviour within the context of that culture, and a detailed account of that setting (Bryman, 2008).

The chosen qualitative approach suggested that the research should enquire for "rich descriptions and narratives of specific cases" (Goodwin and Horowitz 2002, p.

36) through the inquiry process of “understanding a social or human problem,” and “this is based upon building a complex, holistic picture, formed with words, reporting detailed views of informants, and conducted in a natural setting” (Creswell, 1994, p. 29) with emphasis on the participants’ perceptions and explanations of the social practice. In this connection, it can be argued further that the fundamental strength of qualitative research for the current study is its capacity “to create a deeper and richer picture of what is going on in a particular setting” (Goodwin and Horowitz, 2002, p. 44) to fill the gaps and enrich the existing theories.

The main rationale of this qualitative research study of architects in the HA was not to make claims which could be applied beyond the sample (Mason, 2009, p. 39). Instead it aimed at constituting arguments about how things worked in particular contexts (p. 136). The qualitative approach used in the research helped in grasping the entire meaning of what was been said by the architects, and which required the researcher to stay “active and reflective in the process of data generation” (p. 66) and “to be highly involved in actual experiences of the participants (Creswell, 2003, p.181). Therefore, the qualitative approach required the researcher to look for “interconnections between the actions of participants of social settings” (Bryman, 2008, p. 394). In contrast to quantitative research, the qualitative approach adopted in this study was positioned for a narrow understanding of a particular case (Goodwin and Horowitz, 2002, p. 36) in the specific context of architectural organisation and a meant-for-theory testing (Bryman, 2008).

However, qualitative research, to a certain extent, “comes under criticism for the subjective nature of data collection and analysis” (Easton, McComish and Greenberg 2000, p. 703), and the role and position of a qualitative researcher is “not safe from criticism” (Onwuegbuzie and Leech 2005, p. 378). Moreover, this researcher-participants relationships problem is considered a challenge for a qualitative researcher since “qualitative findings rely too much on the researcher’s unsystematic views about what is significant and important (Bryman, 2008, p.391). This view is also connected with the problem that qualitative research might be guided by the researcher’s set of “beliefs” (Denzin and Lincoln 2003, p. 31) that created the dependability of the predispositions and ethical position of the researcher.

Under an interpretivist epistemological position that “a strategy is required that respects the differences between people and the objects ... and ... to grasp the subjective meaning of social action” (Bryman 2001, pp. 12-13, cited in Grix 2002, p. 178), it was therefore prudent to consider an inductive approach for an iterative study of architects’ social selves in practice. Since finding themes and building theory may require fewer cases than comparing across groups and testing hypotheses or models (Denzin and Lincoln, 2003), the findings enriched the understanding of CoP conception by allowing an informed comparison to the original theoretical perspective. Rather than starting with a theory at the outset, the theory developed itself inductively in the process of the research (Creswell, 2003, p. 9) through the explanation of the results based on “contextual understandings on the basis of rich, nuanced and detailed data” (Mason, 2009) generated; thus, theory becomes the outcome of the research:

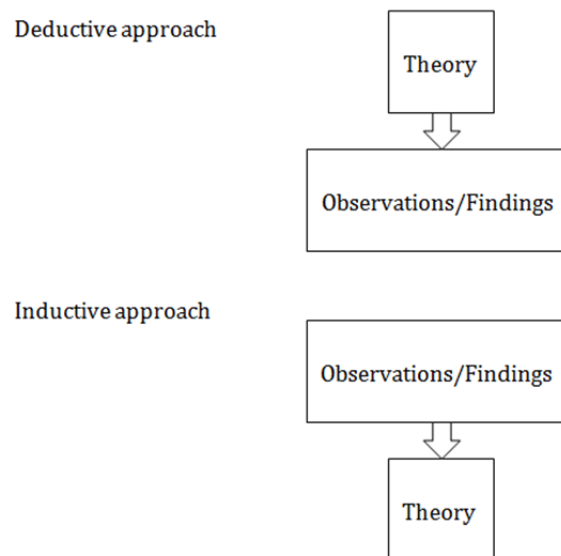


Figure 3: Inductive Approaches to the Relationship between Theory and Research.

[Adapted from Bryman (2004, p. 10)]

With the establishment of a philosophical orientation appropriate for the nature of the research question and a discussion of a qualitative inductive approach chosen for understanding of the social or human problem, the following section discusses the how the research was formulated.

3.3 Research Design

The social constructivist position of this research called for a study of relevant personal experiences embedded and developed in social domains (Aronsson 1997). The point in focus was the architects' experience when they were constrained by a range of social resources under different circumstances (Chase 2003) in the HA

setting. Hence, facilities for intensive and detailed analysis of architects' perceptions, engagement and the context in which architects operate were used.

Similar to studies of CoPs by other researchers, such as, learner disposition to learning (Hodkinson and Hodkinson 2004; Hodkinson and Hodkinson 2003); workplace learning in manufacturing industry and secondary school (Fuller et al., 2005); the transition of adult learner to higher education (O'Donnell & Tobbell 2007); social learning of new lecturers (Warhurst, 2008); and conflicting identities and power in out-sourcing IT workers (Hong & O 2009), the employment of a contextual organisation, the HA, was chosen as an object of study (Denzin and Lincoln 2003 p. 34). Furthermore, this unified study of a single organisation allowed the researcher to undertake an intensive examination of a given entity in order to justify the required "quality of theoretical reasoning" (Bryman, 2008, p. 57) which the study targeted.

In the process, data collected from the participants were cross-referenced for their embedded meanings to inform subsequent analysis with theory of CoP. It enabled the production of new conceptual distinctions or theoretical arguments to accommodate new data (Goodwin and Horowitz, 2002, p. 37) in an iterative manner. By ensuring "congruence between concepts and observations" (Bryman 2008, p. 376) under a single organisation of a similar contextual nature for several "embedded units", the data prospectively enhanced internal validity (Bergen and While 2000) throughout the process. The following sub-sections discuss how the sampling was done and the research methods used for the data collection under triangulation consideration of data source.

Purposive Sampling Strategy

This inductive qualitative research entailed purposive sampling with an aim of generating an in-depth analysis, so issues of representativeness were less important (Bryman 2004, p. 333). Due to the nature of the research frame, it was a non-probability form of sampling and the researcher did not seek to sample research participants on a random basis. It was of significance to ensure access to as wide as possible a range of individual architects relevant to the research question, so that many different perspectives and ranges of learning activity could be captured for attention. In this connection, the sample group for the main fieldwork study was drawn from architects who have been employed with the HA from below 5 to over but around 20 years and who had practiced from 5 to over 20 years in the Hong Kong (HK) building industry. As middle-range management architects, they were playing pivotal roles in the HA's business process and were able to reflect individual situated learning experiences.

Since the research questions imply that learning draws on the social and cultural resources that were available in a setting, it was important to demonstrate from the sample the operation of social construction processes in different settings and to frame different situated learning experiences from sampled architects with contrasting views when they were involved with different CoPs. With the intention of understanding one's individual life experience within their socio-cultural context (Roberts 2002, p. 13), thus, it was necessary for the interview sample to represent different CoPs.

Identifying the Initial Sample

The initial sample was selected purposefully with a focus on architects who were active colleagues in different social gatherings. The initial sample involved 3 architects, chosen from a preliminary stage of observation of architects for pilot study interviews. They were middle-management grade architects who were interested in professional development and eager to take part in community activities in their workplace. Even though these key informants were considered to be solicited sources of information, the researcher was conscious to exclude undue reliance on the key informants to avoid the research seeing social reality only through the eyes of the key informant (Bryman 2008).

To expand the sample, the researcher asked each participating architect to suggest other individuals who might be appropriate participants. These initial participants also shared other possible communities emerging in the HA and of which other architects were members. This process of selecting additional participants, based on referrals, continued throughout the data collection process and alongside the development of the subsequent fieldwork. As a result, a further 15 potential architect participants were identified as informants. They were selected because they were more forthcoming and out-spoken, indicated their appreciation of the subject, and had time available. In the course of the research, they also directed the researcher to further relevant situations, events and architects which were helpful to the development and progress of the investigation. Since the strategy relied on social contacts between individual architects to trace additional informants, the technique used in the research cannot possibly claim to produce a statistically

representative sample. With a population of around 120 architects practicing with the HA, the sample frame was considered suitable for the research purpose, and pragmatic given the scale and length of this research study.

The intention of this process was to broaden the pools of potential participants without relying solely on the researcher's personal network, and to ensure a sample that reflected a breadth of experience, age and gender, situated in different units and engaged in different stages of construction work. Under this sampling strategy, the data generated could be diversified in order to broaden insight and to induce possible valid data saturation. As a stratifying criterion (Bryman, 2004, p. 333), this research deliberately excluded directorate grade architects at top-management level and had a sharp focus on middle-management architects, since the top-management level architects positioned at the directorate level were mainly charged with management duties.

Theoretical Sampling

The sampling procedures were not linear in achieving the number of architects for interview and the approach was an iterative one. The emergent themes, perspectives, elements and relationships appeared to stabilize to the extent that no new themes were captured after around the first 5 to 6 interviews had been completed. At this point, the focus of the process shifted to exploring more fully several of the key themes that had been identified. This more detailed exploration was accomplished through theoretical sampling, in which more data sources were triggered to be sought by earlier data (Bryman, 2004, p. 333). In a mutually interactive manner, the researcher continued to seek participants who would

reflect a balance of units, length of experience, duration of HA, service, gender and a variety of other perspectives that were also sought in parallel with the interview process.

It was not just the participants who formed the “object” sample; it also involved events and contexts as well. Under this rationale, 4 specific issues were discerned through theoretical sampling, as summarized below:

- a) The first issue is about the perspectives of the individuals who self-described as active participants in the social groups. In one of the first 3 interviews, an informant described participation as being a must for working at the design stage of a project; otherwise one will lose track of pace in practice or risk failing to perform at a design review session. On the topic of how projects at the design stage can generate learning opportunities and the impact of involvement of higher rank architects, 5 more architects with good design track records and with projects at the design stage were interviewed.
- b) The second issue is about the notion that architecture is about design on paper, and is also about construction on site. The sampling was extended from the office to architects on site, where vibrant data in relation to interaction amongst communities’ participants were noted. When communities covered the involvement of participants separated by distance, they relied on tighter controls and various communication methods like drawings, log-sheets, etc. Here, 5 participants with projects that involved their working on site were included.

- c) Third, at the suggestion of some participants, it was noted that architects deployed out of their original work units, for example to a post involving the formulation of an environmental policy, might have had some impact upon the capacity of their learning community to carry out a mere central function in providing a standard of design for architects' reference across units. For this reason, 3 architects not belonging to a unit were included.
- d) Fourth, during one of the middle-stage interviews, the researcher was informed that a work group titled Building Information Management Steering Committee (BIMSC) had been set up by the management to review the progress of implementation and results of a trial run of BIM software across different units. Based on this information, 2 participants in this group were included in the sample.

According to Bryman's (2004, p. 334) view, "the chief virtue of theoretical sampling is that the emphasis is upon using theoretical reflection on data as the guide to whether more data are needed". Through this looping refinement process, with on-going data collection informed by further semi-structure interviews, it was noted that the samples did provide categories that implied different modes of learning for the social learning system in the HA.

As the research unfolded, out of the 15 potential informants, 3 originally targeted architects dropped out of the scheduled semi-structured interviews due to personal reasons, after being informed of the time required for the process: "I am interested in your research, however I am fully engaged by my work these months and will not have much time available" [A (N/A)-U1]; "I shall be on overseas

training starting next week and some preparation work will be required before departure, so I am sorry that I cannot join” [A (N/A)-U2]; and “Unfortunately, I am not available for that” [A (N/A) – P1]. In this way, theoretical sampling continued until the researcher was satisfied that a comprehensive understanding or explanation could be described. Finally, in total there were 10 participants interviewed for the main fieldwork when the researcher achieved satisfaction, while the 2 remaining potential participants were not interviewed in the end.

Out of the 10 architects who took part in the research, 7 were female and 3 were male. 8 architects were working with the Project Division, which was responsible for building development and construction. Of these, 3 architects worked with Unit 1, 3 worked in Unit 2 and 2 worked in Unit 3. The other 2 architects not working in units and were responsible for supporting the Project Division, 1 worked in the Environmental Group and the other one worked in the Policy Unit. The main characteristics of the participants are presented in the following table:

Sample Code	Unit	Gender	Rank	Year of Post-qualification Experience	Year of working at HA	Stage of Works Currently Involved
A01	1	F	A	15-20	15-20	Design
A02	1	F	A	15-20	15-20	Construction
A03	1	M	A	15-20	15-20	Design (Building Modeling)
A04	2	F	A	15-20	15-20	Design
A05	2	F	A	15-20	15-20	Construction
A06	2	M	A	5-10	<5	Design
A07	3	F	Sr A	15-20	15-20	Construction
A08	3	M	A	15-20	15-20	Construction
A09	Central	F	Sr A	Over 20	Over 20	Environmental
A10	Central	F	A	15-20	10-15	Policy

Table 2: Characteristics and Profile of Participants in Main Fieldwork

Research Methods

The choice of research method requires attentive preparatory analysis by considering “how well matched the logic of the method is to the kinds of research questions” (Mason, 2009, p. 189). In the current study, the exploration of the social interactions and insights into the architects’ experiences needed to be interpreted qualitatively in order to develop an understanding of their professional lives since

the nature of the response depended on both the world and the instrument and different methods generating information (Mingers, 2001, pp. 242-243).

Therefore to find out how architects learn by accommodating in CoPs, a combination of qualitative methods of data collection was used. This combination included, first, a thorough analysis of the contextual organisation of architects' macro-social practices (Billett and Somerville 2004) by means of the researcher's role as an observer with the HA. This was achieved by reading information from websites and procedural manuals with a view to narrowing down the choice of subject to enable a sharp focus on the research question. This initial process subsequently informed the choice of the semi-structured interview. Emphasis was placed on understanding the architect's "self" as a member of a CoP in micro-social practices in terms of subjectivity and intentionality. The use of a combination of data collection methods placed the researcher in a better position to understand the nature of the context, to find out how the architects would engage in it and the thematic characteristics that would emerge. Including the pilot work period, the research fieldwork lasted for around 8 months (from September 2013 to April 2014) and the semi-structured interviews covered a sample of 10 architects.

In seeking the social products generated in the architects' situated learning under an ontological constructivist orientation, words were considered to be more important than quantification. A questionnaire approach was considered inappropriate because the data that could be produced from scheduled questions could not be used to answer the research question. Words as data captured in interview through open-ended questions (Mason, 2006, p. 62) allowed the

researcher to gain insight and depth in terms of the architects' understanding of CoPs, which a questionnaire would not have allowed.

A focus group interview was also considered inappropriate because the focus of the study was on individual experience and personal understanding, whereas the focus group method emphasizes questioning about a particular, fairly tightly defined topic, and the accent is upon interaction within the group and the joint construction of meaning (Bryman, 2008, p. 474). Besides, a focus group is concerned with the ways in which individuals discuss a certain issue "as members of a group" (Bryman, 2004, p. 346) rather than simply as individuals, emphasizing how they respond to each other's views and build up a view out of the interaction that takes place within the group. Moreover, the unstructured nature of focus group conversations can reduce the researcher's control over the interview process (Denzin and Lincoln, 2003, p. 58). Another limitation of a focus group is that participants may possibly revise their views (Bryman, 2008 p. 475) in the process and end up distorting the data generated. In the case of this study, when discussing the issues regarding the nature of situated learning and individual experience with architects, it would only be possible to perceive the individual perception and thoughts by letting the respondents have the freedom to respond in their own way (Pallant 2007, p. 8).

Data Gathering Techniques Used

A series of data-gathering techniques was used to collect the architects' views of issues surrounding their workplace learning and seek for the emergence of attributes of domains (Wenger, 1998) in their CoPs (Lave and Wenger, 2001)

regarding the nature of situated learning, individual experience and factors affecting the dimension of learning. Since there has been no precedent literature concerning architects' CoPs on which this research could be based, the review of CoP studies conducted by different researchers in professions or organisations pointed to a need to test theoretical understanding of the literature and the research methods prior to carrying out of the main fieldwork. Consequently, pilot study, composed of preliminary observation and pilot interviews, was devised to probe into the architects' communities in the HA as a preliminary exploration process.

Pilot Study

The main intent for carrying out a pilot study for the current research was to test the suitability and workability of the research instruments, particularly the interview questions, so the outcomes of the pilot study “fed into this research as a whole” (Mason 2006, p. 45). The pilot study was used to check the feasibility of the interview structure, the information collected, and the ways in which the questions were asked to ensure that the participating architects would understand the nature of the research. This was important for the further development of the research procedure (Teijlingen and Hundley 2001).

The pilot study was carried out in two stages, with a preliminary observation followed by the pilot interviews conducted from September to October 2013. The preliminary research was about observing the architects' work lives and the organisational context of the HA, with a focus on the different modes of workplace learning they encountered, and how such learning was initiated in the course of

their daily work. While the pilot interview participants were selected based on a convenience sampling approach (Bryman 2008) the accessibility of participant architects was the basis for the preliminary observing stage.

Preliminary Observation of Architects

In order to help to know more about the architect's group culture and the contextual organisation of the HA in the initial phase, the researcher carried out observation of the human activities and the physical settings (Angrosion 2008, p. 162) in which the architects' activities took place. By doing so, the researcher was able to make a close encounter with the actual situation in trying to understand (Goodwin and Horowitz, 2002, p. 36). The observation was an unsolicited process (Hammersley and Atkinson 1995). The researcher talked to different architects working together, observed site visits and inspections, attended seminars, attended office audits, and even had lunch together. Issues that tapped into their work lives, spontaneously and naturally (Bryman, 2008), included:

- a) Discussion of problems encountered due to the implementation of new design guidelines, which jeopardized working programmes on site;
- b) Sharing of experience of a vacation spent in an old town in Germany;
- c) Sharing of the insight about the use of different types of glass products after attending a Continuous Professional Development (CPD) seminar; and
- d) Complaining about the latest safety requirement requiring all personnel on site to wear safety vests as well as helmets.

Two types of data were observed: talks amongst fellow architects and between different professionals that occurred naturally, and detailed descriptions of live incidents. There were advantages in getting close to different architects, listening to their stories and experiences while resolving design and site problems. In the process, the researcher was unobtrusive (Webb et al. 1996). The opportunities for observation were genuine; the architects were able to express themselves freely. The reason for analysing contextual situations (Goodson and Sikes 2001) was to understand the links between different aspects of the architect's professional life in a community and to get involved with architects' actual experiences in practice through identifying scenarios encountered in daily routines and uncovering the meaning of participatory engagement in their CoPs.

As an architect with the HA, the researcher was accustomed to the office layout, rules and procedures, working processes, people, and general working atmosphere. However, the observation could only be limited to providing insights about the formulation and development of the research questions (Mason 2006, p. 96). Therefore, the research interest recognized in the process was turned into questions that were used subsequently in the pilot study interviews.

Pilot Study Interviews

During the collection of background information about the routine and some of the essence of basic professional practice, 3 architects from different units were approached. Detailed discussion of interview protocol is discussed in Section 3.4 Main Fieldwork.

With the experience gained, it was noted that the list of questions needed to be modified to be more aligned and focused with the research aim. It was reflected that some questions did not produce relevant data and they were eliminated; likewise some repetitive questions were removed. As well, closed-form questions were rephrased, for example an original question like “Do you agree that competence and experience make yourself an architect?” was rephrased to “What do you think of an assumption that learning these attributes (competence and personal experience) constitutes knowing that makes you architect?” Basically, the interview question list was shortened, with the contents more polarized and concise after the pilot study. The researcher’s role was to encourage the participants to speak out of themselves so that more stories could be shared, given the view that “the less interviewer talks, the more information is produced” (Gall et al., 1996, p. 31).

Although it was clear in the pilot study process that such a small number of participants is not representative of the whole population (Teijlingen and Hundley, 2001), the participants were found to be a good fit for the discussion purpose. In addition, it was also realized that the three pilot interviews were developed progressively (Teijlingen and Hundley, 2001, p. 3) because of the experience accumulated by the researcher for clearer questioning, smoother workflow and time control.

Semi-structured Interviews used in Main Fieldwork

Following the pilot study, the interview was confirmed as the data collection method because the ontological nature of the research question suggested that an

architect's "knowledge, views, understandings, interpretations, experiences and interactions" (Mason, 2009, p. 63) are meaningful properties of the social reality for exploration. Hence, interviewing allowed a "legitimate or meaningful way to generate data" based on an epistemological position on the ontological properties by which the researcher can "talk interactively with people, to ask them questions, to listen to them, to gain access to their accounts and articulations, or to analyse their use of language and construction of discourse" (p. 63).

The use of the semi-structured interview as the main research method was justified further by its capacity to uncover the key turning points of the participants' career development out of their experience (McAdams 2001). Due to the freedom of format, semi-structured interviewing has the advantage over structured interviewing in that it should be able to reduce challenges like distance and rigidity. In contrast with the concept of "neutrality" (Fontana and Frey 2008, p. 116) in the use of structured interview method, the semi-structured interview is empathetic to the participant architects and collaborative in the process, hence it enabled the researcher to concentrate fully on understanding the emotional state and feelings of the architects.

As a tool for revealing micro-social practice (Billett and Somerville, 2004) in the workplace, the use of semi-structured interview enabled the researcher to know the experience, interpret, and understand the architects through touching on individual abbreviated life histories and edited life stories (Allport 1942, cited in Roberts, 2002, p. 47). That means the data were related to the architects' lived experience in respect of the theme of learning in communities rather than a

general understanding of one's life. As an inductive step, the semi-structured interviews provided the advantage of developing a relationship of first-hand familiarity with HA's architects. Second, the interviews exposed the participants' perceptions of their world directly, since open questions secured responses that could never have been achievable via other means, such as a questionnaire. Third, face-to-face interviewing allowed a much more detailed discussion of the topical areas, because architects naturally like to talk more than they write.

Even though, for the above-mentioned reasons, the semi-structured interview was deemed to be the most suitable approach, the researcher was mindful of the inherent shortfalls of this approach, in particular that "interviews are not neutral tools of data gathering but active interactions between two (or more) people leading to negotiated, contextually based results" (Denzin and Lincoln 2003, p. 62). Besides, the interviews were limited to perceptual data on how the architects viewed the workplace and organisation, and their perceptions might occasionally be inaccurate. Another limitation is that materials from interviews are more difficult to code, analyse and interpret, and are heavily dependent on the individual's capacity to verbalize, interact, conceptualize and remember (Mason, 2009, p. 64). In planning this study, it also had to be assumed that architects are not equally articulate in reflecting the social context in which they operate; and that the data and materials procured in the process of the interviews was likely to be "filtered through the views of interviewees" (Creswell, 2003, p. 186), which might be biased.

Interviewing Rationale

In a semi-structured interview, the series of questions [see Appendix 1 for Aide-memoire of Questions for Semi-structured Interview] can “vary in terms of sequence”; in this study, the questions were deliberately listed “in a more general frame of reference” (Bryman 2004, p. 113) in order to allow space for asking further questions in response to what would be seen as significant replies.

Reflection on and interpretation of past events are likely to occur through the lens of the present which opens up the future (Biesta, Hodkinson and Goodson 2005). With emphasis on the architects’ earlier working experience, the current practice can be identified. It is also viewed that “important work is not strictly bound by the past, but without some links to the past, it is difficult to proceed to the future” (Goodwin and Horowitz, 2002, p. 45). Through the analysis of the narrative linkage between the contextual data analysis and the environment for “self” and reality construction (Gubrium and Holstein 2002), the architects’ lived experiences and their professional practice in the social context in which they operated could be uncovered. As a result, it was possible to elicit an understanding of the “crucial interactive relationship” (Goodson and Sikes 2001, p. 2) of architect’s life about perceptions and experiences; historical and social contexts with respect to events. In this process, the researcher lived through and managed the process of relationship with participant architects, which Mason (2009, p. 95) described as emotional, physical and intellectual. All in all, the semi-structured interviews produced a situated understanding grounded in specific interactional episodes (Denzin and Lincoln, 2003).

Interviewing Questions

By asking designated leading questions (Yin 1994) in rational sequence, following a “clear line of questioning” (Creswell, 2003, p. 186) over the research themes, consistency across interviews was maintained. The extent of cooperation between a narrator and listener (Chase 2003) is affected by the construction of a semi-structured interview. For the purpose of this research it was considered important to maintain a reciprocal relationship between the researcher and the participant architects throughout the process. This was achieved by the introduction of probe questions, asking follow-up questions surrounding the topics discussed for seeking clarification, and invitations to revise answers, to encourage deeper inquiry.

According to the above rationale, the question list was divided into 5 parts, containing 19 questions. The more global questions were asked in the first part of the interview and then the direction shifted to the core of the subject about architects’ participatory learning. Thanks to the feedback from the pilot study, a progressive way of explorative questioning was devised to help the architects to reveal their thinking by asking about the topics with which they are the most familiar first. With a view to understanding the architects’ “knowing” about their situated learning, the schedule of questions was devised in topics. The first topic was concerned with collecting data concerning the architects’ perceptions of competence and personal experience (Wenger, 2000) as attributes for the profession, and their acquisition of these attributes in constituting their “knowing”. The second topic was intended to conceptualize the location in which individual

architect workplace learning occurs; the questions were about their learning in terms of the acquisition metaphor and the participation metaphor (Hodkinson and Hodkinson, 2003); their view of “social, cultural and historical system, which has accumulated learning over time” (Wenger 2000). The third topic of questions aimed to tap into the architects’ experiences of participation in their practices, with a view to identifying attributes in the CoP domains (Wenger, 1998) which constitute the social learning system. As a result, these topical questions have stimulated the monologue of the participant architects by allowing them to express their thoughts toward the subject freely.

Triangulation

As an observer during the preliminary formulation of the data collection method, the interviewer during the data collection, and the interpreter of the data, the researcher noted the difficulty of stepping outside our own experience to obtain some so-called observer-independent account of what we experience (Maxwell 1992). It was also rightly pointed out by Maxwell (1992) that question about the validity of a study: “Why should we believe what you report?” Furthermore, in considering validity, one may ask “Where are you, the researcher, coming from in this research?”, “What's the basis of your knowledge claims?” and “How can your interpretations be taken as solid findings?” (Altheide and Johnson 1994). The main concern is in the realisation, and unfortunately, there have been no perfect methods or models that explain how things really are – and thus “... in general it must be recognised that there is no procedure that will regularly (or always) yield

either sound data or true conclusions" (Philip, 1987, p. 21 cited by Maxwell, 1992, p. 280).

Since "human beings are complex, and their lives are ever changing, the more methods used to study them, the better our chances to gain some understanding" (Denzin and Lincoln, 2003 p. 99). At issue here is the ontological realist assumption about social practice in an architect's work life. Therefore, there are bounded concerns about the validity of these inductive-qualitative accounts which have arisen from the researcher's taken-for-granted allegiance to realist ontology. Possible shortfalls were considered through the adoption of a range of techniques outlined in this chapter.

Due to the nature of qualitative research, the preliminary, unobtrusive observation of the architects' professional practice (Bryman 2004, p. 215) was meant for procuring initial contextual data concerning their daily routines of work, materials from the HA's websites. In this way, the credibility of the study was enhanced because the collection of knowledge about the architects' daily professional practice was used to inform the selection of future participants which, in turn, formulated the development of the interview questions. This form of triangulation displayed "multiple, refracted realities simultaneously" (Denzin and Lincoln, 2003, p. 8), which operated within and across designated research strategy in an iterative manner. As a further cross-checking, the transcribed interview materials were made accessible to the participants for clarification, amendment and verification of views and opinions; this enhanced the accuracy, and hence the internal validity of the data. As the study entailed more than one method and data

source (Bryman, 2004, p. 275) this enhanced the validity of the findings, which in return validated the developing methodology through the process of examining the results from several perspectives.

3.4 Main Fieldwork

The main fieldwork was conducted at the HA Headquarters in central Kowloon in HK. In order to understand the interactions within communities it is first necessary to have a picture of these Headquarters. They are in a complex made up of a building cluster consisting of 4 multi-storey building blocks of 11 to 13 stories in height, located on a sloping site surrounded by other government institutional buildings. Under the hierarchical organisational structure of the Development and Construction Division (DCD), there are sections which are headed by Chief Architect grade professionals. Under each section, there are groups of units, which are headed by Senior Architect grade professionals. Thus there are specific division/section/unit architect communities. Architects belonging to the same section are usually located together on the same floor. Those who are deployed for central functions are based in different locations of the Headquarters cluster depending on their respective functional groups.

Procedures and Methods for Data Collection

With the names of the selected architect participants, the researcher was able to locate their telephone contacts, email addresses, office locations, postings in divisions, sections, and units, and ranks through the HA's internal email system and intranet information portal. This was permitted by the management for the

purpose of carrying out the research. Even though the architects' community in the HA is small enough that the researcher may have known some of the selected participants before the interview, there had been no previous contacts made with any of them with regard to the research topic prior to the invitations being issued. This deliberate arrangement was meant to avoid any premature researcher-participant relationship before the main fieldwork interviews were conducted, in order to avoid the possibility of prejudices.

Interviews were arranged by appointment, either through email or telephone, and were conducted after office hours. The reason for holding the discussions after normal office hours was to help the smooth running of the interviews by alleviating possible disturbances from telephone calls or meetings. Each section of the interview was limited to 60 to 90 minutes in order to maintain the participants' focus. Based on the experience gained from the pilot study, the interviews were conducted in the participants' offices (a partitioned office for the rank of senior architect or a working cubicle for the rank of architect), based on the view that not only would they be more accustomed to their own office environment for freedom of exchange and expression, they could also refer to hands-on materials like drawings, site photos and sketches from their daily working materials to demonstrate their thoughts during the interviews.

The selection of the place for the interview was an important factor in the process and contributed to the success of the fieldwork. The participants' offices tended to reflect their individual styles. In a typical architectural office, models, drawings and contract documents are important constituents of practice. These items play an

important part in the architects' daily work and which provided a useful, vivid supplementary dimension to the oral data captured in the interview. As well, the respondents were found to be more forthcoming and responsive to the research theme when they were expressing their stories and ideas in their own offices, where were more comfortable to them and also free from disturbance or intrusion. Psychological comfort in a secure condition is important to ensure that respondents do not give socially convenient answers for the sake of colleagues or supervisors nearby, especially when they have been invited to discuss sensitive or private experiences regarding their individual attitudes towards colleagues or the organisation.

Based on the experience gained from the pilot study during each interview, the researcher kept an interview protocol on the desk, including opening statements, the question list and probe question list (Creswell, 2003). In order to ensure that the interviews were conducted as designed, ample time was allowed for pre-interview conversation (Bryman, 2004) to explain to the participants the background and purpose of the study, the ethical approval, the sampling strategy, an overview of the questions to be asked, measures taken to ensure anonymity, confidentiality and security of data storage, and necessary clarifications required for the research process. This discussion was intended to build trust between the participants and researcher. Also, this step was important for reducing the likelihood of participants becoming skeptical about the research and thus not giving well-thought-out responses. After the preliminary discussion, the participants' formal consent and permission to audio-record the interviews were sought.

All architects preferred verbal consent to written; some of them explained that signing a written document made them feel the process was too rigid. One participant reflected that, "I have enough legal and contractual documents requiring my signature everyday ... as long as you keep my interview anonymous". In order to cultivate a friendly atmosphere and for the sake of smooth running of the interview, every participant's verbal consent was obtained. At the same time, the researcher's commitment was explained, to ensure that all of the participants had made a fully informed decision to speak and take part in the research (Bryman, 2008).

It was explained in the previous section that the participants who agreed to take part in the research were given time for small talk (Gall, Borg and Gall 1996 p. 31) before the interview in case they wanted to clarify anything about the context of the interview or the background of the study. For example, some participants needed to ask questions about the nature of the interview, such as, "Is it something about another report done by the Department or the Institute?" (A01); "Can I read your report later?" (A02); and "How long would it take and will it disclose something confidential?" (A09). Their requests to know more were entertained and every question was answered in detail prior to the interview, with a view to letting them feel comfortable about the process. Simultaneously, the participants were advised that a follow-up clarification or interview might be required if there was a need for further clarification or if there were new interview questions emerging during the process. However, it should be noted that no second interviews were required in the main study.

The language in which the interviews were to be conducted was an important consideration. English is the statutory language used widely for written documents such as emails, letters and daily communication, but Cantonese is the native language for people in HK. It was expected that the participants would be bilingual in Cantonese and English. However, to ensure their comfort and trust, the research questions were first outlined in English, while the interviews were conducted in Cantonese with frequent use of English when it came to technical terms or jargon, since English and Cantonese are used interchangeably in daily life. Furthermore, it was the researcher's responsibility to avoid equipment failure, and to ensure the smooth functioning of the equipment (Easton, McComish and Greenberg 2000, p. 705).

Throughout the process, only occasional clarifications were requested during interviews. The researcher took care to encourage the participants to be responsive and to engage in discussion about their personal stories. As the interviews progressed, a number of common themes or issues were intentionally listened for or raised, including the emergence of attributes of CoPs in architects' communities, the characteristics of CoPs formed by participants and the management, and how architects' live with CoPs and learn from them.

On the technical side of the data collection, digital voice recording was used in preference to video recording. This was because, as reflected in the pilot study stage, all respondents preferred not to use video recording due to insecure feelings and possible exposure of identity. As well, freedom of expression was encouraged with the understanding that no name or unit would be mentioned in order to

maintain confidentiality. In accordance with Data Protection Act (1998) and the University's Code of Practice (Data Protection) guidelines, the data about the participants retrieved from the intranet and generated from the interviews were stored in a place only accessible by the researcher; and soft copies of the data transcribed into electronic documents were stored in a password-protected computer and internet security software. Furthermore, the relevant materials were backed up daily on a password protected USD drive.

Transcription was undertaken by the researcher in person, for ethical reasons. Each transcription was done in the researcher's office on the same day as the interview in order to ensure that the recording was verbatim, that important data were captured, including the examples used (e.g. architectural drawings and contract documents shown) and that the respondents' use of body posture, if any, could be captured afresh to ensure validity of the data generated. It also allowed the researcher to be aware of any emerging themes that arose in the interview which might have a bearing on the main structure of the study.

3.5 Data Processing and Analysis

Following the phase of theoretical reflection on a set of data, further data are collected in order to establish the conditions in which a theory will and will not hold (Glaser 2002; Glaser and Strauss 1967). This constant comparative method of analysis requires the data collection to move backwards and forwards between sampling and theoretical reflection, until "saturation" has been reached. Saturation is the data generation process; in accordance with Bryman (2008, p. 700), emerging concepts were explored fully and no new insights were being generated.

Once the researcher reached this thematic exhaustion (Guest, Bunce and Johnson 2006, p. 65) in the course of the interviews, where no new or relevant data were emerging and the categories were well developed in terms of the properties and dimensions demonstrating variations (Strauss and Corbin 1998, p. 212, cited in Bryman 2008, p. 416), adequate material may be assumed to have been collected to meet the main aim of the research study.

To prepare the data in order to make sense out of the text (Creswell 2003, p. 190), the interview transcriptions were divided into two stages, the initial data transcription and the transcribed data review. Using the audio recordings and interview notes, the first stage was meant to capture the data word-by-word during interview with a view to covering all the answers to the questions posed. The purpose of the second stage was to make sense of the text provided. The interviews were transcribed as MS Word documents and provided with coded file names known only by the researcher. The information obtained from the various HA websites was based on the English version, so data loss due to transcription could also be minimized. Although, as mentioned earlier, the respondents' native language Cantonese was use along with English during the interviews, the transcriptions were translated by the researcher into English. The participants were invited to review their own transcribed documents with a view to ensuring precision and objectivity.

Although computer-based qualitative data analysis software is available, the researcher decided to carry out the analytical process of data screening manually on the grounds that the focus of the current study was about locating personal

meanings, attitudes and behaviour of individuals. The risk of using computer software to grasp delicate and intimate human data was considered high and liable to attract unintentional information loss. Although the job of data analysis was time-consuming in comparison with the use of computer software, it was considered that the manual method would allow the researcher to extend the level of analysis when it was required, as well as to revisit the audio recordings or the transcripts time and time again for distillation of ideas. Furthermore, the data included not only the interview content, but also sequences of expressions, phrases used, tonal statements and artifacts such as drawings, architectural models and office documents.

Coding System

By comparing and interpreting all the transcripts time and time again, the researcher first reflected on general ideas about the data. Then a general sense of information was reflected by its overall meaning, in accordance with Creswell's (2003) view of a qualitative enquiry. With emphasis on what was said instead of how it was said (Bryman, 2008, p. 553), repeated citations were named by labelling with a topic and a raw code. Although the participants discussed themes or ideas differently, it was the responsibility of the researcher to look for repetitions of topics, similarities and differences, linguistic connections and theory-related materials (Bryman, 2008, p. 555). A coding schedule (Bryman, 2008, p. 553) was for thematic analysis.

The data were organized into thematic groups under a coding schedule based on the research questions. The researcher wanted to identify categories and concepts

that emerged from the text and to link these concepts into substantive and formal theories (Denzin and Lincoln, 2003, pp. 278-9). Following an “open coding” process, the researcher identified potential themes by pulling together real examples from the text (Denzin and Lincoln, 2003, p.279). Using the “constant comparison method” (Glazer and Strauss, 1967, pp.101-116), the technique used was to compare and contrast themes and concepts with attention on what, where, when, why, how and under what conditions these themes occurred in the text (Denzin and Lincoln, 2003, p.279). According to Bryman (2008), it advocates sampling in terms of what is relevant to and meaningful for the researcher’s theory and coincides with the theoretical sampling.

The researcher attempted to align analysis with the four primary requirements: the data were diverse, understandable, applicable to a variety of contexts and supported a reasonable basis for action. The researcher organized the multiple data sources into themes using the question, “What is this expression or artifact an example of?” After reading and re-reading the multiple data sources, the repetition of certain language, terms and practices became one of the variables employed to create themes and categories. The texts from the interviews were compared to identify similarities and differences (Ryan and Bernard 2003).

Categories and Themes

According to Bryman (2008), constructivism suggests that the categories that people employ in helping them to understand the natural and social world are in fact social products which do not have “built-in essences”. As such, categories are constructed in and through interactions between people. Under this view,

therefore, the identification of categories driven by a qualitative-inductive approach was considered appropriate to address the knowledge claim underlying the research questions.

Based on this approach, there were 131 topics identified in the semi-structured interviews, and which were adopted as definitive pointers for identifying the presence of architects' CoPs according to Wenger's (1998) indicators listed in Table 1. In synchronizing, to a certain extent, the thoughts of Lee-Kelley et al. (2014, p. 49) regarding four levels of the evolving nature of CoP knowledge exchange – knowing who, knowing what, knowing how, and knowing why, these topics were grouped. As a result, these topics were grouped into 7 types of learning opportunities, which were carried out in 22 different modes of interaction according to specific situations to achieve the learning outcome, with the use of 22 different types of media including conversations, drawings and photos. In addition, details about the locations where learning usually took place, personnel involved and timing and scheduling of learning were recorded in order to accord learning opportunities with social dimensions which made architects' community learning possible. The essence or scenarios for cultivating such learning opportunities have been presented in a "MS Excel" template [see Appendix 2]. Subsequently, these topics have been grouped into 4 categories which are summarized below:

- a) Project-related (architects "self" initiated communities, which are unstructured in membership with clear objectives: Engagement Driven) – In the course of Project Development Process (PDP), it is common for architects to seek assistance to resolve problems encountered in projects from different

colleagues, because the building process is so complicated that it is impossible for one to know all if one has no experience of. With this aim to share information and steward knowledge, there has emerged a culture of participation in various communities of architects in the HA, even though these actions are done without any reference to the idea of a CoP. In this way, the architects participate actively in communities through active engagement with people in their social practice.

- b) Project-related (management initiated groups which are structured in membership with clear objectives; as opposed to architect “self” initiated communities that are unstructured: Alignment Driven) –Groups of architects are formed by the management (e.g. in the form of panel or committee) for reviewing design development issue in PDP. This is more structured and always vested with company objectives.
- c) Non-project-related (management initiated groups which are semi-structured in membership with clear objectives: Alignment Driven) – Team of architects is formed by the management (e.g. in the form to Audit Team) with mandate to maintain their professional standards in terms of compliance with requirements as stipulated under guidelines and regulations enforced by the HA.
- d) Career-related (architect “self” or institute initiated which are unstructured in membership but with clear objectives: Imagination Driven). Sometimes it is initiated by being member of external institute – Architects participate in various communities, both within the HA and outside it by way of attending

seminars, conferences, continuing professional development (CPD) courses or visits with a view to equipping themselves with state-of-the-art technology and knowledge in the field of architecture and the building industry for bettering their professional practice. The architects all uphold their professional standards in terms of compliance with requirements set out by the institutes, almost in an automatic manner, which includes fulfilling the Code of Ethics and Conducts and maintaining life accountability for buildings with which they are involved. They cherish their professional standard and protect it, in return for their participation in the professional community which gives them a unique identity globally.

Alongside this logic of inductive process, “a category operates at a somewhat higher level of abstraction than a concept” (Bryman, 2004, p. 403); and categories are formed by the grouping together of several concepts with common features. The above-mentioned categories include various dimensions of work-mode belonging (Wenger, 1998), about the architects’ engagement in doing and talking about things together in CoPs; the imagination dimension concerning how they construct an image together; the alignment dimension regarding the process of coordinating for a higher goal within the social learning system of the HA’s CoPs; and, finally, confirmation of the CoP’s importance amongst architects.

This stage was meant to probe into further data attributes to reinforce and enrich the on-going analysis concerning how architects learn in communities, which included attributes about empowering participation; the enhancement of social belonging, including ways of boosting one’s learning energy level; deepening of the

social capital involved; and the degree of self-awareness within communities. The main themes emerging related to the issue of how architects learn in practice were that: the HA seems to work in a mode of a double-knit organisation; through this, architects possessed multi-memberships in the organisation, such as involvement in a business process as a Project Team (PT) member responsible for PDP under the organisational structure of a division/section/unit, or being members of semi-structured work group or numerous CoPs. In addition to the architects' individual situated learning experiences, main themes emerging were that: engagement needs mutual input – giving out can be taken back later; architects' imagination of belonging needed putting oneself in a bigger picture in the industry and history; and their alignment in social practice is not only with HA's house-rules, but also with those of the Institutes and the law.

3.6 Ethical Considerations

The aim of this research was to probe the topic of professional practice, so it needed to reveal insights in-depth about architects in the HA. The method used for data generation was semi-structured interview. Compared with other methods, such as structured interviews, the researcher was noted to be more involved with the respondent as through asking questions, listening to responses, filtering questions, reflecting on areas of interest and steering of topics for discussion with an aim to identify the meanings that the actors attached to their actions (Taylor 1993, p. 7, cited in Bryman, 2008, p. 385).

An application was submitted to the HA to carry out the research and use the data for academic purposes, and consent was granted. Since the research was involved

with human subjects, ethical approval was sought from the University of Leicester before carrying out any of the data collection [Appendix 3]. Besides, the researcher ensured that the ethics guidelines; and protocols stipulated at Regulations Governing Research Degrees and the Research Ethics Code of Practice [<http://www2.le.ac.uk/institution/committees/research-ethics/code-of-practice/> and <http://www.le.ac.uk/safety/>] were complied with throughout the research process. Moreover, the prevailing data protection legislations stipulated in Chapter 486 Personal Data (Privacy) Ordinance were observed.

Understanding the potential ethical risks enabled various potential problems to be prevented. The researcher as observer-participant was conscious that direct involvement with the architects within the same context could lead to interference and influence that could result in loss of individual meaning and personal experience (Ansell 2001). It was important that the interviewing should not be affected by the personality of the researcher (Bryman, 2008). Also, the discussion revealed respondents' behaviours and individual attitudes toward their workplace and colleagues, thus the researcher was, to some extent, in the role of a confidante. Therefore it was a challenge for the researcher not to be judgmental while reflecting during the interview process, since to do so could transform the nature of the researcher-participant relationship. With this in mind, the researcher was careful to avoid possible bias, and to manage relationships which were concurrently emotional, personal and intellectual (Mason, 2009, p. 95). The ethical imperative is not to harm participants (Wood and Bloor 2006), hence it was necessary to ensure that the participants' thoughts and feelings were treated respectfully, so that they could speak up at interviews without hesitation.

Consequently, the participants' names or units were not mentioned in the data storage devices, the transcribed copies or the results. Maintaining a high degree of integrity by keeping the data confidential was of paramount importance to eliminate potential harm to participants. The participants were also assured that they would be able to access their recorded files and transcribed data for their personal records, amendment, clarification or verification upon request before transcription. Furthermore, they were advised that the interview data and relevant materials would be destroyed when no longer required, to comply with British Sociological Association's (BSA) (2002) resource on privacy protection. These ethical considerations were intended to prevent any conflict of interest between the researcher and participants, especially because the researcher was also practising with the HA and this might have affected the process of data generation.

3.7 Trustworthiness: Validity and Credibility

The trustworthiness of this research methodology depended on a number of research features: the initial research questions; how the data were collected, including when and from whom; how the data were analysed, and what conclusions were drawn. The issues of reliability and validity were considered from the outset. According to Roberts (2002), reliability describes how far a particular test, procedure or instrument will produce similar results in different circumstances, assuming nothing else has changed, while validity is about the closeness of what we believe we are measuring to what we intended to measure.

Validity and reliability are ways of demonstrating and communicating the rigour of research processes and the trustworthiness of the research findings since, if

research is to be helpful, it should avoid misleading those who use it (Roberts et al. 2000). Although reliability and validity are treated separately in quantitative studies, these terms are not viewed separately in qualitative research (Patton, 2002), and the trustworthiness of this qualitative inquiry was dependent on the credibility of its internal validity and transferability in effecting external validity (Lincoln and Guba, 1985, cited in Bryman, 2008, pp. 376-7). In this connection, the credibility of a qualitative research study depends on the ability and effort of the researcher to achieve validity. In this study, the researcher as the instrument (Patton 2002) was clear about this stance from the design of the research methodology throughout the process. In determining the subject research design approach, two aspects of validity measurement (Kidder and Judd 1986) and consideration were considered:

Internal validity

Internal validity is about the correctness of the study design. Unlike in a laboratory environment, it was unrealistic and unpractical to achieve internal validity in this research by carrying out an experiment on social phenomena involving architects. The underpinning philosophy, social constructionism, is relativistic and rests on the philosophical assumptions that multiple versions of the world are legitimate (Bryman, 2004). Based on the elucidated philosophical framework and the nature of the research questions, being concerned with an interpretative epistemological position on ontological constructivism orientation that the architect constructs socially, words rather than quantification were emphasized in the collection and analysis of the data (See Section 3.2 for the justification of this methodology).

The inductive and iterative research design meant that the data could be cross-referenced for its embedded meaning for informing meaningful analysis and, at the same time, be used to enable the production of new conceptual distinctions or theoretical arguments to accommodate new data (Goodwin and Horowitz 2002, p. 37). So, the questions were not drafted at one time, but developed using the constant comparative method of analysis and sampling techniques in which the data were collected over a protracted period of time until saturation. Furthermore, the interview questions and sub-questions were structured in such a way that the broader issues were asked at the outset and then gradually deepened as the range of topics emerged. By ensuring “congruence between concepts and observations” (Bryman 2008, p. 376) under a single organisation with several “embedded units”, namely the HA, the internal validity of this study was enhanced (Bergen and While, 2000).

The internal validity was also strengthened in this research by incorporating the pilot study. This was used to test the research design, particularly the proposed instrumentation of semi-structure interviews, in the actual field to assure that it was clear and unambiguous to the participants. This pilot testing of the instruments enabled the researcher to make modifications and adjustments to the instrument, for example the elimination of closed questions and misleading protocol, to tally with the original intention of an inductive-qualitative research methodology. While the interview discussion was designed to cover the architects’ individual life histories (Roberts 2002, p. 38) and other serious personal matters, each interview followed the designated sequence and structure as standard protocol. Based on these respondents’ relatively wide age range and years of

working experience, the sample was able to provide rich data and hence reinforce validity. This ensured dependability and creating the grounds for building reliability. As well, to enhance the reliability, the interviews were recorded properly with the use of a digital recording device and documented in an orderly manner with a numbered notepad.

External validity

The main rationale of the current study was not to make claims which can “represent a population” (Mason, 2006, p. 135), but rather to explore “constituting arguments about how things work in particular contexts” (Mason, 2006, p. 135), that is about “establishing what is possible ..., and having an explanation of how and why it happened in this setting” (Mason, 2006, 196). With the research methodology adopted specifically for architects in the HA context, it can be argued that this research was not meant for a sweeping generalisation for other architectural organisations or professional groups. As far as external validity was concerned, it was considered that cross-referencing for data analysis regarding the context of the HA as one architectural organisation to any other architectural context might weaken the transferability of the research, given that, on one hand there have been wide debates regarding validity when using interview methodology in human intervention research (Chase 2003). On the other hand, the context of the HA was unique for its own position of being both a government body and an architectural practice, hence the data generated were considered specific to this context.

3.8 Limitations of the Research Design

Since this research was an exploration of relationships between people as opposed to between objects, one limitation was the caution that needs to be applied to a study of how people behave with and towards others (Kidder and Judd 1986). According to Kidder and Judd (1986), if we have an idea about how others are likely to behave with and toward us in different situations and in response to our own behaviour, ultimately we can act in ways that provoke desired behaviours from others. Therefore, this inherent nature of qualitative research involving the process of human engagement and relationship did create some limitations to the research.

There was a need to gauge the personal meanings the participants attached to reality, as well the contextual social factors they acknowledged that related to the workplace learning in which the architects operate. Instead describing a “static picture of social reality” (Bryman, 2008, p. 388), by forming categories within the institutional context, this research was a reflection of the architects’ practice in constructing an image for alignment with the institutional process (Wenger, 2000). This is what Bryman (2008) described about the viewing of social life in terms of processes. It gave rise, however, to the limitation of potential inconsistency of the material generated, since a series of interdependent events was acquired through the architects’ reflections on their professional practices.

Valid qualitative research requires the researcher to display reflective ability (Bryman 2008) while interviewing and to handle several activities simultaneously (Arendell 1997, p. 342). For this reason, self-awareness and self-consciousness

(Bryman, 2008, p. 683) were needed in order to balance the potential limitation of the researcher's personal bias and unfavourable situations affecting researcher-participant cooperation.

The sampling method employed in the research has also led to a limitation. The participants in this research were either self-identified or identified by other participants. The sampling technique was selective, purposeful and not random. While attention was paid to trying to get a cross-section view of groups, it was impossible to assert if the categories of members was represented appropriately.

Another limitation reflects a general criticism of inductive approach, how early decisions in the analytic process can shape the direction of the analysis and the resulting theoretical model. The early messy maps of the analysis reflected the numerous potential themes that emerged from the interviews, and the ensuing memos highlighted the various decision points that led this research in a particular direction. Inherent in this process was that many potential paths were left unexplored. As the researcher continued to work with the data, through the constant comparative method, these potential themes either became submerged into other aspects of the analysis or were simply left behind.

3.9 Conclusion

The research methodology and philosophical background of the current study have been described and justified with reference to the existing debates in the field. The theoretical framework that informed the choice of methods and the approach for interpreting the data have been described. During the data generation process,

the data were compared in the study process in accordance with the emerging themes and objectives. A social constructivist epistemological position has been justified and explained in the above discussion. This chapter has also explained how the qualitative approach was implemented, through the use of preliminary observation and followed by semi-structured interviews. The data source, including descriptions of the HA organisation, the sampling strategy and the process of data generation, have all been described.

The sharp focus developed by the emerging themes was of paramount importance because it gave the researcher a better insight about the participants' views on what is relevant and important (Bryman, 2008, p. 437) and what was considered prerequisite for well-developed conclusions in line with the research questions and the ideas raised by the literature pertaining to the area of the research (p. 395). Furthermore, this chapter has discussed the measures taken to ensure that ethical considerations were addressed, including a coding system used to ensure anonymity of the data. Chapters 4 and 5 present two main areas of findings based on the theoretical framework discussed in this chapter.

CHAPTER 4: FINDINGS AND ANALYSIS – HOW ARCHITECTS LEARN IN THE WORKPLACE

4.1 Introduction

The literature review in Chapter 2, has demonstrated the lack of direct reference CoPs in relation to architect's situated learning in the workplace. In fact, there have been relatively few relevant CoP studies of employees' experiences in the building industry. In attempting to fill this knowledge gap, this study has undertaken a qualitative investigation about architects' communities in the Hong Kong Housing Authority (HA). At the outset, however, the researcher found it could not be assumed that any CoP framework was in existence and working in the HA. With an understanding of the concept of the CoP as a proxy, and by reasoning in the context of an inductive qualitative study, the researcher found the need to step back and start from the basics to approach the constructivist research questions. This was done by positioning the research as an exploration of architects' CoPs, by examining first how they learn in their workplace in order to characterize their specific modes of practice.

According to the structure of the research questions, the research findings are presented in two parts, within Chapter 4, to acknowledge the emergence of various CoPs in the HA through the eyes of architects, drawing on Lave and Wenger's (1991, p.98) definition of CoP as "a system of relationship between people, activities and the world", and which "develops with time, and in relation to other tangential and overlapping communities", and Wenger's (1998, 2000) attributes of

CoP domains of mutual engagement, joint enterprise and shared repertoire through indicators (Wenger, 1998, p. 152). Based on this, the study explored how the participating architects learned through formal teams and informal communities, even these entities were actually known by other names, such as units, committees, teams taskforces, or were even not named at all. Despite these different names, the findings concur well with Wenger's (1998, p.25) assertion that "a CoP need not be reified as such in the discourse of its participants" and that the existence of a CoP "might not be evident to its members" (Robert, 2006, p. 625). After describing the study's findings about emergence of architects' CoPs in this chapter, in Chapter 5, the researcher swings the lens to focus on the architect's "self", and presents individual situated learning experiences, with reference to Wenger's (1998, 2000) assertion about modes of belonging including engagement, imagination and alignment in shaping architects' identities and learning trajectories in their participation in CoPs.

4.2 Characteristics of CoPs in HA

The findings in the following session will present that the CoPs identified in the HA differed strikingly in their formality, structures and objectives. However, they all pointed toward the ultimate goal of facilitating the Project Development Process (PDP) as discussed in Chapter 2 for which individual architects were mainly responsible. While it seems to be accepted widely that CoPs work in some organisations, this study has contributed some useful insights into what it was about CoPs that worked in this architects' community. It appeared that the CoPs exhibited similar yet different dynamics within the double-knit organisation

(McDermott, 1999) of the HA under the established and structured group activities of the operational teams of divisions/sections/units.

To suit operational needs, building projects were traditionally allocated to different units for administration. Within a unit, the architects worked as operational team members. Together with other supportive staff, these units became the main community trunks of the HA, in which groups of architects collaborated and practiced. When a team involved different professionals in the PDP, it became a project team (PT). At the outset of this research, the researcher proposed that the traditional organisational structure of division/section/unit existed solely on its own as an isolated operational entity. Thanks to the strength of iterative reasoning in qualitative methodology and foresight in the conception of the CoP, it was reflected from the findings and analysis that these traditional hierarchical teams and associated groups, purposely set up by the management worked with an array of variety of communities carrying different objectives and functions, similar to those in other CoP studies (Gongla & Rizzuto, 2001; Venters & Wood, 2007). As a result, HA did characterize a kind of CoP which, to a certain extent, diluted HA's "double-knit" character.

These observations about the interactions of structured divisions/sections/units, and "constellations of practice" (Roberts, 2006, p.631) raised the very real potential that CoPs can challenge the usual ways of managing groups of professionals in organisations. In a way, the boundary of CoPs and business units was not as distinct as was suggested by Wenger et al. (2002). Thus, a different mind-set or mental-model may be needed, if CoPs are to be used successfully for

architect's communities in the HA. Based on the evidence, this could be attributable to the broader context of the HA's position of knowledge-based organisation, which generated a "fluidity and heterogeneity within and beyond the community" due to the multi-membership situation (Handley et al., 2006, p. 641).

Based on the evidence to be presented below from the architects who participated in the research, the illustration in Figure 4 shows how architects' attachments could be differentiated between the structures, and objectives: architects played the roles as PT members as well as operating team members under its rigid boundary of structured division/section/unit (see Figure 2) to monitor PDPs performance [denoted by thick rectangular boxes located at upper right hand quadrant]; besides, architects could be assigned by the management to take part in semi-structured workgroups of Building Information Modeling Steering Committee (BIMSC) or to join Component and Material Team or Audit Team to carry out ah-hoc "central-function" as required from time to time by the management [denoted by thin rectangular boxes located at the upper left or lower right quadrants]; and architects could also be free to participate in unstructured communities of Newbies formed by novices or Lunch-group in which project information as well as architectural knowledge beyond one's acquaintance were shared through its porous and organic boundaries [denoted by dotted rectangular boxes located at the lower left quadrant]:

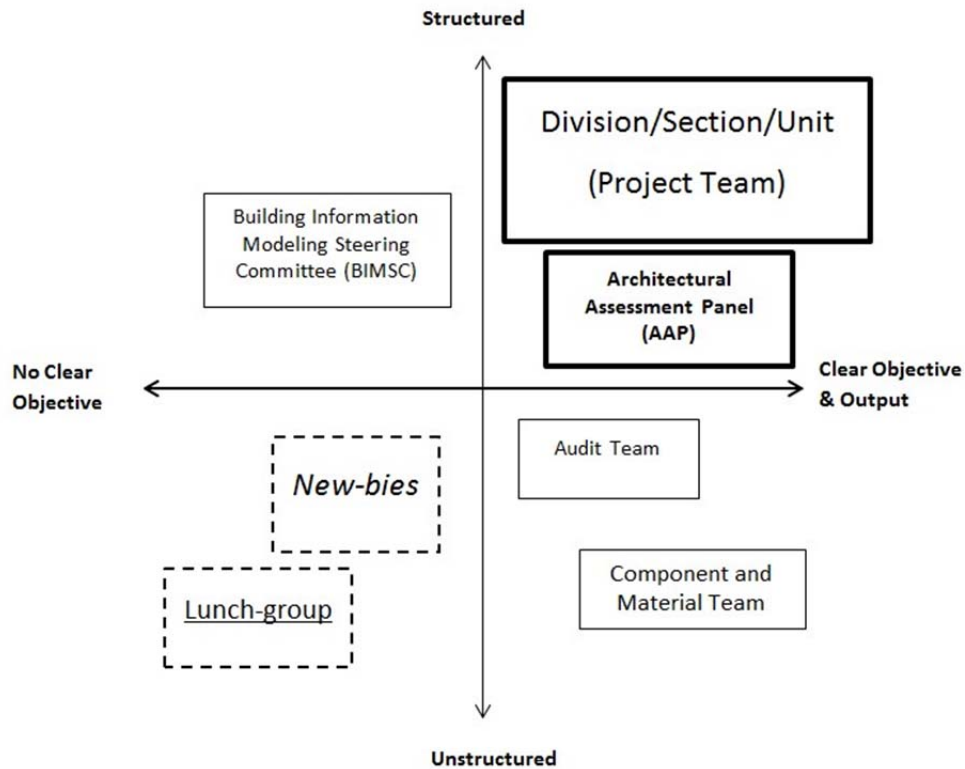


Figure 4: Relationship of Architects' Attachments in HA as identified in the Research

Architects' come together could range from formal divisions/sections/units with clear objective in the PDP (denoted by thick black boxes) to relatively formal semi-structured groups, that set up by the management temporarily or periodically with loose objective or designated purpose underpinning PDPs outside the formal structure of division/section/unit to resolve ad-hoc issue and which in certain case was governed by terms of reference with membership changing from time to time, e.g. Building Information Modeling Steering Committee (BIMSC) (denoted by black boxes), and to a highly informal ones like "Lunch-Group" and "New-bies" where they were free to participate and disband (denoted by dotted boxes). While the organisational structure needed to appear in a manner that echoed the desires of the management and attitudes of the members,

architects' informal communities were flexible in linking architects from different formal units and groups to cater for emerging learning opportunities. There was a clear impression that members came together as peers, with the common positional identity of architects in the organisation. For some communities, structure was considered less significant to the architect participants than the appeal of mingling with colleagues. There has been no perceived standard approach to setting-up or enabling a CoP in the HA.

Instead of Wenger's picture of "compartmentalization" of practice with "little possibility of transfer or translation across contexts" (Handley et al., 2006, p. 647), the come together in Figure 4 would be likely to change, mix and interact between quadrants according to the desires of the participants on one hand, and needs of the management on the other. As one architect explained, "Like a studio, we work together on architectural design; we share ideas and knowledge about experiences within and outside our unit" (A06). In fact, the operational team of a division/section/unit was not a separate entity positioned at the other end of the polarity with other architects' communities. On the contrary, operational teams were interconnected with the respective communities through a web of social activities produced by the architects. Therefore, the architects' CoPs were somewhat ambiguous, consistent with the findings of Handley et al. (2006, p. 646) because "individuals participate not within one community (or collective of network) but within several – each with different practices and identity structures", and it is inevitable that to be "potential for tension and conflict exists" (p.647). The data in the following session will elaborated the above in detail.

4.3 Emergence of Attributes of CoP

In considering the participant architects' interactions and textual reflections during the period September 2013 to April 2014, it was recognised that there were regular occurrences of people engaging in communities for routine matters (Wenger, 1998). All of the architects, under their specific positions in the organisational hierarchy of division/section/unit were responsible for monitoring respective PDPs as assigned by the management; the findings of this study revealed that this was regardless of whether or not they had experience of the assignment. In order to learn how to resolve individual-specific problems, a key theme emerging from the findings was that the architects were prepared to seek assistance from a nexus of informal communities of the practice, which demonstrated attributes of CoP as asserted by Wenger (1998).

Mutual Engagement

Although every participant architect was noted to be qualified professionally, with around 10 to 20 years of post-qualification experience, it was noted that not everyone was sufficiently knowledgeable to shoulder every kinds of PDP. In particular, it was noted that when an architect was allocated a new assignment with which he/she had no experience:

“It's usual here. Just raise the problem to your colleagues nearby, they will be ready to help ... We are “jacks of all trades, masters of none”. Everyone is doing the same thing here. This time it is anyone here; the next time, it may be my turn.” (A05)

The findings highlighted how the architects were versatile in certain types of building design. When faced with a design problem without previous experience, they were conspicuously ready to seek help from colleagues.

Mutual engagement amongst architects was described as common in the workplace. However, as shown from the evidence, longer years of post-qualifications did not exempt the participants from seeking help from colleagues in their communities, because it was noted that each PDP was unique as to the composition of the PTs. Moreover, the findings also described the role of the person who is supposed to help and provide learning and knowledge to the other CoP members, a role normally synonymous with the "experienced older worker" (Fuller and Unwin 2004, p. 40). In a way, there was evidence of active interchanges of roles between old-timers and novice architects in the CoPs; for example, an old-timer architect, such as architect in the rank of Senior, knowing about the design of something may shift to a novice to learn how to design something different. This illustrates that, in receiving or giving help, the participants were aware of the richness of the community brought about by the abundance of helping hands, and expected that their contributions of skill or knowledge would be returned in some way later (Wenger, 2000). Architects were also noted to be engaged in action; they negotiated meaning (Wenger, 1998) with one another in their encounters, but were not bound to be answered in the process:

"He [pointing to a colleague sitting at the nearby working cubicle who just has a similar project completed] told me to be careful about abortive work and kept on reminding me that the client department colleagues are always

changing their minds about what they will be requiring for the design ... not until the last moment before concreting on site.” (A05)

Such a close and intimate working relationship suggested a long-term trust built up amongst the cohort of architects. Every architect invested in the practice for on-going reference and learning. Knowledge proper exists in the application of information in the course of human action or experience (Davenport and Prusak 1998) in the daily routine of design exchange. Although they were not necessarily involved in the same PT or division/section/unit relationships, they saw themselves as members of communities readily helping each other to solve work-related problems. The evidence showed that team-learning processes emerged involving the identification of individuals’ own prejudices, overcoming personal defensiveness, overcoming embarrassment, or the recognition of interaction patterns leading to collective learning (Senge 1990) when they saw themselves as being of the same communities. In so doing, for an extended period of time, the architects became mutually engaged with each other and formed a shared history of learning in knowing what others knew, what they could do and how they could contribute to each other in the forming of CoPs.

Actually, the practice of architecture in the HA was wide in terms of variety in building types and deep in respect of technical sophistication; the evolution of the practice was situated within a social context that required participation and deliberation. Even though the data suggested that the architects belonged to different PT or unit, each participant had found a unique place in the community to settle down and gained a unique identity (Wenger 1998), regardless of whether it

was about design, mastery of site details or the use of computer software. The participants were both integrated and further defined in the course of their respective engagements in practice. They illustrated that knowing and learning with their colleagues was dynamic and collective; it was a “processes unfolding” in a social context (Abma 2007, p.33) where people acted and interacted with each other.

Wenger’s (1998) learning theory focused on novices and largely “ignored the effect on communities when the ‘old-timer’ was from elsewhere” (Fuller et al. 2005, p. 51), and this was highlighted by another participant architect; engagement was linked with relationships established due to the identities of former PT members:

“I worked with him on that temporary pump station in the last project, so I asked for his advice about the drainage problem of my existing project. Though I don’t know him well ... Normally, I introduce myself like, ‘I worked with you before and would like to ask...’ and then we will start to exchange.”
(A01).

The findings acknowledged the significance of the architect’s individual dispositions and biographies (Hodkinson & Hodkinson, 2003) in relation to their identities within the various communities. As well, they did not hide their “temporary incapability” – in an inconvenient situation of qualified to do something, but just in case of lacking certain experience – when challenged by new design problems, which happened often to everyone in the course of PDP. In contrast, seeking help from colleagues was as common as anything else that happened in the workplace. This socio-cultural version of practice and learning

reflected in the findings was “outward looking, resourceful and responding to the world” (Edwards 2005, p. 50) and occurred in the HA. Moreover, it elucidated how professional workers overcome an issue through collective knowledge-sharing and problem-solving strategy (Bishop et al. 2008a), under the engagement process. In a way, mutual engagement, as observed in the HA in the practice of architecture was noted to be inherently partial (Wenger, 1998) when a range of attributes in practice could not be owned wholly by any one architect. Hence the workplace emerged as a state of shared practice in partiality, considered as a sources as well as a limitation in the architects’ CoP. Moreover, there was the practice of cooperation and an atmosphere of mutual assistance within the HA, no matter whether the architects knew each other before or not:

“Those green architects do bring the team new ideas and vigour, though I know more about the red-tape and special procedures here in HA, as members bring in new design thoughts that I have never thought of before ... so I enjoy working with them.” (A09)

The evidence showed that learning has been constant in the HA, despite the fact that the architects were generally long-established “old-timers”. The participants explained that they temporarily made themselves to be apprentice again in the community for sharing of precedent cases as individual learning experiences. Whereas newcomers were not only learners, but they also contributed at the same time. This meanwhile illustrated that linear trajectory of legitimated peripheral participation (LLP) was not necessary (Hodkinson & Hodkinson, 2003) and the learning trajectory of architect in the HA was a kind of haphazard, but still it was a

progressive movement before one could in master of everything. The participants knew seamlessly that they could be taken care of by the social learning system embedded in the HA when any problems arose. This set the stage for creating an ease of familiarity and membership (Wenger, 1998) and thus it was strength of their engagement in the CoP. Not only were they colleagues from the same organisation, they were also professionals from similar educational backgrounds:

“Most of us here are graduated from the same local university. Though there bounded to be differences in one way or another in a design sense, we share the same language and know-how.” (A07)

The participants admitted they were quick to express understanding, and that they would like to know about each other in the HA community through numerous events, like attending seminars, visiting sites and participating in labour-union activities. With a kind of invisible “labelling and identity” (O'Donnell & Tobbell, 2007, p.323), the participants were “comfortable engaging” in the practice of being architects. All in all, these expressions were important ingredients “for creating images of the world” (O'Donnell & Tobbell, 2007, p.323) and for the formation and maintenance of the CoP under the HA's complex social learning system (Wenger, 2000). Sometimes, the jargon behind short remark did mean a lot to a participant:

“Refer to S of A [Schedule of Accommodation of a design brief] and be mindful about Anti-discrimination Ordinances [where proper disabled access is required under the law]. Otherwise, you got to have the whole plan redesign again.” (A01)

This evidence showed that what mattered to the architects was how and in what way they did it. This illustrates that they communicated with frequent use of technical terms, jargon and abbreviations to facilitate exchange and shorten conversation. At the same time, it represented their ability to access the appropriateness of different actions.

The architects engaged constantly with each other in their varying places of work, and learning was noted to be context-bound (Abma, 2007) as they spoke back and forth with shared stories and local lore, arguing for better design concepts with rapid flow of information and knowledge, giving each other advice, help, encouragement, and correction with the use of specific software tools.

“By far, we know it doesn’t work for a design like this here in the HA. Something extravagant in the design of lift lobby should be avoided, as per our after AAP sharing.” (A02)

Therefore, knowledge was not an object that could be singled out and manipulated. The concept of knowledge in the HA refers to something which is social and embedded in personal relationships that transform persistently over time. In a sense, situated learning of architects involved “conflict, difference and change” and architects “confront conflicting demands and changing social expectations” (Kakavelakis and Edwards, 2011, p. 476). Noticeable knowledge manifestations are plentiful, including formally articulated ideas, concepts, models, theories, practices, information, strategies and also technologies. But these were just the many aspects of knowledge:

“It’s no use only having a drawing on hand to build ... yet everything was stipulated in the plan, elevation and section ... you have to have the mind to ‘think’ how it looks, discuss with your colleagues before you instruct the contractor to build.” (A01)

This finding showed that without further knowing how to understand, interpret, apply and contextualize, such knowledge will remain just as images, diagrams, maps, spoken words or ink text on paper pages, or binary digits in electronic information retrieval systems. This is because architectural knowledge also includes far less visible tacit (Eraut 1994) and personal components that are difficult to articulate formally. In this case, community provided opportunity of exchange in view of design refinement.

It was also explained by the participants that engagement processes were carried out either through telephone calls, email exchanges, face-to-face discussions, informal chats, daily conversations, sketches and diagrams, photos or even mobile chat groups using the media of textual exchanges:

“Whatever is quick and reliable, we do ... my site staff let me keep track of the site progress by way of daily email exchange and monthly site meetings. In addition, our web-based CCTV can transmit instant images to my PC at the office, too. Everything is just at your fingertips.” (A06)

Evidence affirmed that the use of online services, within and among CoPs, including email and electronic chat and social network groups "have facilitated the development of CoPs whose members are not co-located" (Lesser & Storck, 2001,

p.832). All in all, any media used were meant to maintain and cultivate sustained mutual relationships, because these people-to-people engagements “derive some personal benefit from interacting” (Lee-Kelley, Turner and Ward 2014, p. 44).

As suggested by this research evidence, engagement and relationship building among architects emerged as a kind of office culture, which took place everywhere and happened anytime as considered appropriate in the office. Most importantly, this was self-initiated by the participants. In a sense, this was very much in contrast with Warhurst’s (2008, p. 459) study of newcomer lecturers, in which he found there was generally a minimal level of facilitation required for one to become engaged. Moreover, the architects’ encounters were based on sustained mutual relationships, either in their working cubicles, at the coffee table, in the pantry, lift lobby, corridor or even the bathroom:

“Whenever I am called up from site about an underground utility crash problem, an image of ‘Brother-Plumber’ [nickname of another architect who was considered good at plumbing and drainage system design] pops up in my mind, even before I refer to our in-house guidelines or manual. It is simply much quicker and more ‘user friendly’. Although he belongs to another unit and his office is on another floor, he is eager to help because we worked together before. And he can always refer me to someone for further assistance in case.” (A03)

As members of CoPs, the participant architects highlighted that they were familiar with who was an expert in what subject and could contribute to knowledge sharing in communities. The participants highlighted the use of this benefit, based on their

sense of identity in a nexus of multi-membership. No matter whether it was about designing a disabled toilet after a revision of legislation regarding discrimination, the use of proper tools for testing materials on site, office manuals and procedural compliance, etc., the data showed the architects' strong sense of identifying "resources available to support action" surrounding them and which may likely include "algorithms and concepts developed in similar situations" (Edwards, 2005, p. 60).

A CoP may move from one state to another (Gongla and Rizzuto 2001) during its lifespan, due to changes in membership, policy and objectives which can affect its function. The data, however, illustrated that the participants turned their early-socialized "dispositions" gained from their participation in previous or different communities to source knowledge (Handley, 2006, p.647) in a convenient way. Like a master, an experienced architect's input could be useful for a community to resolve a range of ever-changing building design problems through mutual engagement. In a way, mutually defined identities among community members were suggested through their experience of "self" in this kind of participation:

"Bringing in my senior [Senior Architect supervisory officer] to a routine meeting may sometimes be useful to resolve a complicated technical or personnel problem, amidst a difficult time on site." (A08)

The participants highlighted areas of practice framed mainly according to their division/section/unit structural positions. This was, in part, due to their views of their units, under hierarchical organisation, as "legitimate" because these were the

groups to which they had been assigned since joining the HA. The evidence indicated that the architects generally positioned themselves as members of operating teams in their units and habitually viewed PDP as a main business process (Wenger, McDermott and Snyder 2002):

“Our Section is mainly responsible for production in the Tseng Kwan O and Ma On Shan area (name of a district), and responsible for nearly half of the HA’s production in the next financial year.” (A02)

However, it was important to note in subsequent elucidation that there were also underpinnings of different and diverse personal connections weaving through different groups of people unlimited by the divisions/sections/units they belonged to or whether they were from outside the HA. Wenger (2000) pointed out that being included in what matters is a requirement for being engaged in a CoP. Simply holding the designation “architect” was meant to be engaged with a community of architects, just as engagement was about defined belongings. In this sense, an individual “architect” was generally engaged by a group of people reserved by law or custom who, according International Union of Architects (L'Union Internationale des Architectes or UIA) (2011, p. 6-8), were “professionally and academically qualified and generally registered; licensed; or certified to practice architecture in the jurisdiction in which he or she practiced” and “responsible for advocating the fair and sustainable development, welfare, and the cultural expression of society’s habitat in terms of space, forms, and historical context”. The inclusion as a member of the architects’ family, with such an identity, could be

understood as a kind of coherence (Wenger, 1998) that transforms mutual engagement into an HA architects' CoP.

When being approached by someone with a question, the architects quickly set up a problem that could be developed for a discussion session; because they already knew what the other knew, there was no need of introductory preamble:

“When I showed them the “GBP” [General Building Plans] about the “prescribed window requirement” [Lighting and ventilation standards], they told me to use the “cone method [methodology for demonstration of lighting and ventilation received].” (A08)

In communities, they never assumed to know everything between themselves, though it was noted that some architects were good at what they had experienced. In one example of a recent learning experience, a participant was enthusiastic to demonstrate how he had learnt recently from another architect regarding the design of a toilet for disabled people according to a set of latest legislative requirements:

“I drew a sketch to show him how it works in such a cramp space, to demonstrate every sanitary fitment is in place right according to the requirements.” (A03)

What counted as knowledge for the architects was the sum of a complex set of social processes shaped by prevailing interests, political struggles and historical change, under the limitation of language and technical articulation. Exchanges in the CoPs were noted to be vibrant and frequent with specific tools and method:

“Bring me a yellow roll [yellow sketch paper in roll form] ... like this [the participant started to do some sketches to show his understanding of the implications of new legislation to disabled toilet design].” (A04)

The architects illustrated that they learned through the participation process, which involved all kinds of artifacts specific to architectural practice, namely a scaled model for the examination of a space for which a textual description was not possible, a freehand yellow sketch not likely to be understood by a layman, and the workflow in the development of a design concept, etc. which were all counted toward aspects of shared repertoire in the CoP. The findings showed that some participants had been pragmatic in the engagement process and free from encumbrances of ranking under the bureaucratic framework. In fact, in seeking assistance from architects of different units, they might sometimes disregard unit, rank or discipline in the learning process:

“I require my RSS [Resident Site Staff] to accompany me to carry out site inspections, even though I am ‘qualified’. They are more experienced colleagues and I seize every opportunity to absorb site frontline knowledge from them ... And this is what other ‘New-bies’ have been doing ... We share this strategy, too [participant shrugged].” (A06).

It was evidenced that “knowing each other well enough to know how to interact productively and who to call for advice” (Wenger 2000, p.230) was important for an architect to engage with the PT on site, where he could only visited occasionally. Even though every architect had already qualified under the Laws of Hong Kong (HK) and settled well as old-timer within the structure of division/section/unit,

evidence showed that they generally understood in the HA that it was impracticable and impossible to solve every problem in practice oneself, in the rapidly changing workplace environment, making community outside the structured hierarchy a place for knowledge to flourish on the ground of the culture of the architecture profession:

“My professional qualification is only an entry card; there is still a lot to learn here in the HA ... they change the standards and procedures nearly every week that I have to cope with and requiring me to link up with other colleagues in one way or another.” (A04)

Unlike a conventional LPP trajectory (Wenger, 1998), the above findings showed that the architects were pragmatic and eager to step down temporarily from the role of an “old-hand” to that of “novice” to seek help from others in their communities if they had no experience of new problems encountered.

Joint Enterprise of Interpretation and Ideas in Practice

CoPs are not self-contained entities and they “develop in larger contexts – historical, social, cultural, and institutional and with specific resources and constraints, hence becoming indigenous enterprises” (Wenger, 1998 p. 79). As defined by Wenger (1998), enterprise involves, amongst other things, creating a context in which to proceed with a community’s working life. In the provision of design and management services in connection with land-use planning, urban design and project management by HA architects, it was noted that the result of a collective process of negotiation was reflected in the complexity of mutual

engagement. In recapturing a design review session to seek endorsement from sectional supervisory officers about the development of a conceptual layout plan design, one participant mentioned:

“I have to maintain a lean and tidy design direction with the architecture ‘*here*’. Yet, it should be done not simply for the sake of complying with the minimum standard requirement stipulated in the B(P)R [Building (Planning) Regulation] or meeting the financial and programme constraints.” (A09)

Traditionally, architects practiced as individuals, or in partnerships or in employment within public or private institutions. Architects’ communities in the HA have evolved as the result of a “long historical development” of joint practice in their minds “*here*”. The legal entity through which the architect provides architectural services was their form of practice. The data illustrated an involvement in creating images of the world and a strong sense of connectivity with the HA, thus affecting identity (O’Donnell & Tobbell, 2007, p.323) of being an architect. While Wenger (1998) argued that meaning and negotiation are paramount and profoundly connected to identity, this finding highlighted that the architects collaboratively formed a particular community in the practice of architecture in the HA and went beyond mere engagement to the government policy and client requirement with the structured unit:

“I found it very different doing things here when I first joined the HA; later on, I could see the similarity and it looked familiar again ... it may be because of our common value, no matter whether inside or outside.” (A10)

These findings highlighted that the boundaries between forms of practice as well as the CoPs so emerged were not fixed, but flexible, continuously shifting, porous in nature and difficult to identify (Roberts, 2006). In the HA, the architects found ways to do design together because they were interconnected and engaged with each other. The participants positioned the “self” within a broader system governed by architects’ “common values” – such as strive of excellence in architectural design, since their job was part of a large building construction industry.

“Everyone here remembers that lengthy critique attended by all Section heads in the AAP [Architectural Assessment Panel] last month. The consequences were horrible and that schematic design got a re-do, as a result of a detour in the meaning of design in developing the public housing ... that’s why we need to observe the norm ‘here’ while maintaining individuality... though difficult.”
(A07)

While stories of design were “relevant sources of knowledge” because they were “located within specific contexts” (Abma, 2007, p.44), architects’ freedom of design was somehow restricted by these precedent cases. This participant highlighted that practice in HA was a collaborative process, when engagement in place, architectural design in the HA became a social product, rather than the result of an individual’s own originality. This data also showed that the architects’ designing processes were bounded by the tension of attainment of general consensus that structured group of APP was seemed not a proper meant to resolve tacit problems.

It has been claimed that CoPs are not a matter of “attainment of consensus among stakeholders, but that learning processes are stimulated through confrontation with diversity”; meanwhile, “multiplicity is considered to be a source of innovation and dynamics” (Bodenrieder, 1998, cited in Abma, 2007, p. 45). From this evidence, individual design freedom and participation for response to tacit knowledge in architecture was impaired by semi-structured group judgement, since the sense of design varies from one person to another and from one day to the next. An architect of strong hold mind about design originality reflected a situation of “not to join” (Handley et. al, 2006, p. 648) due to difference in “common values” of architectural design:

“I don’t like following them in design ... I just feel like the need of an amphitheatre here for the enjoyment of residents, but it was turned down merely due to maintenance issues ... finally I extended the passage to create pockets space to allow alternative interaction of residents.” (A05)

This finding also showed that, even though there were mandates or a set of governances in the HA, different architects’ learning trajectories, training and practices produced architects with different tastes, compassion and empathy. This participant illustrated a re-routed in the design of common areas in public housing estate, which exemplified what Handley (2006) suggested, a “contingent” form of architects’ participation, where an old-timer architect “adapt his or her practice in ways which secure a continued sense of existential integrity whilst still notionally fitting in with community norms” (Handley et al., 2006, p.648). Out of these varieties in terms of view about design and recreational provisions and differences

in the sense of space planning though, the HA architects did, whether willingly or reluctantly, unfold their practice to deal with what they understood to be their community enterprise based on exchanges in design review sessions, completed project references, and stories heard in social interactions.

Whereas, the opinions of old-timer architects were often viewed as more valuable in the design evaluation process, since they knew more about the complexity of practice and were in a better position to unknot many factors by explaining what a specific problem was about (Simon 1976). That was normally the reason why they were higher in rank and occupied more senior positions:

“I will show them design options, explain pros and cons, and recommend my favourite option. Ultimately the decision still rests with my seniors, even though sometimes they might choose a ‘wrong’ option in my view.” (A01)

This finding illustrated that, through critiquing in groups, architects with different “extents of peripherals” (Fuller et al., 2005) practice and learn together. The participants illustrated a state of adaptive participation (Handley et al., 2006, p.648). However, at the same time, this finding demonstrated, in the structured setup of AAP, that the architects’ freedom of design was somehow restricted by the views of more senior architects, thus causing the participation here to be “restricted by the workplace power structure” (Hodkinson 2005, p. 525, cited in Warhurst, 2008, p 457). In addition, power associated with ranking was shown here as important attribute affecting how one engaged in the HA, since “issue of power is inherent in community relations” (Fuller et al., 2005, p.54).

The architects' practice in the HA, as shown in the interviews, was reified through a consistent approach of execution for a variety of PDPs. When a joint enterprise was involved in architectural design, amongst other attributes, the creation of context was in contradiction with the architects' work lives and even personal values at instance:

"Use of standard design achieved by precast concrete construction has, in a way, pre-empted our freedom of design and flexibility, for examples, use of unified precast façade dictates the profile of building envelope design in some ways." (A08)

Noticeably, devising methods for mechanizing construction, for example the extensive use of precast concrete components for speeding up the design process and the use of standardized details of design across different projects, was understood by the participants as a method for achieving coherence (Wenger 1998):

"They need us to use this type of 'zigzag' precast façade as far as possible so as to achieve a figure of overall percentage of mechanization in use for reporting it into the HA's annual report ... it doesn't make sense to me as far as architecture is concerned." (A08)

This participant illustrated that such coherence has actually led to "tensions" in the participation (Handley et al., 2006, p.648) when design opportunity had been undermined, and the management assumed that "a community represents a group

of homogenous individuals whose motivations and behaviours can be controlled by management” (Wenger et al. 2001, cited in Handley et al., 2006, p.648).

Practically, the architects found a way to do work together because they were interconnected and they were engaged together in the joint enterprise. In the case of the HA in this study, enterprise was communally and continuously negotiated since individual situations and responses varied every days. However there was actually considerable diversity (Handley et al., 2006, p.648) amongst architects as far as design was concerned. Although the enterprise of architects in HA was jointly maintained, it was not that everybody believed in the same thing or agreed with everything in the structure of the HA, a participant pointed out:

“Auditing is a waste of time to me, because such countercheck mechanism has no direct added-value to my design works. It is meant for fulfilling the management’s control.” (A05)

Another participant illustrated that architectural design need not be a uniform enterprise for it to be a collective product of different PTs for each unique location; otherwise the authenticity of architecture may be at risk:

“Break the rules ... standards are dead elements; but we architects are alive to think ... think out of the box each time in designing, no matter there were various kinds of constraints here you need to comply with.” (A02)

Indeed, conflicts between participants were not only natural but also inevitable in corporative problem-solving scenarios (Landau, Landau and Landau 2001) of architectural design as the findings from the HA architects showed:

“No matter how hard you try to achieve your best scheme of design, it is only part of it. The scheme needs to be commented by our engineers who advise on workability by carrying out structural framing wind-load check, slope stability check, etc. ... it works in concerted group effort.” (A04)

This participant architect indicated the inherent conflict in collaborative works in their PT. As in any organisation, in the HA's CoPs the conflicts arose from power, emotions, balances, and tensions which inspire all human relationships and might act as obstacles to learning (Hughes 2001), therefore the meaning of “joint” in the HA was noted in a stage of continuous negotiation:

“What may work this time may not be used next, especially when the chairmen of the design review meetings take turns. We have to suit each one's preference in order to get the green light.”

Senge (1990) proposed that discovering mental models unavoidably begins with a meditative analysis of how we see the world; this process involves an open scrutiny, an exposition, of these models. Whilst the participants in this study exposed their own thinking effectively and made thinking open to the influence of others on different design review occasions, it was a process in which the architects could accommodate differences in how they each saw the world, identified individual sensitivities and common ground; and resulting in a process of “knowledge-building dialogue”. It was evident in the HA that conversations promoted the balance of inquiry and advocacy in design language:

“Using a curtain wall façade design would surely bring down the scale for a building in the play of light between transparency and reflection, like that at our commercial centre just completed last year ... however, my senior commented that we should also be careful of any sun glare bouncing back to surrounding buildings, about which we have been receiving similar complaints lately.” (A04)

This data highlighted that the architects were mindful of historical events learnt from the communities that had shaped their practice, and as well the ranking embedded within structured unit. The differences nature of situated learning was noted to be in relation to “three agentic orientations – past, present and future” and that the “temporal-relational contexts shape the way actors engage with and assess learning activities” (Kakavelakis and Edwards, 2011, p. 476). With their accumulated architectural experiences, the communities built up enterprises which were rich in shared functional knowledge about why something was done instead of just how it was done (Stammers 1987), for example:

Within our CA (group) [i.e., nickname of a unit, which was led by an officer of Chief Architect rank], all columns inside a carport building are of ‘600-500’, [dimension of 600 mm in length and 500 in width in the design of the column] maximum, so as to control the angle of sight within every corner at the carport.” (A07).

Lying in between the duality of participation and reification through the negotiation in communities (Wenger, 1998), it was noted by the participants that

the existence of abundant shared referencing documents, forms, manuals and guides, etc. was important as repertoire for the interpretation of actions:

“Just aligning to DCAB201 [Department Contract Administration (Building) Guide] will do! [The participants explained how she had prepared for the tender of the main building contract]” (A01).

Further, it was interesting to note the findings about the architects’ abundant use of abbreviations for daily communication, whether during meetings, or writing emails or notes. Yet, abbreviations were required to be re-formatted in full when documented. It was noted, however, that these sub-rules were negotiated implicitly or explicitly within the group (Wenger, 1998) for the sake of saving time in communication. In a sense, this reflected an escalated level of learning energy (Wenger, 2000):

“It took me some time to decode this seemingly random vocabulary, like 600 by 500, S of A, BIM, RSS, B(P)R, PDRC and BC, when I was a new comer ... now they have become part of my language.” (A06)

The participants illustrated that knowing the “shared meaning” behind these abbreviations was recognized as “participating” (Handley et al., 2006, p.649) in the joint enterprise. This also showed that knowing was related to architectural practice in the HA with respect to site communication methods, professional knowhow, obligations under the law, and reification of professionalism as a group of a certain class:

“Outsider architects cannot really understand what we were actually talking about with our ways of communication methods.” (A05)

It was evident that the architects freely used forms of jargon and talked within CoPs about certain issues affecting their practice, as that they held these areas in common (Greeno 2006; Wenger, McDermott and Snyder 2002), thanks to a consistent governance of internal house rules or guidelines that only the architects were able to access.

Architect's Obligation

In making joint enterprises possible, the participants recognized that, behind the process of negotiation rested the architect's obligation to maintain the quality of the profession in aspects of competence and integrity:

“As the backbone of an architect's professional practice, ethics has been the keystone of the bridge of obligation between the client and architect. As the client's agent, I should be able to perform a due diligence check for work carried out and also be able to keep information strictly confidential since property development involves enormous investments.” (A10)

In an organisation, architectural knowledge cannot be managed practically in any direct or formal sense, since it is dependent upon the employee architects' experiences, cognitive frames, perceptual capabilities, social relationships and motivation, since these exist in the “heuristics” of employees during day-to-day work (Tsoukas and Vladimirou 2001).

“Remember, I have already qualified professionally...; and ethics! You know? My design should be guaranteed!” (A10).

As well, the participants saw that maintaining justice in PDPs and the ability to judge impartially when resolving contractual disputes were their inherent obligations:

“I am obligated to play the following lawful roles simultaneously in maintaining a high standard of social responsibility. First, executor as well as owner of design; second, agent of the client, representing the interests of the latter in managing a building project with respect to time, cost and overall quality; and third, adjudicator in protecting public property and client’s interests by making decisions impartially in the administration of the construction contract between the building contractor and the client ... Moreover, as an architect, I should be able to interpret the conditions of a building contract rationally and to issue Architect’s Instructions in an equal manner.” (A02)

The participants considered daily practice, with its mixture of design and documentary work, to be a complex and jointly negotiated response to their situational learning. As “inherently a contested process”, architects’ learning orientations “entail a range of interests in the way actors link with their social contexts” (Kakavelakis and Edwards, 2011, p. 477):

“As an architect, I won’t release property development information produced during the procurement process to a third party without the consent of the

client ... more than the building end product itself; what I do is actually a processes of realisation in the interest of the client's investment." (A04)

The findings showed that the architects were empowered by their clients to act in workplace, and that they controlled the use of client's resources in a careful and faithful way. These data also highlighted that shared knowledge amongst architects was based on trust (Roberts, 2006, p.628), when information was associated with sensitive property development information and confidential in nature. Noticeably, knowledge transfer of this kind was attributable to "social interaction and perception" (Roberts, 2006) shaped by this empowerment. With a target of more than the production of public housing, the architects' roles in the HA were extrapolated to meet the demands of waiting-list applicants due to changes in housing policy and meeting the HA's yearly business targets. Under a spirit of obligation, the architects indicated that they inevitably faced challenges of dual or multiple identities:

"As a HKIA (Hong Kong Institute of Architects) member, agent of the client and trustee, I am delegated with authority on behalf of the client to carry out work based on design requirements in the form of forward-looking directives." (A02)

These data demonstrated that an architect's "identity and disposition" in participation required "attention to the specific circumstances, rather than a more general approach" (Fuller et al., 2005, p.65):

“I wear two hats and am accountable both as an architect and an employee of the HA, no matter I am carrying out my duty or not.” (A09)

This participant highlighted an estate of multi-membership, which were HA architects’ inherent properties, which were in fact governing one’s participation in the social world. The Hong Kong Institute of Architects’ (HKIA) advocates that it is important for a client to appoint an architect based on experience, aspiration, values, capability and personal integrity, instead of economic considerations. It is therefore the responsibility of the guild (i.e. HKIA) of local architects to maintain standards of ethics for its members. In a sense, these cross-boundary relationships between the HA and HKIA had created groups of “external pressures, in the wider organisations where they (the force) were located and from national and even global sources” (Fuller et al., 2005, p. 64):

“... under the triangular contractual relationship among client, builder and I, as an architect, I should possess basic skills and be able to state clearly the tasks and assignments of design and to commit to a supported timeframe for its production in monitoring the process of building development ... especially when architects in the HA have been historically playing both designer and project manager roles in the process.” (A10)

As reflected in this finding, a unique and indigenous enterprise emerged, defined by the participating architects in the very process of pursuing it. In a way, Lave’s and Wenger’s (1991) LPP and Wenger’s (1998) generalization of Ariel as a cypher for many workers is an over-simplification and unconvincing for covering all workplace learning scenarios (Fuller et al., 2005, p.65), because this participant

illustrated that there required the prerequisite of formal education for an architect to participate in a workplace, as well as its CoPs so emerged. Underpinning the joint enterprise would be knowledge, which is ultimately the source of sustainable competitive advantage (Davenport and Prusak 1998) in a community of architects. Since knowledge is about architects' experiences, the data also showed other components of knowledge: values and belief, judgment and rules of thumb, etc.:

"I have been recently nominated as a fellow of the HKIA ... I am prepared to be a role model for the communities ... eager to share my views, thoughts and knowledge based on my experience of long service here both in the HA and as a member of the HKIA." (A09)

Old-timers with the knowledge to cope with uncertainties in the HA were more likely to be consulted by colleague architects; this also worked as a means to exercise their influence in decision making (Hickson et al. 1971; Hinings et al. 1974) and hence affecting design ideas in CoPs. Despite all of the exerting forces shaping CoPs, both within the architects' unit and outside it, being beyond their control, the participant architects explained that they negotiated responses to situations, thus belonging to the process by echoing an intense sense of jointly held enterprise:

"No matter whether the management of the HA only views me as a general employee, my obligation as an architect is about personal belief, which is ever-changing alongside my work life ... it comes with my experience, indeed." (A10)

This evidence demonstrated that experienced architects were also learning through their engagement with different architects; this undermines “the view of CoPs as unchanging” (Fuller et al., 2005, p. 64) and challenged Wenger’s (1998) view of LPP by emphasizing identity change through external forces in relation to the professional institutes. The participants also reflected that this enterprise was never fully determined by an outside mandate, though it did exist. Besides, these data were in line with Wenger’s (1998, p. 78) assertion that “it is only as negotiated by the community that conditions, resources, and demands shape the practice” and suggested that the management’s role would be that of seeking to “harness CoPs that are both within and beyond organisation boundaries” (Roberts, 2006, p. 635) in order to cultivate CoPs from an acceptable distance.

Mutual Accountability

Defining a joint enterprise is a process, not a static agreement; negotiating a joint enterprise gives rise to relations of mutual accountability among those involved (Wenger, 1998).

“As an architect here, as far as I can, I am obliged to produce good designs for my projects ... which include carrying out due diligent checks on site and sedentary contract administration tasks. I am also personally accountable for treating information precisely [‘precisely’ loudly voiced], correctly taking care of our resources as something to be shared, and being responsible to others.”
(A07)

Indirectly affected and shaped by this larger context of accountability under the indigenous enterprise of the HA, the architects viewed that their identities as CoP members were particularly important in linking the quality and standards of their practice and thus the architectural design. In a sense, this was a kind of vertical-cum-horizontal accountability (Wenger 2004) put into context. This pervasive influence of the institution (Wenger, 1998) was in evidence as a resource as well as a constraint for architects in facing volatile workplace environments. Meanwhile, these data suggest the importance of boundary interactions between architects and CoPs.

Mutual accountability was also found to be one of the architects' local values and largely their definition of professionalism. One participant related practice as providing accountable service in the managing and manipulating of knowledge embedded in the PDP:

"I think our knowledge in practice is founded upon expertise and accountability, rather than the building itself as the physical end-product or the style it carries ... which, although [inaudible] ... are more appealing to the general public than the human us." (A09)

This data highlighted that joint efforts established site-specific tacit knowledge when style was of concern as well as a sense of belonging. In addition, accountability was viewed as the protection of public interest as well as of the architects' communities in aspects of endeavour for architectural excellence and impartiality in the administration of PDP. On this point, the participants' self-awareness was apparent but intangible; one participant pointed out that:

“Not only me; we are all subject to the the Code of Professional Conduct, though I have rarely turned a page of it after my professional examination. However, I have inherited the DNA of ‘our profession’ ... most importantly; this differentiates us from others who also claim to be professionals in the industry.” (A09)

Under the rules and regulations of the HKIA, which is linked indirectly with the UIA, every architect, amongst other requirements such as paying the annual subscription fee and fulfilling continuous professional education (CPD) yearly benchmarks, is required to observe the guidelines stipulated in the HKIA’s (2008) Codes of Professional Conduct [for example, architects “shall act impartially in all cases in which he is acting between parties, and shall interpret the conditions of a building contract with fairness (p. 2)” and “shall endeavour to promote architectural excellence through his work and by the encouragement of others (p. 6)”].

Limited only by the provisos under the Codes, this participant illustrated that architectural practice in the HA was actually linked with the value and judgment of architectural discipline in a worldwide level, socially and historically, which Lave’s and Wenger’s original CoP framework did not expect as far as boundary was concerned. The nature of boundaries of CoPs was shown as a matter of “heuristic value judgment” and “necessarily imprecise” (Fuller et al., 2005, p.63), and it did cultivate a joint enterprise on different levels inside as well as outside the envelope of the HA. Coupled with these very meanings about joint enterprise within the HA, this layering of advocates was viewed by the architects as a driver to striving for a

better practice environment enabling an extension of the knowledge and skills necessary to deal with any extension of architects' CoP boundaries:

“... Hence, the letters ‘RA’ (Registered Architect) annexed to my name card is not only a reflection of my professional qualification, it is also my commitment to myself as an architect and for the building I design.” (A10)

The architects considered themselves to be professionals subjected to earnest expectations from the public and, to a certain extent, governed by relevant laws, and empowered to monopolize a specific facet of the property development market. The participating architects were not spoiled by such a privilege; rather, they saw it as a responsibility:

“Architecture is for us people, it stands there for decades or even more ... you have to do it, not only right, but also exceptionally well for the sake of our society.” (A02)

The joint enterprise brought forth by the participants “was a process instead of a static agreement” (Wenger, 1998, p.82), which accompanied the architect's practice like the rhythm to music. The participants demonstrated a desire for high standards of professionalism, integrity, skill and competence, thus bringing to society unique skills and aptitudes essential to the sustainable development of the built environment they all longed for. Under such a relationship, the possession of exemplary ethical standards and professional conduct was of paramount importance for the HA architects.

HA architects are subject to a system of scrutiny under the HK laws and the HKIA standards for accreditation. These social systems of rules and standards were designed for the benefit of the public and to sharpen architects' social practice for their long term good as respectable professionals. One participant viewed accountability as a standard and a process instead of an end:

"Being both an HA employee and a member of the HKIA somehow dictates what I can, or cannot, do according to respective guidelines or regulations."

(A10)

This evidence sounded out the participants' feeling that, due to the sets of regulations, rules and guidelines, their participation in the CoP was not necessarily "constructed in a positive manner and thus undermined their feeling of legitimacy" (O'Donnell and Tobbell, 2007, p. 323). Architectural design has been reserved for the architect profession by statute in HK, because such work should be carried out only by persons with the requisite education backgrounds, training, standards and discipline, for the protection of public interest; this contrasts with Lave's and Wenger's (1991) "dismissal of formal education ... and ... of the role that 'teaching' plays in the workplace learning process" (Fuller et al., 2005, p. 65). In a mutually informed process, these data about local responses were reified as negotiated enterprise (Wenger, 1998) for architect's CoPs in the HA.

Repertoire in Communities

Wenger (1998, p. 83) defined shared resources as a repertoire for emphasizing the negotiation of meaning. Evidence of shared repertoire was noted to be embraced

by common experience and language used by architects, which were part and parcel of their work life. The following session demonstrate these points with relevant evidence.

History and Stories within Routine of Work

There have been abundant good, as well as bad, building examples throughout the HA's 60 years of housing development. These stories were shared and circulated amongst fellow architects in communities:

“The folding structure of a shear wall at X Estate [name withheld for anonymity], completed in the 90s, is a classic example which everyone should take a look of it. It is a simple and effective design and won the HKIA award in its year of completion. Original architectural hand-drawn tracing paper drawings [no computer print by that time] for this spectacular design are still with me, and it has just been borrowed to Y after chi-chatting about it again at our regular lunch gathering.” (A07)

This finding illustrates that a story about a good architectural design can have long-term effects on a specific community of architects who mutually engaged with each other in social cohesion (Kakavelakis and Edwards, 2011, p.475-6) through regular lunch gatherings; this design-related example was quoted repeatedly as a reference within the community to endeavour for architectural excellence. As in any project-based industries, the participants' knowledge of past examples was a vital organisational and project source (Nonaka and Takeuchi 1995; Scarbrough and Pan 1998) in building up a joint enterprise for knowledge sharing and

acquisition in particular CoP when architects socialized into established sets of practices (Wenger, 1998). The original hand-drawn tracing paper drawings were not only diagrammatic representation as to how best design were created, more importantly, referencing it was a shared repertoire because every ink strokes and corrigendum hand drawn by the original designer contains the skill set for architectural design. The finding demonstrated that design knowledge about the process for realisation of a distinct design concept could be acquired through participation. Consequently a CoP of a particular community of architects, who attached together through regular gathering, emerged. Meanwhile, these stories were viewed by the architects as “new effects on the practices” (Wenger, 1998, p. 83), for which every community member can learn. However, design is a difficult subject to pin down. One participant reflected:

“Here is no Bilbao Guggenheim [Name of a museum in Spain designed by renowned architect Frank Gehry], you know? I have a very clear stance for what I am doing here for an architectural style of public housing here ... some latest design submissions to AAP, I think, are just too extravagant.” (A02).

The concept of design involves problem defining and setting (Schön 1985) and is inherently susceptible to debate. From this comment, it appears that the architect who had been involved in previous community-defined benchmarking projects had a strong inclination for design taste and setting an “early socialized” disposition (Handley et al., 2006, p. 647) in the aspect of participation in communities. These already developed and developing architects’ biographies have been contributing to both their “affordances and interdependences”

(Hodkinson & Hodkinson, 2003, p. 5) during participation. When individuals continue to negotiate their concept of “self” across multiple communities, this dispositioning of personal style generates “intra-personal tensions as well as stabilities” (Hodkinson & Hodkinson, 2003, p.648). This in turn has been found to impact upon one’s “form of participation” (Fuller et al., 2005, p.54) in a CoP, a notion which the Lave and Wenger (1991) framework dismissed. With reference to Wenger’s (1998) characterization of shared repertoire in a CoP, the abundant examples of design stories told by the HA architects belonged to a particular CoP was actually a source for the negotiation of meaning in design knowledge jointly promoted and as well as bitter lesson learnt. In distillation through years of participation and mutual engagement amongst architect members, it became a joint enterprise of a specific CoP.

Shared repertoire in architects’ CoPs can range from designing a master layout plan for a new estate to refining a detail for the metal gate installation in a domestic flat:

“The standard fixing details of the metal gate at the entrance to our domestic flat has, all along, been a problem when it comes to installation on site, because the skirting in place is blocking the sliding movement, as the recess is simply not enough ... and later I learned from X in our regular lunch chi-chat that part of the skirting at the junction could be modified to make way for installation ... ever heard of a book titled ‘Never Eat Alone’? [break with laughter] ... problem solved momentarily, however, I would still like to have

more tidy details, which are yet to be developed based on the existing one.”
(A04)

It evidenced from this data that knowledge sharing by taking part in Lunch-group was underpinned by “social cohesion”, for architects were “socialized into a new set of principle” in the course of design refinement works. As Wenger (2002) pointed out, the knowledge of experts is an accumulation of experience – a kind of “residue” of their actions, thinking, and conversations – that remains a dynamic part of their on-going experience. This type of knowledge is much more a living process than a static body of information; in this study the architects’ CoPs were not an “unchanging” entity (Fuller et al., 2005, p.64). This finding also illustrates that, free from the dispositioning of “new-comer” or “old-timer”, the architects’ CoPs did not reduce knowledge to an object, with the experienced workers “also learning through their engagement with novices” (Fuller et al., 2005, p.64). Instead they made it an integral part of their activities and interactions, and they served as a living repository for that knowledge. The insight is of significance in adding further dimensions about participation with the never ending refining process of architectural design in the learning process to Lave’s and Wenger’s original account. These working knowledge stories were often shared amongst members both within structured units and deepened at CoPs, such as Lunch-groups or New-bies in the HA or other unstructured social encounters in the office or on site; this could be perceived as catalytic dimension of architects’ CoPs between the ways of acting and the use of specific artifacts:

“Once at the commercial centre construction site, I yelled to my RSS [Resident Site Staff] behind me, ‘Bring me the magnet!’ The atmosphere turn into dead silence for a while, though they know right away that I was going to inspect the material content of the metal used for the screws in the windows [as a rough testing method, a magnet has been used as indicator to test the carbon content contained in stainless steel] ... it was their responsibility to check for me in advance ... I’d just learned from another novice architect that the same brand of screws had already failed in two recent random tests.” (A02)

As Wenger (2000) pointed out, the joint pursuit is about the degree of self-awareness concerning the repertoire developed and its effects on the shared practice. However, this finding of reality showed that the sharing of knowledge on site amongst PT members was an extension of learning from CoP. Besides, which was also associated with power relation and degree of identity conflict (Hong and O 2009) under ranking system created by the HA’s hierarchical organisational structure. In the data about A02, in application of shared repertoire from New-bies CoP with the use of magnet piece, the “silence” in communication indicated a communication gap, which may finally undermine a “coherent learning experience” (Hong and O, 2009, p. 312), if factors, like emotion are not handled with care in participation.

“Shared” refers to a way of doing things that was common in the CoP of new-bies architect and therefore recognizable as a practice (Abma, 2007), and which was involved with tools and equipment used by A02, and also reified as documents:

"It just looks not right to my eye, the membrane is just too flimsy [in discussion of choice of the right waterproof membrane for roof construction] ... thanks to reminder from colleague about the recent 'Alert' issued by our Component and Material Team, I pay special attention in all recent sample submissions and the approval process." (A08)

When the researcher looked at examples provided by the participants about their ways of doing design and possible examples of shared repertoire, it was clear that the HA architects demonstrated a spirit of endless striving for discourse about better ways to pursue design excellence. While Webb et al. (1996) pointed out that a highly functional CoP can be upset by active reorganisation by the senior management, architects highlighted their own ways of accommodating these upsets, including attending seminars or reading journals relevant to building construction:

"I have to learn from courses for 'BIM' [Building Information Modelling, type of software for making 3D model to visualize building design]; sooner or later, this BIM stuff will replace 'AutoCAD' [2D software] in the architectural world ... Actually, I don't need to bother about anything in my post here; there is the BIMSC [BIM Steering Committee] set up by the management last year to deal with across-the-board BIM inception, including hardware replacement and software migration." (A03)

This data indicated that architects were always looking for new knowledge about state-of-the art technology in architecture. This comment also showed that this architect was well aware of his position at the periphery of a CoP, trying to avoid

full participation in the process of implementing new software. In order to stay away from the workload involved, this act of “denying participation and maintaining a peripheral identity” (O’Donnell and Tobbell, 2007, p. 326) may probably have been due to his own construction of a learning world, in effect affecting his understanding and reactions to these practices. This example underpins the notion of “identity shifts that enable participation” (O’Donnell and Tobbell, 2007, p. 326) and hints that “individuals avoid conflicts of identity and practice by choosing not to join non-complementary CoPs” (Handley et al., 2006, p.648).

Furthermore, the findings below showed that it was very important for the HA architects to stay tuned to upcoming projects and to be familiar with landmark architectural designs and their designers worldwide, such as Norman Foster, Zaha Hadid and Tada Ando, etc. in order to be able to communicate in the exchange of design ideas:

“After the last Specification Review Taskforce meeting, we talked about what our counterparts have done in Japan ... their white wash fair-face concrete is so smooth and impressive ... we are still figuring out the right cement and sand content that should be used to achieve that standard for the specific wet climate in HK.” (A09)

The data showed that the architects prioritised striving for state-of-the-art design knowledge by having both unstructured CoPs “spontaneously emerging” in the community and semi-structured work group as part of the HA’s business, with the chairman as “facilitator” (Abma, 2007, p.36). This suggests that the architects’ CoPs

were multiple and that they may well have been predisposed to the absorption and creation of certain knowledge. As noted, this kind of spontaneous creation of metaphors was renegotiable in the history of its usage:

“Although 3D modelling is possible with BIM, nothing is better than experiencing the spatial quality with your own eyes ... that’s why I can’t wait for another site visit organized by our union or the HKIA.” (A03)

New collaborative technologies, such as email, discussion groups and chat rooms, have been identified as possible solutions to overcome geographical constraints (Lesser and Storch 2001) in use of CoP. As far as tacit aspect of architectural design was concerned, IT was found not the priority. Architects were still sticking to tradition way in learning of architecture by way of “see” and “touch”. Moreover, behind what was done and what could be done in a better way in architecture, it was evident that face-to-face sharing, instead of IT, was used for negotiation of meaning for architecture in CoPs, because people-to-people encounter motivate participation by enhance feeling of being part of professional community (Lee-Kelley, Turner and Ward 2014):

“... last time, I mentioned about creating a narrow space for the ground floor lobby in resemblance of Gehry’s Guggenheim Museum. It turned out to be a debate about the meaning inherent in this kind of spatial quality and resulted in a long discussion of our respective travelling experiences in Spain last summer.” (A03)

Traditional methods of human exchange, such as touch and sight, were still regarded by the architects as rich as it could enhance feeling of participation in CoPs. This architect illustrated that stories could constrain the possibility of meaning (Wenger, 1998) in the design process when the shared resources were interpreted differently amongst different members. Stories did lead to and revealed the ambiguities of practice, and at the same time, containing a large amount of “practical wisdom”:

“...never again that excessive masonry balls landscape feature. I received enormous complaints about how difficult it is to clean them. And there have been cases of children climbing up the ball ... you know it is almost 1500 [1.5 metre] above ground from its highest point! ... This is a design everyone should avoid as it poses a potential falling hazard to children who play around them.” (A07)

Resource of Engagement

The HA architects’ CoPs adapted, and in some cases accepted, certain levels of ambiguity behind the interpretation of meaning in both direction and resources used in the design process. In a way, in trying to come up with a consensus in the process of design development, “ambiguity was not simply an obstacle to overcome; it is an inherent condition to be put to work” (Wenger 1998, p.84):

“My more expressive built form [for the building envelope] was rejected during AAP review last month. I shall try this idea again but improve it by breaking down the scale of the building clusters to make it more articulated to

the ground surface ... I hope I will have a smooth sailing at AAP this month.”
(A05)

This participant highlighted that getting an approval with the design review panel, AAP, was an important PDP step in the design development. As Wenger (1998) suggested, it may be best to situate ambiguity in the context of a history of mutual engagement. In this process, the architects were required to present design ideas to heads of divisions and sections for approval, before moving to the subsequent stages of development, such as preparation of the project budget and tender documentation. In a sense, structured AAP was to align design standards and scrutinize project feasibility but, to some participants, it was not a proper arena for resolving conflict that had somehow originated from subjective design idea:

“I present my proposed master plan showing the disposition of building blocks and show the heads the logic of functional planning and even the subjectivity of colour scheme of building envelope ... whether you like it or not.” (A02)

This architect illustrated that AAP was an occasion for design idea bombardment or exchange in the tacit regime of architectural design knowledge. But the participants showed that they did not welcome the idea of an overly structured AAP as a setting for tacit knowledge exchange and experience sharing, even if this exchange created tacit knowledge as shared mental models and professional skills (Guldberg et al. 2013, p. 116). Their reluctance was because of the professional rankings prevailing in APP deterring CoP formation and the “unequal power relations” (Fuller et al., 2005, p. 66) that determined how one spoke and ultimately

the outcome. To some extent, this was about the architects' incapability in negotiation of abstract meanings of shared repertoires originated in the CoP. Not every participant viewed this kind of negotiation as something in which they wanted to participate:

"I'd rather monitor my project from a PM [project manager] perspective, leaving the design bid to my subordinate to sail through. Sometimes, I am just fed up with those review panels." (A09)

Similar to the views presented by Hodkinson and Hodkinson (2003) about school teachers' learning in the workplace, some architects in this study thought that the application of audit approaches to learning caused an overemphasis on the aspects of workplace learning that fit the "acquisition" metaphor, and "render less visible participation approaches" (Hodkinson & Hodkinson, 2003, p. 14), thus hindering the participation. One participant reflected that:

"It's annoying ... why not just believe in our professional judgment. I hate being part of the audit, and someone, someday popping up in front of my desk to check my design for compliance." (A03)

This finding illustrated that there has always been a lack of rules or theories for a good design. However in practice, it became problematic when the design knowledge was treated as resource, since semi-structured teams established for the purpose of auditing failed to offer the social and lived attributes which informal architects' communities could potentially offer. Indeed, ways of doing things could become institutionalized within routines (Nelson and Winter, 1982, cited in Robert,

2006). In a given pre-dispositions, the development of tacit knowledge might become path-dependent and restrictive because of the need to satisfying various sectional heads in the structured AAP. In line with what Swan et al. (2002, p. 493) acknowledged about the management of innovation in healthcare organisations, the HA management's efforts could be interpreted as "an attempt to manage innovation by aligning the interests and agendas". While this aspect of repertoire was obviously rejected by participant A03 under more structured setting, it was accepted by another participant. It must be stressed, however, that in this case it was achieved in an informal way, with a small and unstructured communities surrounding the structural hierarchy of division/section/unit:

"When he [participant architect's supervisory officer] had a preconception about the difficulty involved in using a vertical precast bathroom instead of a traditional in-situ cast bathroom design based on the shop drawings [supplier's design drawing], I convinced him about this idea after office hour with BIM 3D modelling to explain to him the rationale by discussing the pros and cons with our structural engineer and building services engineer." (A03)

4.4 Conclusion

Although architects' communities did not have fixed representation, like group names or fixed gathering times and places (Wenger, et al., 2002, pp. 1-4), it has been noted from the data that HA architects have been involved regularly in different CoP, big and small, within their own units or across units, and inside as well as outside their professional practices. The findings showed that structured units or PTs, with designated objectives and output requirements formed by the

management, were more subject to the influence of early dispositioning and the power of rank. The HA architects did not have a static relationship to knowledge and, in fact, their knowledge changed over time and in relation to context (Lee-Kelley, Turner and Ward 2014). In this connection, some CoPs, like the more obvious ones of Lunch-group or New-bies, were formed automatically by fellow architects within, around or independent of structured division/section/unit. Which were unstructured, without any designated objectives or output targets, yet these CoPs were more dynamic and productive in terms of learning output for practice use. As a whole, such engagements collectively affected personal learning and professional development.

Even though not having names or gathering places, the data revealed an understanding of the attributes of the CoP domains and their associated dimensions, according to Wenger's (1998) CoP framework. First, engagements amongst architects were made mutually, both within their respective divisions/sections/unit as well as outside them. These people-to-people engagements were found to be rich relationships, both harmonious and conflictual, and were ever-changing, diverse and partial. Second, the formation of collated interpretations and ideas about a CoP of doing things jointly established an enterprise, which was shaped continuously by the architects' obligations and constrained by the unique mode of governance regarding accountability, ethics and conduct. Third, various design experiences, jargon and shortcuts representing complex technical meanings made up a shared repertoire, precipitated by historical stories about the production of public housing in HK. Through concerted

efforts to participate and negotiation of meaning within these domains, a sense of community coherence amongst fellow architects emerged.

The impact of the architect's' engagement in CoPs was the learning that resulted. This was the main benefit of facilitating architectural practice in a learning community through participating in an organisational context. What counted as knowledge amongst architects was the sum of a complex set of social processes shaped by prevailing interests, political struggles and historical change, under the limitation of language and technical articulation. This chapter has located architects' CoPs under the complex social learning system in the HA. In the next chapter, the findings will focus on the architect's' situated learning experiences with reference to Wenger's (1998, 2000) modes of belonging, namely engagement, imagination and alignment.

CHAPTER 5: FINDING AND ANALYSIS – NATURE OF ARCHITECTS' SITUATED LEARNING

5.1 Introduction

In this chapter, the lens swings to focus on the architect, presenting the individual's situated learning experience, with reference to Wenger's (1998, 2000) assertion concerning modes of belonging in shaping identity in CoP participation. In this study, the understanding of individuals' experience of CoP was based on Wenger's (2000, pp. 227-8) distinction between three modes of belonging to social learning systems, namely engagement, imagination and alignment. Drawing on all of the captured evidence, the last section in this chapter links the significant findings of the two related chapters and discusses them in relation to other professional development and CoP literature.

5.2 Situated Learning and Individual Experience in CoPs

The Hong Kong Housing Authority (HA) has an arrangement in place for junior architects to be mentored by more experienced architects in their first year. When asked about recent learning experiences in the HA, a junior architect reflected:

[With a sign of embarrassment on the participant's face] "Now, I know from fellow colleagues that it is totally different here from the outside in terms of practice and more ... and it shapes my design, too." (A06)

This new participant highlighted that individuals have “specific predispositions; when they join communities these do not disappear, although they may be moderated” and, in a way, may influence the participant’s ability to “create and absorb new knowledge” (Roberts, 2006, p. 629). Further data showed sign of difficulty for new architects to become accustomed to the mode of working in the HA, thus affecting their participation:

“I was frustrated, since it was difficult for me to locate learning materials about project administration and appropriate references, such as the writing of loose minutes to seek approval from my section head. There was no such thing in the private sector; you know ... my ‘RA’ qualification didn’t help when I joined HA ... but now, however, is much better, when I make friend with them. I can ask for their assistance whenever I encounter with procedural problems.” (A06).

This finding illustrates clearly that “individuals cannot learn, therefore, with ‘belonging to something’, and learning is an incidental but inevitable occurrence ... that is, when they belong to a community” (Hodkinson, Biesta & James, 2004, p. 10, cited in Warhurst, 2008, p. 456). The participants were found to be active in seeking opportunities to enhance their sense of belonging, both socially and passively, as required by the management:

“... that’s why we new-bies all come together, for lunch and after office badminton games ... we share a lot, including news about architecture and office rumours. We exchange information there, and sometimes we may

benefit as well as be constrained by having ‘old-hand’ architect joining us.”
(A06)

This finding also illustrates that historically and socially defined competences (Wenger, 2000) were acknowledged by the participating architects to frame their social learning system. The fundamental requirements for professional certification as an architect are connected with knowledge, skills, and abilities that must be mastered through recognized education and training, and demonstrable knowledge, capability, and experience, in order to be considered professionally qualified to practice architecture. As far as qualifications are concerned, there are no apprentice architects in the HA, because being member of the Hong Kong Institute of Architects (HKIA) and registered under the Architect’s Registration Board (ARB) as Registered Architect (RA) is the prerequisite requirement for one to join the HA. However, when new-comer architect came to real practice in the workplace of the HA, the participants clarified that qualifications did not help:

“I see qualifications just as an entry permit for working here. Real life is that you still need to learn how to learn from others the specific ways of doing design here in the HA. There are various kinds of house rules or procedures, namely, design vetting panels, audit committees or working taskforces to scrutinize your design by more senior architects, no matter whether you are expert or have been an award winner or so ... You have to be part of them in practice and adapt to such mechanisms by learning with someone ‘junior’ than me in order to get your designs passed [participant raised the eyebrows].”
(A09)

This finding illustrates that an old-timer, in terms of post-qualification experience, needed to cross a professional boundary when entering into a new practice in the HA, though the nature of this boundary could not be defined precisely (Fuller et al., 2005, p. 63). This more experienced architect demonstrated a similar finding to that of Fuller et al. (2005, p. 64), in contemporary workplace settings in the UK, that “experienced workers were also learning through their engagement with novices”, and that “part of the process of LPP (legitimate peripheral participation) for many novices is to help other workers to learn”.

Through incidental social interactions, practice was culturally sustained and possibly extended (Lave and Wenger, 1991 p. 52). When practice interplayed with the two factors of competence and experience (Wenger, 2000), more experienced architects, usually of higher rankings, were engaged within various structured committees set up by the management to supervise and lead various stages of the Project Development Process (PDP):

“There were just so many people speaking on the design in a small room, it was not desirable and considered inappropriate for reviewing architectural design ... last time on the community hall design, when our chairman decried the concept of ‘functional grouping’, others just followed to bombard.” (A04)

This comment highlighted that the managerialist view of an architect’s practice has somehow neglected the broader social context and micro-political factors of learning (Hong and O 2009), thus underestimating the critical challenges of resolving the “social tensions” as a consequence of “asymmetrical power relations embedded” (p. 312). While a CoP may support the accumulation of incremental

knowledge developments in group thinking, they may “reduce the scope for radical innovation” (Roberts, 2006, p. 630) which tacit architectural design knowledge may likely require.

Architectural design is not just something that emerges from one’s brain after nights of working solidly in a studio. The architects in the HA community were aware that knowing something about the design was not enough. They placed learning as an integral part of the practice and, an architect’s competence in the PDP needed to be defined by the social community:

“... as an architect here [in the HA], I have to know how to demonstrate my design idea through presenting it to them [senior management] to have it endorsed individually or at the AAP, before I can move onto the next stage of tender preparation.” (A04)

This participant highlighted that one must be engaged in practice as well as in the social world (Lave & Wenger, 1991) for the situated learning of design to evolve, regardless of whether engagement opportunities may be engendered (Venters & Wood, 2007, p.350) by the management or formed by architects informally. This participant also illustrated attainment through design critique. As Edwards (2005, p. 59) noted, “attainment ... (is) found in a mind at grips with the world and evidenced in accomplishment of action on the world” and various critiques in the HA were noted as ways for architects to engage with communities for mere management of PDP, whilst architectural design, however came after it. While Abma (2007, p. 45) described a CoP as “not a matter of the attainment of

consensus among stakeholders”, the participants described it clearly as a group process “through confrontation with diversity”:

“Finally, I step back from it and let them all comment on the design first, then I respond to their points one by one ... occasionally I find some comments are really nonsense, but there may be good ideas.” (A07)

This participant saw that situated learning integrated with routine in the social world was sometimes reified in the form of a series of informal design review sessions. Like pilgrims, their learning was very much about internalizing the surrounding culture in the HA through their identities as members of a unit in the organisational structure. By becoming active participants in multiple CoPs, the architect highlighted a trust (Roberts, 2006) in each other within the community in terms of professional capability and learning by sharing. It also showed an atmosphere of strong beliefs about the “likely behaviour of another, others, which matter for the trustor’s decision-making” (Roberts, 2006, p. 628) in the community.

On the other hand, old-timer architects may sometimes find their competence levels being challenged (Fuller et al. 2005) in one way or another by new design requirements, technical improvements or ever-changing procedural enhancement initiated by the management. One participant shared her learning experience from site staff on site:

“... for example, I cannot hold up a concreting process on site, when I am unsure about a particular step about a submitted method statement ... the RSS (resident site staff) helped me to resolve the problem.” (A04)

This finding showed that there was no need for the architect to go through from the very surface of a subject to learn a new subject from a novice perspective, as learning occurred vibrantly and in many forms in the HA. These data suggest that a full LPP process was not necessary (Hodkinson & Hodkinson, 2003) for learning to take place in a community. When there was a technical problem or an organisational change problem arose, qualified architects made themselves “apprentice” again to learn new practices in the CoP in order to adapt. This meant that they were able to refresh themselves with the necessary skills and competence, irrespective of whether they considered themselves to be novices or masters in a certain aspect of practice. Therefore, it was not only new-comers or junior architects, everyone became a peripheral participant when the case warranted (Fuller et al., 2005, p. 64), and this was the architects’ CoP culture. However, it was noted by one participant that predispositions (Roberts, 2006, p. 629) based on roles and qualifications impacted upon one’s learning experience, especially when it was in an inconvenient situation:

“I was surrounded by the staff of the contractor during the inspection of sample flats ... I was not comfortable with either the setting out or the composition of the backing layer; as an architect, I decided not to ask openly ... there were just too many people ... later and separately, I checked the drawings and specifications with someone who did it before.” (A05)

In contrast, another comment indicated that the social learning culture within communities did often play a role in resolving problems:

“It doesn’t matter if the person I ask is from another unit ... as long as we all are from ‘here’, we share what we know.” (A01)

Therefore, the experienced architect learners were sensitive enough to be able to locate active participants in target CoPs in order to learn by venturing into core groups with specific expertise. The architects’ engagement, as interplay between relationship and experience for learning took place in the above examples, was noted to be depend upon their social strengths:

“It’s better for one to gain experience by working in different units at the early stage of your career in the HA, because you will have made more friends from different units” [Architects may be deployed, voluntarily or as required by management, to different units during their careers in the HA]. (A09)

In addition, this finding also illustrates a “social integration process in which members from different communities build bridges to link the diverse knowledge sources” that are “localized and embedded in the social and institutional environment” (Lehrer and Asakawa, 2003, cited in Hong and O, 2009, p.314). Some architects enjoyed being posted to different offices under the HA’s career development policy. From the interview data, post-rotation was seen to facilitate one’s social integration process as well as knowledge base, because it provided more accumulated opportunity for the cultivation of friendship, and thus promoted extensions of the architect’s social horizons. This attitude towards

learning socially from different postings was the very nature of the architects' practice that determined their full membership of community (Hodkinson & Hodkinson, 2003). Once deployed to a unit by the management, and architect would settle down with a new identity requiring the learning of new practices specific to that post. This was also about shifting one's identity in the structural system of division/section/unit, because the deployed architect not only be removed from doing design work, the posting title would be changed, for example, from "architect" to "manager". In this sense, learning was dependent upon the knowing of the active participants in new CoPs in which both tacit and explicit skills could be shared and learnt:

"Changing units is like changing jobs for me ... I have to adapt to everything again. Not only do I have to move to a new workplace in the Headquarters to work, I have to shift to a mode in working attitude more welcome by my superior officer and fellows." (A10)

From a social perspective, the architects' situated learning was an extension of their personal professional lives beyond unit, section, division and even the HA; they were interconnected with the larger group beyond multiple CoPs under "the broader socio-cultural context" (Handley, 2006, pp.645-6).

In striving to know more and to be enabled to experience differently, members of CoPs in the HA shared a "dream, goal or ambition" (Abma, 2007 P.35) for the betterment of personal skills for the excellence of architecture in practice and for adaption to multiple CoPs. It was also apparent that a key characteristic of these CoPs was their continual and self-motivated drive for new and better ways to work:

“After that technical meeting with the BSE [building services engineer], I now know why the material specifications of our plumbing system have been changed from DI [ductile iron] to GI [galvanized iron]; it is meant to cater for a future change of water source, from fresh water to sea water, someday.” (A07)

It was also evident from the data that the architects’ knowing involved both the competences that the communities had established over time and the architects’ ongoing experiences of the world as members of the HA and beyond. For example:

“It saves much of my time [after having lunch with some architect colleagues] to source the letter box standard detail drawings” [Because a similar design could be adapted for reuse in different projects]. (A09)

“... only material that is sturdy but also light enough can be tested in the laboratory for use as raw material for manufacturing metal gate-sets... so that even the elderly can slide them without too much effort” [participant sharing experience of visit to the material testing laboratory months ago]. (A08)

5.3 Modes of Belonging in Participation

As Wenger (1998, p.152) argued, identity in practice arises out of an interplay of participation and reification. To make sense of these social processes in the construction of an architects’ practice, along with the aspects of social competence and personal experience embedded in their communities as discussed above, the data analysis also drew on three modes of belonging to and participating in a CoP, described by Wenger (2000) as engagement about the negotiation of meaning for

membership, imagination about negotiated experience and alignment of learning trajectories for the coordination of enterprise.

Engagement and Negotiated Membership

As active participants in the social process, architects' professional identities were found to be affected by the pictures they had created of their positions:

“... starts with a capital “A”, we, architects are bounded to lead them [other professional groups] in the design process ... but not the other way round ... what kind of design will it be if everything is just controlled by time and cost only? So they don't need us?” (A02)

The data showed the architects positioning themselves atop the hierarchy of the Project Team (PT) because of their leadership role. Even in constraining environments where the architects were of the same ranks as other professionals, and with a lack of organisational support, a well-suited leader could still bring a CoP to a success (Ardichvili et al., 2006). Being self-professed as important members of the community, the architects viewed “accountability” as a concerted enterprise (Wenger, 1998, p.152) in order to contribute their experiences, modify practice and shift values (O'Donnell & Tobbell, 2007, p.315). In order to lead the PDP, architect leaders possessed an established reputation and forming their own character to an organisation, and were able to lead by example and provide a consistent vision of aims and objectives (Muller 2006). At the same time, this self-projection of identity by belonging to a community was shaped by how actively one was involved in the mutual engagement process (Wenger, 1998):

“Architects and engineers are different animals! While I ask for smaller member size in the space frame for the amphitheatre, in return they always suggest one that is out-of-proportion ... however we learn from each other of the constraints and - even though with difficulty - to look for an optimal one we accept mutually.” (A08)

The architects were aware of their leader identities in engaging different groups of professionals in the design process, both in the office and on site, or in other venues outside the HA, even if this leadership role was not necessarily due to their ranking. To achieve this, “meanings and their negotiation were paramount and profoundly connected to identity” (O’Donnell & Tobbell, 2007, p.315). These subtle empowerments in CoPs were acknowledged by Lave and Wenger (1991), but they never fully explored the impacts of conflict or unequal power relations in the internal operations of a CoP and its relationship with the wider context (Fuller et al., 2005, p. 66). In a sense, the architects’ engagement came with personal associations or labelling which reflected their mode of belonging and was reified as sources for “concomitant identity shift” (O’Donnell and Tobbell, 2007, p.312) in the community for articulation of their specific participation:

“I need to maintain my membership with the HKIA/RA [Registered Architect] under my name on my name card ... now that I am an HA architect, I should maintain my HKIA member status ... so I participated in all these events - seminars, visits and conferences organised both inside HA and outside it by the HKIA to attain prerequisite CPD [Continuing Professional Development] hours.” (A05)

This finding highlighted a shift of self-portrayed identity according to different situations, and identity changes were “mediated by a sense of belonging” (O’Donnell and Tobbell 2007, p.326). By participating in events simultaneously both within and outside the HA, this architect established his identity through negotiated experience of “self” (Wenger, 1998) through being a member of the HA and RA under the law. In another example, the architect’s identity reinforced when inspecting site works in the company of front-line staff:

“In case I am not familiar with it [working details of a door architrave on site], I expect my site staff to come forward and assist right away.” (A05)

Interestingly, these data exhibited a sense of power in the CoP due to “embedded power differentials” (Hong and O, 2009, p.311) originating from ranking. This attitude was tuned through talking with or seeking assistance from colleagues or mediating when an architect was discussing project matters involving different disciplinary professionals:

“What you wear counts! I will try to have make-up and with my executive suit in doing my presentation, in order to make my oral presentation impressive, and more convincing.” (A10)

In describing how to impress heads of sections during AAP design presentations, this architect highlighted how she tried to construct an identity to gain “influence in a more powerful group” (Hong and O, 2009, p.315). These bounded characters of engagement with different personnel were noted to be dependent very much on the physical limits and scope of activities and very much in connection with the

“power relations and inequalities” which were likely to be “stratified through a complex division of labour” (Fuller et al., p.53-4). Apparently, from the data, the architects were aware of the “issue of power in participation” (Warhurst, 2008, p. 457) at CoP due to ranking hierarchy in the HA, an aspect of CoP theorisation not considered by Lave and Wenger (1991).

The HA architects were not only aware; they also contributed to shaping the relationships of various mode of accountability and associated power in the course of their work:

“I was greeted by them [resident site staff] as a full team during the last visit ... surely I don’t know all their names ... but it doesn’t matter as long as they know ME, that I am the one empowered to issue AI [Architect’s Instruction, a kind of formal document under conditions of contract to instruct action on site, that only the architect is empowered to issue] and held accountable for it.”
(A05)

The data showed that when LPP entails complex power relations (O'Donnell and Tobbell 2007), the architects defined their power through “empowered positions” as a way of having “full participation” (O'Donnell and Tobbell 2007, p. 326) in a particular CoP. It is also worth noting that the architect’s full participation on site was more fundamentally earned “through the forms of competence that it entailed” (Wenger, 1998, p.152), that is being reified as the only professional under the building contract empowered to issue the site instruction:

“We wear white safety helmets, while they wear yellow. They can easily recognize me far from any spot on site, for them to perform and carry out work properly. Otherwise, I will exercise my power to remove him from site.”

(A10)

On site, the architects' identity was formed through participation in the inspection as well as reification in the form of appearance, represented by the helmet. This architect viewed the RSS as subordinates to perform routine tasks, and “themselves” as professional and more capable (Hong and O 2009). Even though no data were collected from the RSS side, it was evident that both parties perceived a significant “identity gap” (Hong and O, 2009, p. 318); they were both engaged in the CoPs but had a “label with specific meaning” (Wenger, 1998, p.150).

When architects' engagements in HA communities were related to an interesting nuance of power distribution, these CoPs “afforded the power to negotiate enterprises and thus to shape the context” (Wenger, 1998, p. 175) in which the architects could “construct and experience an identity of competence”. While meaning may be negotiated within CoPs, it was vital for the architects to recognize the role of power in the process:

“As an architect, sometimes, you should keep a reasonable distance from the RSS in order to establish your image. Though we share experiences in one way or another, there is something that they can't really understand, as far as design is concerned.” (A02)

This participant, however, illustrated a possible state of engagement that Robert (2006, p.626-627) described as “plagued by misunderstandings and disagreements”. Hence, the architects’ levels of engagement were attributable to the interrelationships between CoPs, made either by architects or others, such as the RSS, which, besides power, were also affected by individual dispositions to learning (Hodkinson & Hodkinson, 2003):

“The area was just too clean to look like a construction site. What were they thinking, letting me see a tidy site like this? It was ridiculous in terms of wastage of time and money ... I would rather see more of their time spent on completing the tiling work on time instead.” (A07)

The different expectations of the architect and the RSS regarding the preparation of the construction site for the senior official’s visit characterize a drawback situation of engagement in which the entrenched identity and power could have been an obstacle for understanding between CoP members.

Imagination and Meaning of Experience

Regardless of whether they knew each other before or not, the architects recognized that there were other architects “out there” working simultaneously in divisions/sections/units, departments of the same Government, the private sectors, and universities, in HK, mainland China and indeed all over the world:

“I meet my old friends and classmates through these seminars and visits ... these are great exchange opportunities, though they are from the private sector.” (A7)

This comment showed that the architect regularly shared knowledge with fellow architects through a variety of means; most importantly, some of these were beyond the boundary of the HA. New collaborative technologies, such as email, discussion groups and chat rooms have been identified as possible solutions to overcome geographical constraints to CoP collaboration (Lesser and Storch 2001). This participant architect preferred face-to-face encounters to IT because it “eased” his “transition” (O’Donnell & Tobbell, 2007, p.318) to another CoP located outside the HA. These data also showed a linkage to the very nature of tacit knowledge of architecture where “social interaction” facilitated exchange (Eraut, 1994, p.104):

“We share about travelling experiences, and where to see our favourite architecture during holidays ... with these as our common language, our group of friends somehow affects my way of life and my view of architectural design.”
(A03)

Even with differences in their modes of belonging, the participants knew they were similar in aspects of formal education and values toward architectural design which were bounded by their coherent view of professionalism. This finding contrasted with Lave’s and Wenger’s (1991) “dismissal of formal education” (Fuller et al., 2005, p.66). These data suggested that previous formal learning could sometimes “form an integral part of wider learning within a CoP” (Fuller et al., 2005, p.66); this was especially apparent for naturally formed CoPs (Gongla and Rizzuto 2001), since it was easily enhanced by a shared imagined world of architects’ professionalism. Moreover, in practice, sharing knowledge occurred more freely in CoPs, because they were self-organizing groups (Lesser and Storch

2001); the knowledge transferred was not bounded by a defined objective. One new member participant pointed out:

“I know what we all know to be core values, provided that I stay tuned with them. We go to lunch together and share the insights from seminars or some things that should be avoided in the design.” (A06)

There was no fixed time, venue and membership for lunch activities. The description of this unstructured architects' CoP suggested a degree of “trust and mutual understanding, both of which require time to develop” (Roberts, 2006 p.633). The data showed that the architects cultivated trust and understanding amongst CoPs members by sharing individual learning experiences in a world view of architecture. One participant remarked that one may be required to change postings, from unit to unit, section to section and division to division one day to suit management arrangements:

“I would rather be posted back to the mainstream [“Design and Construction Division”], or I risk losing track of my design skill and knowing the peoples there ... or future promotion prospects.” (A10)

Organisationally, the architects were posted under different units in the division/section/unit hierarchy, according to the management. This finding highlighted that they assumed they would belong to “multiple communities during their lifetimes” (Handley, 2006, p.650) apart from their unit and contradicted Wenger's (1998) conception of “compartmentalisation” of practices in which CoPs were viewed as isolated entities. Some CoPs in the HA were similar in skills and

competences, some were with clear objectives and some were just formed by themselves for the sake of getting together and sharing information. Most importantly, these CoPs interact with overlapping membership.

This resulted in the formation of “multiplicity of setting” (Kakavelakis and Edwards, 2011, p. 477) of architects’ CoPs of “distinct practices and identity structures” (Handley, 2006, p.650), which created a social learning space in the HA context of institutional accountability structures (Wenger 2004). Based on these findings, it was noted that the identity of an HA architect was interwoven in a nexus of multi-membership (Wenger, 1998) under what McDermott (1999) described as a double-knit organisational structure. The architects’ participation in a “unit” was the business process and considered as the main reason for practice. Once deployed out of the place in which he was originally posted, one participant considered it an experience of detachment of their structured unit and sometimes, or an exile to community:

“No... Not again! ... No, no, no! I don’t want to be deployed to other unit for not wanting to weave for another network again ... staying at my existing posting could make more easy life; everything is just at my fingertips.” (A04)

In the process of negotiating “self” continually within and across multiple CoPs, the participant saw a possibility in generating “intra-personal tension as well as stabilities” (Handley, 2006, p. 648), because detachment was seen as jeopardizing one’s normal learning trajectory for building an identity that communities generally acknowledged. Trust and mutuality (Roberts, 2006) need time to develop; a participant architect reluctant to be deployed to another unit remarked:

“Everyone knows this kind of deployment [to another workplace or unit] will undermine one’s promotion prospect in the HA.” (A08)

As a result of participants’ preference for a longer stay at any existing postings, the sense of belonging to a community in which one has was apparent amongst architects in the course of the interviews. One architect put himself in a “position” in the organisation by introducing himself like this:

“I am from CA/1 [the group of Architectural Section 1, headed by a Chief Architect grade architect].” (A05)

The architects’ perceptions of “self” as the members of a unit had a profound influences on their attitudes toward participation in the workplace community and CoP. While their posting in a unit provided them with certain experiences, their communities in return “reified them as participants” (Wenger, 1998, p.150). More than just a set of self-images, such perceptions shaped the architects’ identities as participants in the PDPs. In talking about the preparation for a forthcoming presentation, one participant mentioned:

“I can’t do a design for the sake of just finishing it ... the future building bears my signature, and that’s architecture of me.” (A02).

With images of the world, the past and the future (Wenger, 1998), one architect illustrated that, out of daily routines, like others in communities of architect professionals, he would be building something impressive:

“Plan, elevation, section ... from 2D, recently we used a 3D building information modelling for the presentation of design ideas.” (A03)

By participating through the PDP, the architects created a rich stock of perceptions (Wenger, 1998) about their engagement in different communities, including presenting design ideas, answering emails, cutting cardboard to make scaled models, conducting site inspections, answering complaints from neighbouring construction sites, staying late at work to prepare presentations for the next day, arguing with structural engineers for a longer structural span, or cleaning the mud off safety shoes after a rainy site visit:

“Though it is easier doing it this way [in planning a fire exit with a shorter route], as an architect, you strive for a better design ... the building will stand there serving the residents for at least 100 years, or more.” (A07)

Although the concept was presented in a variety of ways, the architects were found to be “maintaining a sense of agency through the adoption and adaption of different forms of participation and identity construction within different communities”, in contrast with Wenger’s (1998) CoP framework. In addition, one architect indicated that there was no need to “compartmentalize their identities and behaviours according to community”, especially when maintaining a “coherent sense of self” (Handley et al., 2006, p.650) across multiple communities in the HA and beyond its boundary:

“We are not only building “buildings”, we are building ourselves! What you did will be seen physically by anyone at the end of the day, no matter good or bad.” (A01)

On the other hand, architectural design in CoPs was seen as a product of “collaborative work” (Bishop et al. 2008a, p. 1) where “problems are shared and solved regardless of where they occur in the productive system” (p. 1). To maintain the HA’s quality standard was as meaningful as safeguarding one’s professional identity; one of the participants described an experience about tackling sub-standard tiling work:

“Have it dismantled and removed, that’s the way it is ... no second thought! It should be a redo. Imagine, it will be a disaster in setting a wrong standard for others if I let go it and walk away.” (A03)

Regardless of the differences in their tastes in design trends and perceptions, the HA architects were found to be consistent in the process of expanding themselves, in transcending their views of time and space (Wenger, 1998) and creating images of the world, as well as themselves:

“I can feel my mind echoing the masters of modern architecture by touching on the concrete façade of the Ronchamp Chapel [landmark architecture designed by a notable architect Le Corborsier in the 21st century at a small town in France, where a participant once visited].” (A03)

This extrapolation of experiences produced a common language for social relationships, both during design review sessions for resolving planning problems or having lunch, chatting with fellow architects:

“It’s rejuvenating in every short break to see the world outside, no matter whether it is Taiwan, Japan, SE Asia...the further, the better, [followed by long laughter after the participant stated this].” (A09)

Though the architects made it clear that they had lives outside the HA, these outside lives were also a major constituent part of the HA life; neither could be fully understood without the other (Hodkinson & Hodkinson, 2003). Because most of the participants had 10 years or more experience as professional architect, it was thought to be impossible to separate their lives from the evolution of the CoPs to which they belonged:

“Visiting local iconic architecture is a must during every vacation trip ... for I can learn something new each time.” (A03)

As well, one of the architects shared a recent visit to a metal gate-set factory, organised by the Component and Material Taskforce:

“That’s the best and most direct way to understand from another angle ... real life experience is very important to us to strive for better design.” (A08)

Wenger (1998) explained that mutual engagement merely creates a shared reality in which to act and construct an identity, while imagination is another process for creating such a reality. While the aspect of imagination is of paramount importance for participation in community, one participant highlighted a sense of common roots in the social circle; through this, one calls upon imagination to see the present workplace as the continuation of a shared, deep-rooted heritage.

“As far as contract administration is concerned, there is a thin line [about acceptable standards of building quality] you won’t cross ... it’s a matter of ethics and conduct you won’t forget ... there is a huge amount of money involved in every decision we architects make on site.” (A01)

Based on the findings, the architects’ identity was found to be traceable from their social interactions and communal experiences. As well, their image of “self” was noted to have contributed to the shaping of belonging beyond the HA and to have expanded the scope of reality (Wenger, 1998) in their participation. However, this image of identity could be a delicate balancing act between “participation and non-participation” (Handley et al., 2006, p.649) as well as “doable and unreachable” (Wenger, 1998 and 2000).

Alignment and Learning Trajectories

Wenger (1998, p.179) described that alignment “bridges time and space to form broader enterprises so that participants become connected through the coordination of their energies, actions, and practices”. However, the findings of this study showed that the HA architect’s self-image did not necessarily result in a coordination of action. Quite on the contrary, sometimes they were noted for their affinity to doing things differently so as to express individuality in respect of design taste:

“It’s not that my identity as a member of the HKIA makes me participate in CDP activities ... I feel the need to equip myself, and I like attend painting

classes after office hours, just for the sake of relaxation. After all, it really enhances my arts sense for my workplace practice!" (A01)

This architect did not reject CPD, but highlighted a vibrant learning trajectory reflecting what Handley et al. (2006, p.641) described as "fluidity and heterogeneity within and beyond communities". This participant's reference to the influence of off-the-job educational provisions could be viewed as being influential to an architect's personal development and in the formation of dispositions to practising and learning (Hodkinson & Hodkinson, 2003). Even though this architect was referring to another art form, which was studied in a venue of his own choice outside the HA, this learning activity still had an impact on the architect's workplace practice.

This finding also illustrated that the architects' learning involved personal mastery (Senge 1990), that is the ability to realize consistently the results that mattered most deeply to them. As a commitment to continuous development, this ability to achieve new skills was something Senge (1990) saw as a lifelong learning condition, in which the continuous process involved a deepening personal vision, focused energies, developing patience, and the ability to see reality objectively. In this connection, the architects' real personal mastery was a process of living their lives in the service of their highest aspirations. However, one participant architect found it a chore rather than an objective to complete the required CPD hours:

"It's a waste of time in participating CPD events, I think I can learn the same by more effective mean by myself; but I have to bear it as long as my membership is to be maintained." (A05)

This comment showed the architect's unwillingness to participate in CPD events. The learning opportunity was seen by the participant as unwelcome and perceived as a new type of managerial surveillance (Senge, 1990) to scrutinise the architects' professional practice. This act of a CoP event "purposely situated on the periphery of activity" (Warhurst, 2008, p. 457) was noted to be an excuse for receiving less intensive tasks in a team by claiming lack of certain skill due to no training received:

"I have no time to attend Building Information Modelling (BIM) training; this should be a job left to those colleagues interested in it." (A05)

The data did not show identity congealing firmly into any kind of activism beyond the architects' local engagement in work, and there were nuances about their attitudes toward fulfilling annual CPD hours. Architect A10 was aware of "self" as well as the group identity labelled "architect" (O'Donnell & Tobbell, 2007, p.323) by aligning with the group at least at the minimum level:

"Oh! ... Thanks for reminding me, I forgot to submit my annual CPD report; otherwise I will be removed by them from the member list." (A10)

The interplay between participation in activities and reification upon the annual receipt of a CPD certificate shaped the architects' identities and made a "progression along a trajectory towards full participation" - that was an objective constantly renegotiated during the course of their professional lives and "the target of 'belonging'" (Handley et al., 2006, p.649). Participant A08 demonstrated this point that:

“As a member of the HKIA in the HA, I am obliged to learn and fulfil ‘CPD’, apart from all house rules here (in the HA).” (A08)

This architect’s comment captured a shift in the relationship with the outside world brought about by a well-structured CPD system with the objective of enabling architects to keep on learning something new in addition to their experiences within the HA. However their sense of belonging might sometimes be reflected and reified subtly in complying with standards and guidelines issued by the HA management:

“I don’t mind having my design checked by them [auditors]. I know I have already complied with all these [procedures].” (A09)

This comment illustrates the architect’s personal alignment with the management objective in relation to audit, when HA as a whole is seen as a CoP. It also demonstrates that this CoP activity was constructed partly through external, wider contextual influences, while participation was related to personal views about the relationships within communities (Hodkinson & Hodkinson, 2003). On the topic of the auditing, another participant remarked:

“I have enrolled in almost all monthly ‘Audit Sharing Sessions’ held in the HA’s lecture theatre because I don’t want to repeat others’ mistakes ... Their explanatory notes were prepared with detailed photos and the auditors did a good job for us.” (A04)

This finding shows that the aim of the activities conducted in the Audit not only concerned with alignment of management objectives, it also contributed to this

architect's career progression and professional development (Hodkinson and Hodkinson 2003), and attracted serious attention for its function of knowledge sharing. Using the established audit system to align design with in-house standards and guidelines was seen as an expression of the architect's belonging to a broader social system (Wenger, 1998), which was precipitated from the HA's culture and history. However, there were instances described when this alignment could be viewed as a hurdle as well as a way of setting good standards:

"It [regular audit carried out internally to check for compliance in different stages of the PDP] is a waste of time and an act of micro-management!"(A05)

This participant reflected that a participation of this kind could be read as a rhetorical tool to facilitate the control of a professional group over which the management level had little authority (Swan, Scarbrough and Robertson 2002). However, the management rules left no choice not to fulfil the audit check. The data also revealed that participation could probably lead to "identity conflict" (Hong & O, 2009, pp. 318-320), when audited architects were placed at the periphery of the learning trajectory by being treated as "outsiders" and audited for non-compliance. However, Architect A04 was receptive about the CoP in audit:

"I should be grateful to those auditors for helping me to dig up my 'carelessness' in the preparation of the tender document; otherwise we shall pay a price for it when it is put to work on site."(A04)

With a view to aligning an organisation goal as an objective, the management of the HA upheld a so-called "4C-Spirit – Caring, Customer-focused, Committed and

Creative” for which their employees, including architects, were required to understand and observe the vision behind. In a sense, it was the management’s intention to align the architectural practice through diversifying knowledge and resources with learning trajectories within the HA:

“I doubt very much the use of our so-called four pillars [“4C-Spirit” of the HA] ... in particular they put “Creative” as the last pillar ... these are the objectives set by them, not us.” (A09)

This comment illustrates that the architect viewed these objectives as a way to impose management directives and actions that related to a managerialist climate of professional practice (Hodkinson & Hodkinson, 2003). Another participant pointed out that CoPs could be upset and disappointed by senior management level directives (Webb et al. 1996), for which they did not have ownership, and that this could eventually undermine one’s CoP participation:

“I see ‘4C’ as a management slogan devoid of substance ... it is something fashionable that every company needs to put on its internet homepage or annual report. It is nothing in anyway related to my practicing of architecture here.” (A01)

On the other hand, conduct and ethics were, however, viewed by another participant architect as catalysts for directing energy to align with professionalism as well as CoPs creation in a collaborative manner:

“It’s our Codes of Professional Conduct that differentiates us from the rest [when trying to distinguish the architecture profession from others].” (A10)

As far as alignment in CoPs is concerned, these findings show that the architects placed more weight on upholding professional conduct and ethics than on fulfilling the catchphrase type objectives laid down by the management. Although the registration system of architects in HK was not the focus of this study, these data show that the system affected the way the HA architects aligned themselves with CoP objectives, since they all had the suffixes “HKIA and RA” after their names:

“As a member of the HKIA, I should and do faithfully carry out my duties in every project. Furthermore, I undertake my tasks with a proper regard for the interests of both those who commission them and those who may be expected to use or enjoy them.” (A07)

Even there is no such thing as a law governing architects’ alignment, connecting themselves with these institutions magnified the effects of the architects’ actions in terms of their work styles and behaviour, as governed by the interplay of local and global (Wenger, 1998, p.161) attachment:

“As a Member of the HKIA, I shall endeavour to promote architectural excellence throughout my work life.” (A02)

5.4 Significance of the Findings in Relation to the Literature

Since there had been no earlier discussion of architect’s CoPs in the literature, this research was conducted to fill this research gap. The architect participants reflected an almost instinctive sense of tenure and commitment to their preferred CoPs. They saw their participation and that of their colleagues as being determined by their own keenness and longing to connect with others; this, however, was

affected, but not necessarily bounded, by the upper management of the HA or the external authority for which they needed to register in order to practice. Even when they had moved between units within the HA, they still displayed a sense of commitment and attachment to the CoPs to which they belonged or had belonged.

In almost every case, the architect participants spoke of their engagement in different teams, groups and communities in both their professional and private lives. There were formal project teams under structured division/section/unit with clear objective and committee with scrutiny objectives: the “Architectural Assessment Panel” (AAP) composed of heads of sections and management responsible for conducting preliminary review of architectural design and master planning of building blocks for PDP at its feasibility stage; semi-structured workgroups with explorative objectives: the “Building Information Modeling Steering Committee” (BIMSC) for exploring state-of-the-art computer drafting techniques to be implemented into architectural design processes; and the “Audit Team” responsible for carrying out regular check on PTs with respect to matters related to procedural compliance at different stages of building development. As well, there were CoPs which acted as unstructured communities with certain objective, for example, the “new-bies”, which was an easy community formed loosely by newly recruited architects for quick sharing of settling-in information and familiarization with the HA’s office culture. Furthermore, there were CoPs which acts as unstructured communities without pre-set objectives, such as the “lunch-group”, in which architects turned their lunch sessions into chit-chat periods, to air their grievances about routines by criticizing acts of management

and exchange best practices through the sharing of experiences of difficult problems encountered.

By contributing insights about the characters and functions of the architects' communities, as presented in Chapter 4 and above, this research has provided evidence of the emergence of various CoPs in the HA. Even though the name "CoP" has not been used by the management to define architects' communities in the HA, it can be understood from this research that the concept of the CoP can be used to view the relationship between informal communities and major structural configurations of divisions/sections/units, characterizing an unique double-knit organisation (McDermott 1999) of business processes and a variety of CoPs in the HA. Based on this perspective, the architects were engaged in multi-memberships within the HA's CoPs.

As major structural configurations of the HA, divisions/sections/units have typically been recognized by architects as more "legitimate entities". In fact, the participants generally gave more weight to these legitimate entities than to other CoPs in which they participated; they considered that working in their respective units made them "genuinely" involved in the business processes, even though their identities were constructed by a complex involvement of different CoPs. Besides, they generally considered their participation in other semi-structured workgroups, known as "performing central functions", as something additional to their usual work routines. As one participant said, "I come from the CA/3 [Chief Architect Section 3, under Project Division 2]; I am also responsible for some central

functions, for examples, I belong to the BIMSC [Building Information Modeling Steering Committee]...” (A03).

Apparently, the architects viewed themselves naturally as working under a double-knit organisation as far their involvement in business processes and participation in CoPs were concerned (McDermott, 1999, cited in Wenger et al., 2002, p. 19). This state of multi-membership created a learning loop as follows:

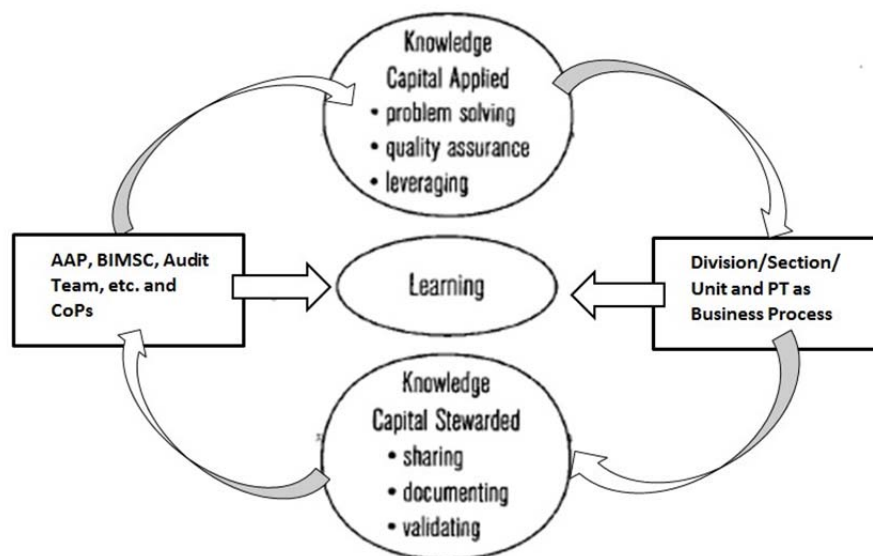


Figure 5: Multi-membership Learning Cycle of Architects in the HA

[Adapted from Wenger, McDermott and Snyder (2002, p. 19)]

Under such a mode of learning through the work mechanism, the identity of multi-membership demanded the architects to learn from their own experience and to leverage their knowledge fully in the practice of architecture. Because of the need to steward knowledge and share information in order to tackle ever-changing problems encountered in the course of complicated PDP that not everyone could

master individually, the architects even formed their own unstructured CoPs. These were independent of the structured project teams and semi-structured workgroups established formally by the management, which were vested with clear objectives under fixed terms of reference. In such interactive model of informal communities and management-arranged groups, the business processes were carried out in units where knowledge was applied. Though viewed as separate entities, these informal communities, semi-structured workgroups and structured teams needed to be tightly interwoven (Wenger, McDermott and Snyder 2002) in order to cope with multi-faceted problems in construction or nuances in design issues. In this regard, the architects kept up with their specializations, coordinated standards, shared knowledge developed and lessons learnt, and finally united in business-line operations of the PDP.

As members of their respective units, the architects were accountable for the respective PDPs of different projects. When they faced problems, they applied and refined their skills. But the same architects were also CoP members and, as such, they were accountable for developing practice. When they came across new problems, they devised new resolutions by seeking answers from colleagues from an array of communities. The architects brought their experiences regarding practical building design problems to their units and received help with their problems. They discussed their new solutions, generalized or documented them, and integrated them into communities for practice. Moreover, with the help of the intranet and personal interactions within the HA, these newly developed tools were disseminated to different units at office level and then cascaded to site for use, or vice versa. This meant that the architects returned to their projects

equipped with expanded capabilities, which again faced the test of application to real problems. Through this multi-membership of communities, the learning cycle continued indefinitely (Wenger, McDermott and Snyder 2002).

As revealed in the previous chapter, the various CoPs in the HA did not have any fixed names or venues. Nevertheless, the nature of the HA architects' situated learning was vibrant and multi-dimensional. In a sense, CoPs were found as being more emergent, organic and intangible, besides which could form around or within formal structure, but they could also form independently. The CoPs were embedded within the architects' workplace practice as well as in the outside community (Fuller et al., 2005, p.52); this could begin in the working station and extend to the badminton court, or sometimes it could be associated with an after-exercise drink in the canteen. Newcomers to the HA learned to be part of the architects' community through different means and from various angles. Professional qualifications seemed to be irrelevant in terms of acceptance of membership in the CoPs and the issue of qualifications did not seem to have arisen.

Consistent with the view proposed by Wenger, McDermott, & Snyder (2002, p. 57), the findings of the study suggest that the architects' communities in the HA included participants from three levels: the core group was predominantly the "master" architects experienced and knowledgeable in aspects of architectural practices occupying management level, whereas the active participants were the more mature competent architects, and the peripheral participants were the newcomer/novice architects [Figure 6].

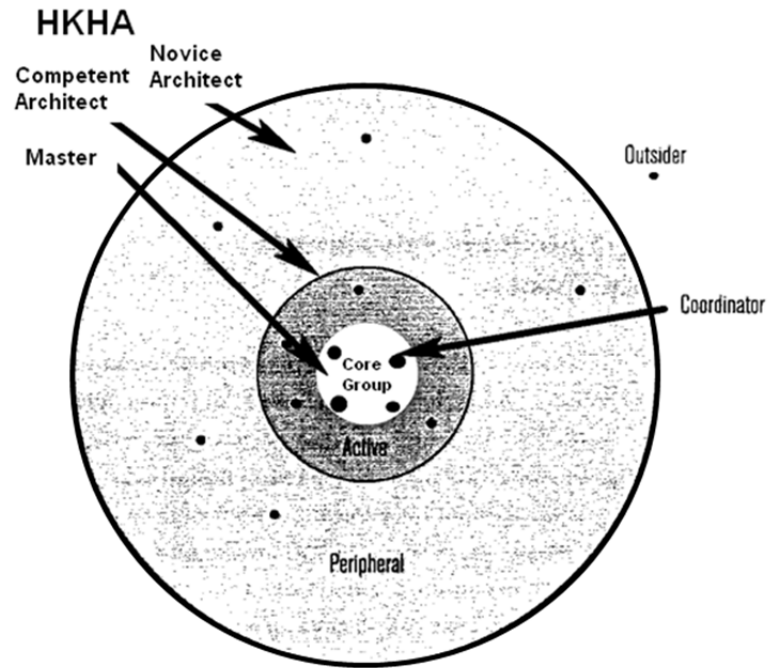


Figure 6: Degree of Participation within Community of Practice in HA

[Adapted from Wenger, McDermott, & Snyder (2002, p. 57)]

Through an array of engagement activities, different architects from varying backgrounds worked in a concerted process to help each other to move from the level of newcomer to that of novice and then to competent in HA practice through experience sharing in community participation (Wenger, 2002). It also worked the other way round in the learning trajectory (Fuller et al., 2005, p.64), with the novice advising the competent architect when the situation warrant.

Sustained Collaboration

It appears from the results that, even if they did not have a clear idea about what constituted architect's CoP, the HA architects did have opportunities to decide

what type of entity they wished to create and for what intended purpose. This, in turn, assisted in the productivity of their sharing of information on site, or in a committee or work team and, most importantly, the associated tacit knowledge and creativity in architectural design. When the architects continued to negotiate “self” within and across multiple CoPs, they might have generated “intra-personal tension as well as stabilities” (Handley, 2006, p. 648). Some talked of how different modes of belonging could be employed to enhance individual participation in their communities; others, however, thought participation in a community posed different constraints and did not participate. However, organisational knowledge cannot be managed practically in any direct or formal sense since it was shown to be dependent upon employee architects’ experiences, cognitive frames, perceptual capabilities, social relationships and motivation, when these existed in the architects’ heuristics (Tsoukas and Vladimirou 2001) during their day-to-day work.

In addition, there was a high degree of consensus amongst the architects that the CoP needed to be owned by the members, not imposed artificially from outside for less formal CoPs, because they could enjoy the freedom and at the same time have enhanced output, with the outcome meeting the objectives required by the community. Because of “early-socialized dispositions” (Handley, 2006, p. 647), some architect participants noted a preference for either formal or informal structures as they were prepared to endure various levels of formality, even though it was sometimes not a choice when it came to organisational decisions.

Furthermore, the architects who coped with uncertainties in organisations were more likely to be consulted by others, which was a way of exercising influence in decision making (Hickson et al. 1971; Hinings et al. 1974). Power, as Emerson (1962) defined it, is rooted in other people's dependence. When dependencies of top-ranking staff on lower-ranking staff were rooted in the superior knowledge of the latter, realignments in the exercise of voice were observed. There were some stories of told of learning experiences to fuel the vibrant of architects' CoPs and their effects persisting after project team had ceased to exist, for example because of a change of membership when a core member or master was redeployed to another unit.

While not directly raised by the participants, the research suggested that their experiences in CoPs were broadly consistent with what Schön (1985) said about architectural learning and professional competence, that design work should focus on problem finding rather than problem solving (Schön 1985). While engagement in CoPs provided the opportunity for the architects to exchange ideas and knowledge, the strength of the joint enterprise in CoPs was the sharing of knowledge of design with the members, which benefitted all concerned. In this sense, the members were no longer working on their own and only focused on the problem-solving aspect of design. Through participation in CoPs, they could also refine the design process as a problem-finding process. Collaboration in CoPs and the people-to-people interaction helped to expanding questions such as how to design a domestic flat, a disabled toilet or a staircase, to questions about what type of flat, toilet or staircase would address a particular problem. For example, when it came to planning for a redevelopment project, the HA architects in CoPs would ask

questions relating to the problems of, say, rehabilitation of an old estate and its social sustainability issues instead of merely how to design a re-housing building block.

The basic elements of experiencing an event, reflecting thinking about or interpreting an experience and then generating a new one, were noted to be implicit in the remarks made by many of the participants. Many of the participating architects spoke directly about the important opportunities the CoPs gave them to reflect on their work and to share experiences with colleagues in a manner that helped clarify what had happened with a particular event. There were also frequent exchanges of references about building projects based on experiences of colleagues in a manner that may accelerate the learning cycle. The CoPs were, in effect, just an institutional framework, within which the architects could live out their roles and confidently exercise their skills, namely the competences that Schön (1985) suggested the architectural professional should address.

Professional Identity

Knowledge about how architects' communities work in the HA was obtained by drawing on the concept of the CoP. This research focused specifically on the experiences of individuals as members of CoPs in the HA. The experience related by the participants in this research reflected many facets of social practice with a specific situated learning process. It was evident that knowledge was not something that was learned first and then used later (Eraut 1994). It was evident that knowledge was created alongside the architects' collaborative practices during their active participation in communities within the HA. The act was not

only an individual engaging in specific activities, but also active participation in social communities and constructing an individual's identity in relation to these communities. The findings of this research appear to support many of the original propositions about CoPs put forward by Lave and Wenger (1991) as "a system of relationship between people, activities and the world", and which "develops with time, and in relation to other tangential and overlapping communities", and Wenger's (1998, 2000) attributes of CoP domains of mutual engagement, joint enterprise and shared repertoire through indicators (Wenger, 1998, p. 152) and, in particular, the concept of situational learning. With members becoming engaged in the CoP and developing a sense of commitment and involvement with their colleagues, Lave's and Wenger's notion of LPP also seemed to be evident in this research. The participants displayed a capacity to join and then become increasingly involved in the CoP. However, on occasions when problems were encountered, the architects automatically adjusted their levels of involvement as they felt appropriate, and sought comfortable places to learn from other in solving their problems. Although formally qualified as architects, they still considered themselves to be learning through active participation. Moreover, this research also suggested that their participation in CoPs was not simply a linear journey of increasingly intense participation. The goal underlined in this participation was to be "professional learners" in order to become more effective "learning professionals" (Eraut 1994).

The degree of participation and individual perceptions of the architect's identity in the more formal work-related group activities such as PTs and Committee were noted to be very different from informal CoPs. This could be attributable to the

unique aspects of a CoP regarding membership, i.e. whether it was voluntary, and/or whether the level and quality of a member's participation was evaluated directly. This idea is related to Wenger's (1998, 2000, 2002) assertion that CoPs cannot be managed or directed; this also appeared to be consistent with the experiences of the architect participants in this research.

Benefits and Commitment

Nearly all architect participants in this research reflected the experiences derived from belonging, in one or more CoPs in the HA. Meaningfully, these benefits tended to relate to personal factors, for example, the opportunity to escape from the pressures of heavy workload to compare notes about the daily routine, a place to speak openly about difficult issues, problems, mistakes, or unexpected results in a nonjudgmental atmosphere, and the opportunity to breathe a sigh of relief when talking to others who are in the same boat or engaging in the dialogue. As well, the architect participants noted the prominence of the relationships that were developed within their unit as well as the networks that they developed with the outside world that provided them prompt access to data, facts, techniques, or critiques from a circle of trusted colleagues. Since a group of good designers would look for common ground (Cramer and Simpson 2007), participation in the CoPs provided the opportunity to evolve the essential elements that would make a project truly special, and convincing all concerned to hold fast to those core values. This is what Cramer and Simpson (2007) described as the "Next Architect", who should be able to synthesize all information, sort it and prioritize it, then boil it down to its essence.

It was related to the theme of personal benefits; the participants also described the benefits that could accrue for the HA as host organisation, such as quick or timely exchanges of skills, knowledge, techniques, and practices, the expansion of information exchanges, and a range of broad benefits related to resources, such as project planning, staff movement and staff morale. In such an environment, concentration on how tacit and explicit knowledge interact is fundamental to knowledge management (Kakabadse, Kakabadse and Kouzmin 2003). However, it was also noted that when a group was devised by management to address specific organisational objective, for example in checking of compliance by an audit team, the architects were reluctant to become involved since it was regarded as “time consuming” and “drove no output” in the participation process because it reflected an act of distrust in professionalism.

Resources

The architect participants did not see the need for resources to sustain a CoP apart from the time required to attend, whether or not the community had a fixed meeting place, and the use of the HA’s email and phone systems. Though it was not spelt out, the participants were self-initiated and were all aware of the importance of managing their CoPs themselves. In the scenario of a lunch-group gathering, for example after the announcement of the promotion of a senior management or the approach of a seminar by a renowned Japanese architect, the CoP members were eager to meet. The amalgamation of a CoP with the work and life of an architect was, to a certain extent, a demonstration of the CoP concept described by Lave and Wenger (1991).

The architect participants spent their time wisely in their PDPs, irrespective of the stage of the project. Time consumed in managing or attending a CoP was balanced easily by extended hours of work, or vice versa. Universally, the participants noted that routine work took precedence over the CoP. If there was conflict, they could complete urgent tasks rather than attend an informal CoP meeting. As one participant explained, "No matters what central functions you are involved in, when it comes to annual performance appraisal, it would be my work in units that counts the most!" (A01). When performance is a multi-dimensional construct, the measurement of it varies, depending on a variety of factors including goal, context, competence and value chain (Armstrong and Baron 1999), which in turn affects the participation experience.

5.5 Conclusion

As noted from the findings in Chapter 5, no HA architects were aware of the term CoP, but they could point out attributes of CoP domains for the communities in which they participated and their modes of belonging were generally in line with the aspects of personal engagement, imagination and alignment (Wenger, 1998, 2000). Main themes, including that engagement in architect's communities needed to involve mutual contributions, since members could alternatively be the givers or receivers of information. As well, the participants needed to perceive themselves as part of a bigger picture as member of the HA in the industry in order to think globally and act locally. Finally, the architect's alignment with their CoPs was also related to issues of professional conduct and ethics.

It was evident that the architects claimed to belong to multiple CoPs. These divisions/sections/unit configurations of the architects' engagement characterized a double-knit (McDermott, 1999) organisation that reflected a broad range of structures and resourcing across a wide continuum - from very structured to unstructured. Yet across these differing expressions about architect's CoPs, there were a number of clear underpinning issues that characterized architects' CoPs. Further to a detailed discussion of the findings in these two related chapters on findings captured in this research in respect of similarity and differences of architects' CoPs in relation CoPs framework in literatures, in the next chapter, the discussion will draw a conclusion to this research in particular the significance of these findings.

CHAPTER 6: CONCLUSION

6.1 Introduction

After looking at the research data collected from architects in Chapters Four and Five, it is now time to bring full circle the insights gained from applying the CoP concept to look at the context of architectural practice in the Hong Kong Housing Authority (HA). In order to move accessibly through an array of data, information, and theories to provide a clear path for the reader, this chapter has been organized in five sections.

The first and second sections identify the overarching themes that emerged and some of the broad conclusions that may be drawn from the findings about viewing architects' work lives through the lens of a CoP framework. In response to these themes, the third section articulates a model of architect's CoPs based on the themes emerging from this research. It then follows with a discussion of how typical or traditional approaches to creating a group activity in a complex double-knit HA organisation may not be appropriate for the successful creation of CoPs, and comments about why a model of nexus of CoPs is of significance. The fourth section concludes with a suggestion that the success of an architect's professional development depends on their ability to design themselves as social learning systems fitted with an architect's specific conception of a CoP into the formal structures of an operating team. This could ultimately facilitate the architect's participation in broader learning systems in the Hong Kong (HK) building industry or a consortium in the world of architecture. The fifth section

notes the limitations of this research and, finally, the sixth section identifies some of the future research opportunities that could be pursued and the concluding remarks.

6.2 Overview of the Findings

A review of the literature suggested that there was more focus on the instrumental aspects of CoPs than on the empirical investigation of how they operate and the complexity inherent in them. Fuller et al. (2005, p. 66) also pointed out that Lave and Wenger did not develop this CoP idea in relation to particular group of learners. In addition, it was understood that the existing body of research regarding workplace learning did not shed light on architects' CoPs. To address this gap of knowledge in the literature, this research sought to locate CoPs within architectural practice of the HA and subsequently developed an inductive qualitative inquiry of architects' individual learning experiences in the HA. The findings have given rise to the pertinent questions of how the architects learned as members of their CoPs and what their individual learning experiences were about. The purpose of this thesis is to examine the experience of participants in CoPs. Vibrant learning experiences emerged from the architects' CoPs enabled the attributes of the CoP domains (Wenger, 1998) to be presented through genuine reflections. Even though these CoPs did not have names and did not have any fixed venues, it was evident from the findings that there were numerous examples of individual HA architects coming together in configurations functioning under social practice (Lave & Wenger, 1991). These very facts of situated learning and

tacit design knowledge exchanges characterized the architects' particular CoPs. These will be elaborated upon in the following sub-section.

Nature of Architects' CoPs in HA

The findings suggest that the HA architects always identified themselves as members of business operating teams in their respective divisions/sections/units under the HA's hierarchical structure. Together with multi-disciplinary professionals responsible for monitoring the Project Development Processes (PDPs) of respective building projects, the architects participated in Project Teams (PTs) in the process of architectural design and project management for the production of public housing in HK. In the process, although they were qualified in the eye of the general public or under the law, they still saw themselves as continuously requiring learning in order to boost their competence in the workplace in areas with which they did not have relevant prior experiences. To address the need for certain skills and the sharing of specific up-coming knowledge they lacked, the need arose for multiple and varied CoPs relating to social practice in the HA. Some semi-structured workgroups were set up formally by the management with explorative objectives, thus gaining organisational recognition of the value (Lesser and Storch 2001); meanwhile CoPs, which emerged around, within formal structure or existed independently, were created informally by the architects themselves, and they used these to steward knowledge and shared information.

From such a framework, the knowledge stewarded in a constellations of the CoPs (Roberts, 2006, p 631) could be tested and applied in real situations in the PTs; on

the other hand, the knowledge applied in different types of PT in different units was able to feedback to a range of CoPs set up or developing different objectives. Such architects' CoPs frameworks were noted to be a very important part of the HA's social learning system, because they provided the opportunity for the formation of knowledge and skills in CoPs where architects of different backgrounds met, exchanged and learned. As such, the HA has been reified as a double-knit (McDermott, 1999) organisation consisting, on one hand, of business operation teams in the form of PTs established by division/section/unit structures for monitoring PDP and together with some semi-structured groups on the other hand, multiple CoPs (Wenger et al., 2002, p. 19), vested with different objectives which did not appear on the HA's "line and box" organisation chart.

This situation enabled the architects to participate in different social communities related to their practice, in which they negotiated (Wenger, 1998) their specific and individual meanings of architectural practice in terms of explicit knowledge about technical know-how and tacit knowledge of design (Eraut, 1994). The way tacit knowledge transferred was important to architectural practice when the system provided the chance for the architects to meet socially, to share different experiences of how a design problem was resolved or how a failure could be brought to light for reference, deliberation, and sharing in the social venue of the CoP. Based on different experiences of participation (Wenger, 1998) the architects, as members of the structural system as well as multiple CoPs, established their own individual learning trajectories (Wenger, 1998) through a nexus of multi-memberships, and constructed specific identities through the negotiation of "self" in different social entities. With constellations of CoPs working together with

the main organisational trunk of the division/section/unit, the architects were noted to be developing their own modes of belonging to communities, based on experiences accrued locally but with a global view.

There was an atmosphere of cooperation and mutual assistance within the HA, emerging from the sharing of knowledge about precedent cases and individual learning experiences; irrespective of whether or not the architects knew the colleagues to be asked. On some occasions, the “novice became the expert” (Fuller et al., 2005, p.64) and brought in new skills or knowledge when the case warranted. Learning was described as having a constant presence in the HA, despite the fact that the architects were generally long-established old-timers in their units. When faced with a practice-related problem, the old-timers of a CoP sometimes made themselves being “apprentice” by experiencing the peripheral (Handley, 2006, p.649) condition again in another CoP and asking for answers, because the CoPs were not “compartmentalized” (Handley, 2006, p.647) and social situation has been in “multiplicity” (Emirbayer, 1997, p. 308 cited by Kakavelakis and Edwards, 2011, p. 476). This finding suggest that the full process of legitimate peripheral participation (LPP) in the linear trajectory of “novice-competent-master” was not necessary (Hodkinson & Hodkinson, 2003, p.16) in architects’ situated learning. Rather, the learning process was noted to be an on-going journey of individual architects’ professional development processes - an interchanging role play process alongside their career lives and an active response to their experiences in social practice.

Obviously they knew their workplace problems could be taken care of by their fellow architects, as long as they could manage to participate in the embedded social learning system in the HA. This desire to create familiarity and a sense of membership (Wenger, 1998) thus facilitated mutual engagement in the CoP. Not only were the architects and their colleagues of the same organisation, they were also people of similar educational backgrounds for a “wider learning within a community” (Fuller et al., 2005, p.66). They were quick to express understanding and wanted to know about each other in the HA community of HA through numerous events, like attending seminars, visiting sites and participating in labour union activities. All in all, these expressions were important ingredient to the formation and maintenance of architects’ CoPs as a complex social learning system (Wenger, 2000).

The significance of a web of multi-memberships in CoPs offered enhancement as well as being a burden to the architects’ situated learning. In addition, because of their professional membership with the Hong Kong Institute of Architects (HKIA), outside the HA, this situation of multi-membership crossed the HA’s physical boundary (Roberts, 2006, p.631) and highlighted the importance for learning to be effective in the sharing of knowledge globally. Therefore, healthy architects’ CoPs needed to include extra-organisation as well as intra-organisation learning for it to provide quality content about professional practice and ensure a flow of discourse for knowledge transfer, in which individual architects of all experiential levels could thrive. Furthermore, this created room for the human dimension in design learning in the context of informal networks or communities (Abma, 2007).

Architects' Situated Learning in CoPs

As noted from the findings in Chapter 5, no HA architects had been aware of the CoP subject before this study, but they could point out attributes of CoP domains for the communities in which they participated. Their lack of awareness about CoPs is not surprising, given that there has never been a clearly articulated definition of an architects' CoP. In a sense, the architect's learning has been seen during this research as a ubiquitous process (Hodkinson & Hodkinson, 2003), often subconsciously undertaken in the normal working process. It was also evident in the practice that the architects claimed to belong to a variety of communities, which were generally shaped by personal engagement, imagination and alignment (Wenger, 1998, 2000).

The researcher traced the nature of the architects' situated learning by asking how a CoP could be reflective to contribute to these domains of CoP. In this connection, the research has characterised architect's engagements within the bounded environment of the HA's structural system. This chapter has also discussed the architects' imagination of relatedness in between their work obligations and their local and historical heritages, and has identified the architects' alignment with professional conduct and ethics. This was meant for creating a sense of belonging that for architects to expand their "identity" (O'Donnell & Tobbell, 2007, p.315 and 323) beyond their daily work in the HA and contributed towards "fuller participation" (O'Donnell & Tobbell, 2007, p.315) in multiple CoPs. This were done through a diverse fashion of "attainment in accomplishment of action on the world" (Edward 2005, p.59) by ways of participating activities both inside and outside the

HA. These configurations of architects' "belonging" reflected a broad range of resourcing across a wide continuum - from very structured teams to unstructured CoPs. Some relied on the HA's resources to a limited extent, and others consciously avoided using such resources. Yet, across these differing structures of architects' CoP, there were a number of clear underpinning issues. These will be discussed below.

Significant variations in the architectural design routine were grounded in the dispositions [and predispositions (Roberts, 2006, p.629)]; values and identities (Hodkinson & Hodkinson, 2003) of individual architects. The HA architects, on one hand, qualified under the law in terms of professional skill and the ability to practice in society; on the other, they were situated in varying stages of their personal career development in terms of competence and skill. The architects' CoPs provided an environment for healthy discourse by enabling individual modes of belonging that built up a unique identity of the HA architect in a social learning system. In return, the impact of the architects' professional development on the CoP concept was about enriching the environment through diverse perspectives and the specific nature of the social situativity of learning (Warhurst 2008) for architects. This research supports the idea that, when facilitating a professional learning community, it would be beneficial to encourage and facilitate participation through different modes of personal belonging, given that, in reality, individuals might have varying developmental backgrounds in terms of competence, trajectories or level of activity in participation.

When the specific domains of the architects' CoP were intertwined with the various modes of the participants' belonging, a unique texture of architect's situativity has been formed according to the very nature of different PDPs. Besides designing building in practice, this research found that, the architects were able to design a CoP compliant with their own lives to illuminate better architectural practice through learning. This could be done by expanding CoP dimensions to consider the rhythm (Wenger, 1998) of events specific to architectural practice. By establishing that architect's CoP as a social learning container, the issues identified in this and the preceding paragraphs could possibly answer the questions about how the CoP concept can be applied to the profession more effectively.

6.3 Significance of the Study in Contribution to Knowledge

The research questions asked, firstly, how the emergence of CoPs developed in the HA; secondly, the effect of the nature of architects' situated learning experience within these CoPs on their professional growth and, third, the impact of these issue for broadening our knowledge of the concept of CoP and how it can be applied to the architecture profession. While CoPs were identifiable entities in the HA, according to attributes defined by Wenger (1998), the interactions described in the data about the architects' situated learning experiences have provided a set of influential features to prompt the well-being and development of both the CoP itself and the architecture profession in the HA. As discussed above, McDermott's (1999) double-knit organisation and the notion of multi-membership described by Wenger et al. (2002) both failed to represent the vibrancy of the architects' workplace learning situation through participation in various CoPs. To reflect the

architects' situativity more vividly, the model of architects' attachments in the HA, first discussed in Chapter 4, has been revised [Figure 7] to reflect the real situation about underlining social interaction amongst structured teams, semi-structured workgroups and unstructured communities joining together to form a web in the HA. Instead of working in compartmentalised as "New-bies" or "Lunch-group", more than that, the web reified as a whole becoming HA architects' CoP which was working coherently in an interlocking way through the overlapping of memberships:

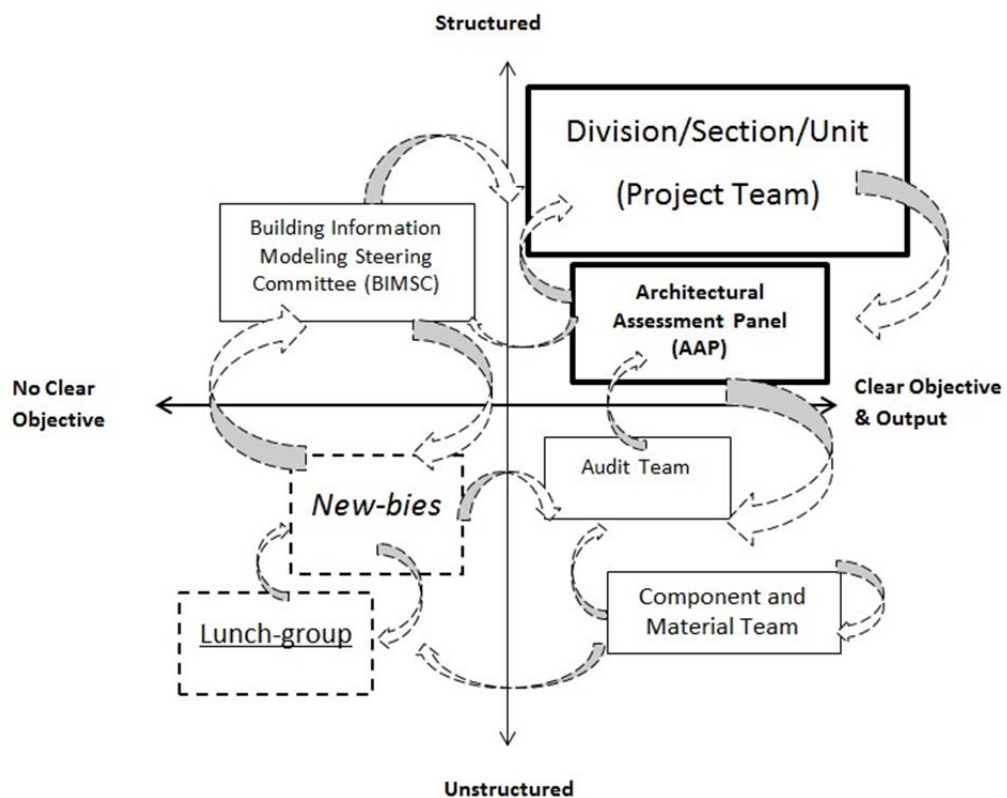


Figure 7: Web of Structured Teams, Semi-structured Groups and Unstructured Communities

These underlying linkages created by social interaction, were found making various communities to be “tangential and overlapping” (Lave & Wenger, 1991, p.98) in relation to each other. The web so formed became HA architects’ specific CoPs and which was important constituents of the HA’s social learning system, because they were interdependent from and supplementary to each other in supporting the diverse functions needed for the HA to cope with the ever-changing pace of the building industry. The interaction among CoPs, semi-structured workgroups and structured teams was prominent and facilitated by what Wenger (1998) defined as specific LPPs and boundary processes, in which architects were agents of knowledge and expertise irrespective of whether they viewed themselves as “novices”, “competent”; (or maybe as “masters” - not evidenced as far as this study is concerned). The spread and dissemination of the architects’ CoPs was found affected by their modes of belonging in participation and as well as the conflicts that arose due to “multiple identity and embedded power differentials” (Hong and O, 2009, p. 311 & 314-5) that originated from the ranking system under HA’s bureaucratic hierarchy.

The impact of the architects’ CoPs was on the way in which they enriched the organisational environment with diversity in perspective and the nature of the social situativity of learning (Warhurst 2008). It is important to note the subtle connection amongst the different teams, groups or communities. As well, the LPPs were adaptive but “not necessarily constructed in a positive manner by those experiencing them” (O’Donnell & Tobbell, 2007, p.318). They interlocked with each other under a “broader social context and micro-political factors of learning” (Hong and O, 2009, p.312), and even evolved through an overlapping of objectives,

resources, membership and leaders. It is reasonable to envisage that with the existence of many more link-ups between teams, workgroups and communities, the overlapping of memberships occurred and interactions would be more vigorous. The significance of recognizing architects' CoPs was about building bridges to fill the gap for different areas of skill sets and expert knowledge necessary for completing different aspects of requirement in the PDP, which cannot be achieved only by individual effort, semi-structured workgroups or structured teams.

Furthermore, when learning and participation in the CoPs shaped the participants' identity in society (Wenger, 1998), architects' identity from the research was noted to be attributable to their engagement with CoPs inside as well as outside the physical boundary of the HA. To zoom out from the context, another layer of engagement was realized. Engagement was reified through their taking part, as members of the professional institute of the HKIA, at technical seminars, annual conferences and site visits to fulfil CPD requirements. Similarly, it could be reified by being registered under HK law as Registered Architect (RA), bearing the lawful responsibility for signing off the Architect's Instruction on site as well as its literal meaning under the building contract, which indeed constitutes environmental consequences, safety and health consequences and social implications. Actually, these different forms of engagement, imagination and alignment had been a constant part of the architects' personal lives from the outset. In other words, regardless of whether they were redeployed from unit to unit, section, or division or even outside the HA, the architects were still thinking of their links with their institute and their perceptions of their status through belonging to all kinds of

CoPs. The significance of this was the maintenance of a fundamental, consistent belief about their obligation to achieve architectural design excellence and to be accountable for it throughout their careers. When the architects' CoPs matched Wenger's (1998, 2001) conception of engagement and imagination, the architects were noted to be in strong alignment amongst themselves with the values of the CoPs they belonged to and to be bounded by the relevant Code of Professional Conduct of the HKIA. With this further layer of belonging created through the porous nature of CoP boundaries (Roberts, 2006), the web model needed to be revised further to represent real situation of architect's CoP in the HA, as below Figure 8, taking into account architects' complex sense of belonging and the connectivity among CoPs, semi-structured groups and structured teams within the HA and the outside world:

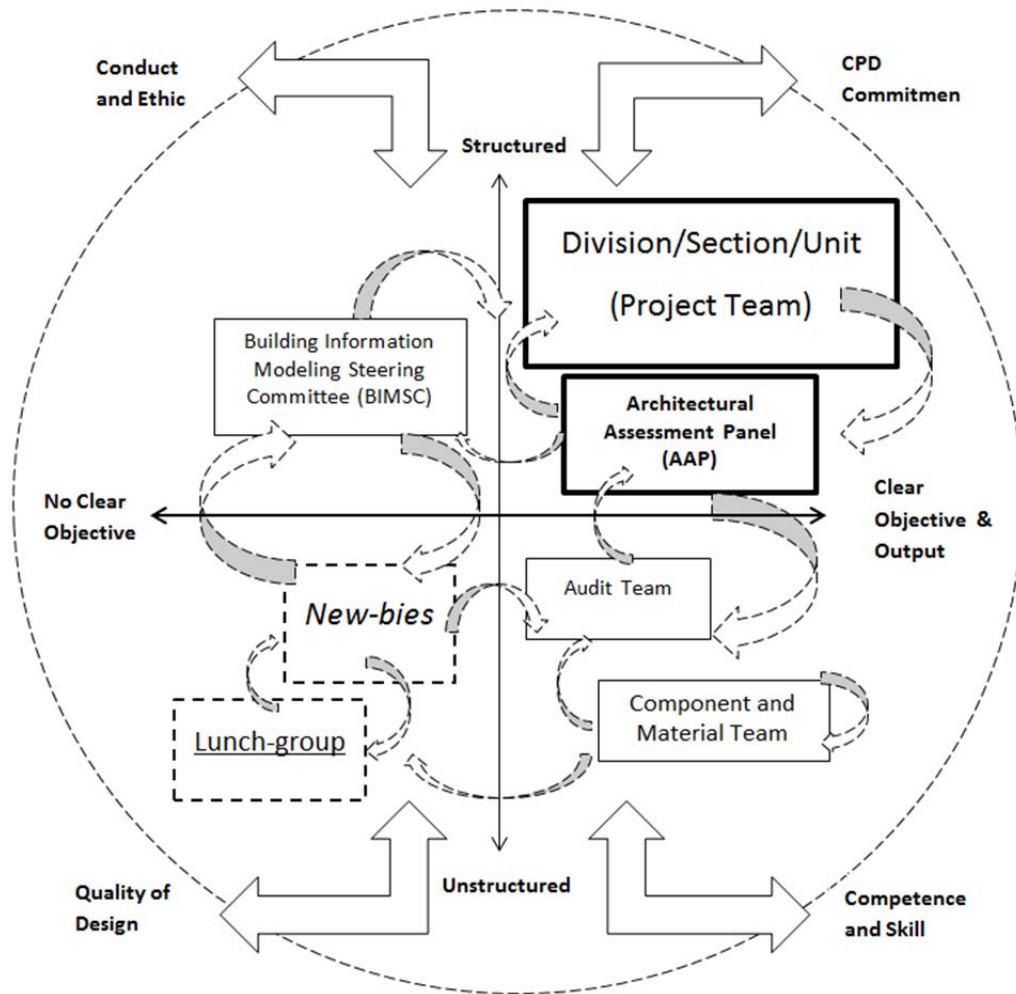


Figure 8: Model of Architects' CoP in the HA

In this latest version of the architects' CoPs model, workplace learning is no longer an unilateral frame, as described by Wenger (2002), of a double-knit organisation (McDermott 1999), whereby information exchanges of applied knowledge and stewarded knowledge between operational team and CoPs could only be made in linear to-and-thro situations. Rather, the architects' situated learning, besides fitting within a process of LPP and having various modes of belonging, is associated with multi-directional boundaries, with interaction taking place in formal teams, semi-structured workgroups and informal communities, within and

outside the HA. The significance of this concept of architects' CoPs was about the strength extended beyond the organisational boundary of the HA, with the HA architects' social practices in further alignment with mandates and institutes beyond the physical boundary of the HA, such as statutes, by-laws, codes, rules and guidelines required by the Laws of HK, HKIA and the global organisation, such as the International Union of Architects (L'Union Internationale des Architectes or UIA). In this case, their compliance with the rules and regulations of the Code of Professional Conduct represented the architects' views of their profession's global value.

6.4 Recommendations for Practice

The findings of this study support the concept of facilitating a professional learning community in the HA. It would be beneficial for the HA to encourage CoP formation and to facilitate architects' participation in these CoPs by recognising their specific modes of belonging to them. Bearing in mind that there is no on-size-fits-all solution (Gongla and Rizzuto 2001), this could be achieved by allocating adequate resources in terms of time and venues for CoPs' use and the articulation of policy to enhance or engender (Venters & Wood, 2007, p.350) CoP development free from the management's direct control or conflicts embedded in ranking.

To support the development of architects' CoPs, management can encourage alignments of changing practices between communities, thereby assisting the transfer of knowledge across the organisation. By so doing, the very strength of CoPs could be pronounced by attracting architect participants of varying competence levels, whether they consider themselves situated at the peripheral or

at the core level in their individual learning trajectories. In parallel with their experience of designing buildings, the architects were able to design CoPs that helped them to achieve better architectural practice through learning according to the rhythm (Wenger, 1998) of events specific to architectural practice:

- **Appropriate CoP Objectives**

CoP formation should be selective and should complement the objectives of business process in the PDP with regard to architectural design planning, project management and contract administration specific to HA. It is suggested that the management of CoPs could be centred around creating and promoting the right conditions, time and space rather than following directives from the senior management (Ardichvili et al., 2006) in the venue of structured committee. Cautions have also been raised about the effects of “compartmentalisation” of CoPs (Handley et al., 2006, p. 647). The need for organisational recognition of the value of CoPs (Lesser and Storch, 2001) and the necessity for CoP activity to contribute to career progression and professional development should be put on with much weighting. Semi-structured group set up by the management with objective of fault-finding, for example the team for auditing, should be reviewed.

- **Flexible CoPs Formation**

Too tight a structure for a CoP may likely hinder its function and reduce the flexibility for interaction across boundaries. Architects’ learning processes are stimulated through confrontation with diversity; meanwhile, “multiplicity is considered to be a source of innovation and dynamics” (Bodenrieder, 1998, cited

in Abma, 2007, p. 45). This suggests that authoritative control, like ranking, in an organisational hierarchy may exert bearing upon the blossoming of its CoPs, since the mode of LPP may “not necessarily be constructed in a positive manner” (O'Donnell and Tobbell 2007, p. 318). Therefore membership of CoPs should not always be bounded by office ranking, since it was noted from the findings that senior ranking staff leading design review may hamper CoPs' development and hence the vigour of the interactions within it. Opportunities should be given to individuals capable of leading based on interest and track record.

- **Connectivity**

The engagement and involvement of CoP members may be the most important factor that contributes to its success (Bishop et al., 2008b). While an open plan office layout, which in a sense resembles a studio setting (Schön, 1985), was noted to be physically conducive to connecting CoP members through face-to-face discussion and ad-hoc sketching, the office intranet could provide another layer for communication by making exchanges achievable at any time and in any space. Establishment of the right communication channels and regular interactions with CoPs to keep track of their activities and progress (Gongla and Rizzuto, 2001) can help to establish the right processes and environment to encourage a culture that acknowledges the CoP as a valuable resource (Bishop et al., 2008b). Therefore, the use of IT could be explored further for more user-friendly directions.

- **Transcending Boundaries**

For business organisations to leverage their knowledge capacities fully, they must seek to “harness CoPs that are both within and beyond their organisational boundaries”(Roberts 2006 p. 635). While the boundaries process was noted to be an important ingredient in the development and cultivation of the architects CoPs, it is suggested to enhance its action by promoting knowledge transfer both internally and externally with the lead of the HA management and that of the outside institutes, i.e. the HKIA and UIA.

6.5 Limitations of this Research and Suggestions for Further Research

Regardless of the insights that have emerged from this study, like all research, it had limitations. The main limitation reflects a general criticism of how early decisions in the analytic process can shape the direction of the analysis and the resulting theoretical model. The early, messy maps of the analysis reflected the numerous potential themes that emerged from the interviews; and the ensuing memos highlighted the various decision points that led this research in a particular direction. This research did not claim to be an all-inclusive or general illumination of members’ experiences in CoPs, and it was clearly bound by a specific time and context, reflecting only the views of the participants who agreed to share their experiences with the researcher. All in all, it was not the researcher’s intention to assert any claim to have captured the complete complexity of these phenomena discussed above.

There are numerous opportunities for further research to extend this study. The more the researcher probed into what was available to be found out, the more questions were raised and this led the researcher to identify more subjects and potential themes for future exploration. As an example, the researcher noticed a variety of comments that suggested many potential themes, such as differences in CoP membership based on age and the politicization of members due to office ranking. As the researcher continued to work with the data, through the constant comparative method, these potential themes became either submerged into other aspects of the analysis or were simply left behind. Inherent in this process was that many potential paths were left unexplored, and there is still more to be uncovered from a wider or deeper study. Some of these are described below:

- a) This study has focused on public sector architects within the organisational context of the HA, with particular learning phenomena being studied. It is suggested that further research could be conducted into private sector architectural organisations. This would strengthen the CoP concept and model of the architects' situated learning generated from this study and, uncover common themes and guidelines that may be applicable across sectors or architectural disciplines. Moreover, it would also be beneficial to practicing architect's learning if more thematic entities can be captured for a more holistic comparison and analysis.
- b) Similar studies are suggested for other public organisations, to explore the similarities or differences in members' experiences. Moreover, based on this suggestion, there would also be opportunities to explore, more thoroughly,

the possible relationship between and CoPs and knowledge-based organisations, and the implications of any such relationships.

- c) Further research could be conducted to consider developmental evolution within some particular CoPs in-depth. Looking in-depth and discretely at a range of identified CoPs could potentially identify differences as well as similarities in members' experiences, based on the natures and types of CoP. Likewise, a focus on a range of discrete CoPs could also be a means to identify consistent characteristics of successful CoPs. In this way, a study of individuals' experience within CoPs over a more prolonged period may be advisable.
- d) Previous studies about CoPs in the construction industry have tended to look specifically at the benefits derived by the organisation and tangible issues of knowledge transfer. There has been little focus on the benefits to individual members or how these individual benefits might be translated into more systemic benefits to the organisation. It is recommended that further research could be conducted to consider a particular CoP from inception to maturity. This could be done by relating the benefits derived from CoPs to individual members and to the host organisation.
- e) It would be meaningful to conduct research that considers CoP members' learning experiences in comparison to other forms of learning undertaken by non-members. Even though the participants in this study identified themselves as qualified architects, it was not clear whether it was their qualifications as architects or their membership of CoPs that enabled them to practice and discharge their duty, or if it was the other way around. There was

a variety of views expressed throughout the interviews. Equally important would be to investigate how personal aptitudes, including age, attitudes, and even politicization of members due to their office ranking, could affect their engagement with a CoP. Alongside this thinking, personal development, biases, personality, manner of collaboration and world views could influence an individual's participation in a CoP and inversely affect the potential individual growth through participation in CoPs; this is another possible focus for further research.

- f) Further research could be conducted on CoPs emerging in other building and construction professional groups. Comparisons of their learning experiences with the findings of this study would be meaningful, especially since their views would be based on another side of the same PDP and generated from the different role play in the industry.
- g) As noted above, there would be a great deal of potential to compare, contrast and align the researcher's understanding about CoPs with other fields of inquiry, such as adult learning, on-the-job training, group dynamics and organisational learning. It has yet to be explored whether these notions would be separate subjects in their own rights, or if the CoPs would offer the opportunity for further insights into these subjects to contribute more richly to the CoP concept proposed by Lave and Wenger (1991).

6.6 Concluding Remarks

The architecture profession has, to date, been left out of the academic literature about CoPs. This study has addressed this gap by testing the validity of a concept of CoP for architects in the workplace practice of HKHA. This has made a significant contribution to the CoP field of knowledge. In conclusion, it was evident from the study that the CoP framework offered an understanding of situated learning relating to the architecture profession. From this research, CoP has emerged as a framework for architects' knowledge about their process of professional learning; even though the specifics in sharing tacit aspects in architectural knowledge, the structures built upon the ranking organisational setting of the HA, the boundaries created by architects' multi-membership inside as well as outside the HA and the connectivity inherent in the profession's global value of accountability and obligation as embedded in architects' CoPs deviated to some extent from the original concept proposed by Lave and Wenger.

Can an architectural practice like the HA benefit from CoPs? Can architects benefit from being members of CoPs? With culture and common practice of architecture served as a type of binding agent or common reference point, the understanding contributed by this research about how CoPs develop and function needs to be enriched by further collaborated evidence of characteristic of particular CoPs. Clearly, there is much scope for further research on the subject of CoPs. From the findings of this study, the answer to these questions appears to be a complicated yes. As further research emerges, additional findings can add to this field of inquiry.

I hope that questions such as these pave the way for further, more specific research that can be conducted in the future.

APPENDICES

Appendix 1 – Aide-memoire of Questions for Semi-structured Interview

Part A: “Professional” related questions to identify attributes to define architecture profession [It also serves as a warm-up for setting the scene for subsequent questions]:

- (a) Besides architects, what types of occupation do you think are professionals?
- (b) How do you differentiate professionals from other types of occupation?
- (c) Why are these *attributes* so important for a professional?

Part B: “Knowing” questions for theorising about architect’s learning:

- (d) So, what attributes make you an architect?
- (e) How did you learn these attributes that you have mentioned [or what kinds of relationships have enabled you to know]?
- (f) What do you think of an assumption that learning these attributes [e.g. competence and personal experience (Wenger, 2000)] of being an architect constitutes the *knowing* that makes you architect?

Part C: “Participation” related questions for conceptualising the individual’s place within such participatory studies of workplace learning:

- (g) What do you think of your learning: whether it happened within yourself [cognitive and acquisition metaphor] or amongst other [situated and participation metaphor (Hodkinson & Hodkinson, 2003)]?
- (h) Apart from using your own brain/inner resources, do you think that your “knowing” as an architect also involves a “very complex social, cultural and historical system, which has accumulated learning over time” (Wenger, 2000)?
- (i) Then, how do you see knowing as an act of *participation* in complex “social learning systems”?

Part D: “Community of Practice (CoP)” related questions for establishing the constitutive elements of social learning systems:

- (j) Can you quote some examples of your recent learning?
- (k) How has your experience of your participation affected your practicing?
- (l) How do you see the existence of “CoPs” constituting your participation in such social learning systems?
- (m) How do you view and understand the concept that “CoPs are the basic building blocks of a social learning system because they are social ‘containers’ of the competences that make up such a system”?

Part E: “How Architects Learn through Communities of Practice (CoPs)” related questions for exploring i) what constitute HA architect’s CoPs and how being a member of a CoP affects work practice; ii) the nature of situational learning; and iii) the experience in taking part [*this echoes with the sequence of questions asked from Parts A to E and serves as a comprehensive review for answering the thesis question*]:

- (n) As important attributes for an architect, how did you learn and construct your “social competence” and “personal experiences” within your CoPs? [*Reflection on the view that “separation between the person learning and the context in which they learn is artificial” (Brown, Collins and Duguid 1989)*]
- (o) How do you see CoPs affecting your practice? [*It is not just that each person learns in a context; rather, each person is a reciprocal part of the context, and vice versa (Hodkinson & Hodkinson, 2003)*]
- (p) How do you view the concept that “CoPs define competence by combining three elements (Wenger, 1998): “joint enterprise” [*understanding of what their community is about and being accountable to each other – level of learning energy*]; “mutuality” [*interactions with one another, establishing norms and relationships – depth of social capital*]; and “repertoire” [*production of communal resources, such as language, routines, artifacts, tools, stories, styles, etc. – degree of self-awareness*]?]
- (q) How do you think “belonging” could impact upon how you learn in the CoPs under the respective considerations of “engagement [ways of doing thing together]”; “imagination [constructing an image of ourselves]”; and “alignment [making sure local activities are sufficiently aligned with other processes]” (Wenger, 2000)?

- (r) CoPs are born of learning, but they can also learn not to learn and it is useful to articulate some dimensions of progress. As such, how would you construe progress in CoPs?
- (s) What are elements of design that you can hope to influence in designing better CoPs for architects' practice?

Appendix 2 – Categories of Architects’ Learning in the Workplace Practice

What	Mode	Medium	Where	Who	When	How
a. Project-related (architects “self” initiated communities which are unstructured in membership with or without clear objective) – Engagement Driven						
I. To resolve design problem because of experiences of certain circumstances encountered (e.g. how to design a residential care home for the elderly). Or one has basic experience of a design, but it is just a situation change that triggers one to seek advice (e.g. toilet design needing modification to cater for use by the elderly).	<ul style="list-style-type: none"> - Telephone call - Email - Face-to- face - Chit-chat - Ad-hoc small group discussion - Reading design guide - Searching the internet - “Whatsapp” sharing group 	<ul style="list-style-type: none"> - Conversation - Sketch and diagram - Textual guidance from manual - Computer drawing -Photo of similar case for reference 	<ul style="list-style-type: none"> -Question-er’s workstation or cubicle - Answerer’s workstation or cubicle -Restaurant during lunch - Coffee time inside pantry - At lift lobby - Meet in the corridor - In washroom - Intranet source - On smartphone 	<ul style="list-style-type: none"> - Colleagues (architect familiar with, but not necessarily belonging to the same unit) - Colleague referred by closer colleague -Immediate supervisor, if problem unresolved 	<ul style="list-style-type: none"> - As and when problem arise - Recalling a subject from memory, e.g. during lunch time or bumping into each other in lift lobby 	<ul style="list-style-type: none"> - Explaining to colleague architect the background of the problem and seeking reference from precedent building projects completed - if not having known each other before, questioner, with a brief introduction of his/her unit, may visit the workstation or introductory email from another colleague - Depends very much on how well the materials are

What	Mode	Medium	Where	Who	When	How
						documented; and one's social competence -Architect to materials -Architect to architect or other professional
II. Problem solution arises from the need to align input from different stakeholder professionals [e.g. whether an emergency vehicle access road could be accommo- dated on the ground floor of a building complex full of big columns, but at the same time the structures are needed to support the loading of the	- Informal self-organised technical meeting - Complex problem to be resolved at regular design coordination meeting [e.g. Project Design Review Committee "PDRC" or Building Committee "BC"]	- Discussion with the aid of a drawing, e.g. plan; elevation; section; perspective; scaled model; computer simulation; 3D modelling; or animation	- Architect's office - Engineer's office - Formal meeting in conference room	- Project Team members of a multi- disciplinary team of professionals, which include town planner, engineers, surveyors and contractor (if site meeting) - Other government official, when the problem involves design issue under the control of regime of other department,	- On regular basis when it is project related - When required in the course of design development for a building project	-Learn to align board principle by use of meeting, but deep down problem still needs to be followed up with break-up into small discussion group or on-going liaison -Speed of resolving problems depend on experience and competence of the team members

What	Mode	Medium	Where	Who	When	How
soil above for the planters]				such as Fire Services Department, to look after design of emergency vehicle access		-Architect may need to explain the problem to person without background in architectural training
III. To inspect whether materials used on site are in compliance with specifications (e.g. to check whether the steel railing is made of the expected grade of stainless steel)	<ul style="list-style-type: none"> - Site walk - Material submission for inspection - Deploying material sample to undergo test 	<ul style="list-style-type: none"> - Naked eye inspection of colours - Hold with the hand to weigh the difference - Touch with fingers to feel the texture and profile - Hear with ears by knocking on the materials to sense the sounds 	<ul style="list-style-type: none"> - Spot check - Check under a ratio as required under manual 	<ul style="list-style-type: none"> - Contractor's representative on site - Resident site staff -Professionals of related discipline - Supplier of certain material [acrylic paint]; component [metal gate-set; and proprietary product [drawing rack for laundry] 	<ul style="list-style-type: none"> -Regular basis -Sometimes ad-hoc and perform as surprise checking 	<ul style="list-style-type: none"> - To stay alert to related incident, e.g. latest safety issue with worker injury -To select what materials to be checked depend on latest information and one's experience of areas susceptible to corner-cutting by contractor -Architect to contractor or site staff
<p>b. Project-related (management initiated groups which are structured or semi-structured in membership with clear objectives; as opposed to architects "self" initiated, which are unstructured) – Alignment Driven</p>						

What	Mode	Medium	Where	Who	When	How
IV. To seek endorsement from supervisory officer [usually senior rank] for idea or design development	- "Crit" [jargon for critique in HA] Session for Architectural Accession Panel (AAP).	- PowerPoint presentation - Conversation and discussion - Sketch and diagram - Laptop computer	- Conference room - Office of the supervisory officer, like senior or chief architect - Sometimes at architect's workstation when the supervisory officer is more eager to know the status or progress of work	- Senior rank architects - Colleague from other unit - Colleague from other division who is not architect, namely, housing manager or maintenance surveyor, etc.	- As and when required in the architectural design development - Depend upon style of immediate supervisory officer and attitude of senior management - To conform with HA guideline	- To learn from more competent colleague experienced in the field or specializing in a particular subject - Use of proper medium is vital to convey design idea; sometimes, layman terms are used for ease of communication - Use of proper language is important to point out problem and pin down solution
c. Non-project-related (management initiated which are semi-structured in membership with clear objectives) – Alignment Driven						
V. To ascertain whether both the design and work carried out on site are	- Regular audit in accordance with the frequency laid	- Record of file; memo; letter; log-sheet; data proforma; and various kinds	- Architect's workstation - Office of auditor	- Personnel from the audit unit - Immediate	- At strategic stage of the Project Development Process	- To learn from discrepancy in comparison with HA design standard

What	Mode	Medium	Where	Who	When	How
in accordance with the HA standard	down in the guideline. - statutory submission for checking of compliance of relevant regulations and ordinances	of form - checklist - Question and answer for verification	- Office of independent checking unit	supervisory officer	(PDP), e.g. to check whether all kinds of drawings are included after issue of a set of tender drawings; or to compare work done on site are in compliance with quality standard after completion of a building project	drawing - To find out non-complying items picked up from audit check to align with procedures in usual practice - To learn from sharing of audit finding to avoid repeated problem and ensure consistency
d. Career-related (architect “self” or institute initiated which are unstructured in membership but with clear objectives) – Imagination Driven						
VI. To learn new practices, for example, knowing about application of new material; update on legislation; statutory requirement update; and procedural review in	- Seminar - Conference - Workshop - Taskforce	- Verbal Presentation with the aid of “PowerPoint” - Demonstration - Slide show with description - Factory visit	- HA’s lecture theatre in the Head-quarters - Lecture room of the vendor or organiser of the event - Rented venue, such	- Colleague of HA or architect in private sector to share experience or to introduce new procedure by way of seminar - Supplier of building material or	- Every now and then, CPD [continuing professional development] courses will be organised by the training unit of HA	- To attend seminar for learning from experienced architects both inside and outside HA. - To participate in hands-on demonstration so as to keep track with

What	Mode	Medium	Where	Who	When	How
workflow of HA		to know the manufacturing process	as hotel ball room, local professional institutes premises and lecture room in university	component to present their new technology by bringing photos, drawing and material sample to demonstrate uses.	- Regular CPD course and visit will be held by the Hong Kong Institute of Architects (HKIA)	market trend in the use of materials
VII. To learn from latest example of completed building; local design event or festival, e.g. Venice Biennale Hong Kong Exhibition organised by the HKIA	- Visit to exemplar or award winning building - Construction site visit	- Sharing by means of presentation by the architect involved in the building project	- Building just finished and granted occupation permit by the authority but before handover to user - Active building construction site with specific part or the stage of work of interest	- HA colleague architect who just has their project completed - Foreign architect who visits HK and is introduced by the HKIA	- 5 to 10 times each year since there is around the same number of projects completed each year, providing on average 15,000 flats - when project wins design competition [e.g. special design for a very long span structure]	- To attend self-organized visit by different HA units or architects' labour association - Sharing of area of interest, which includes design details; additional time involved and even the cost breakdown - To keep an open eye to what is going on in the

What	Mode	Medium	Where	Who	When	How
					- Different events held by HKIA every season	community of architects in HA and that of the private sector or the HKIA

Appendix 3 – Ethical Approval

To: **YIP Shing-lam, Sherman**

Subject: Ethical Application Ref: **slsy1-8e6e**
(Please quote this ref on all correspondence)

13/07/2010 08:23:43

Labour Market Studies

Project Title: **Architecture as Art and Profession: the Construction of Professional Identity for Architects in the Hong Kong**

Thank you for submitting your application which has been considered.

This study has been given ethical approval, subject to any conditions quoted in the attached notes.

Any significant departure from the programme of research as outlined in the application for research ethics approval (such as changes in methodological approach, large delays in commencement of research, additional forms of data collection or major expansions in sample size) must be reported to your Departmental Research Ethics Officer.

Approval is given on the understanding that the University Research Ethics Code of Practice and other research ethics guidelines and protocols will be compiled with

- <http://www2.le.ac.uk/institution/committees/research-ethics/code-of-practice>
- <http://www.le.ac.uk/safety/>

The following is a record of correspondence notes from your application **slsy1-8e6e**. Please ensure that any proviso notes have been adhered to:-

--- END OF NOTES ---

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