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# The Use Of Storytelling As Transfer Of Knowledge

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Ph.D

The Hong Kong Polytechnic University

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The Hong Kong Polytechnic University  
Department of Building and Real Estate

# The Use Of Storytelling As Transfer Of Knowledge

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A thesis submitted in partial fulfilment of  
the requirements for the degree of  
Doctor of Philosophy

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Jodith K.L. Leung



## **Abstract**

Storytelling is a knowledge management approach that facilitates knowledge transfer. Few studies of knowledge transfer and storytelling examine stories and the knowledge these stories carry. To fill this research gap, the first aim of the current study – to develop a paradigm that reveals the knowledge carried by stories through a systemic analysis of their content – is established. As the recipient of knowledge, the story receiver is also a stakeholder in the storytelling process. However, the examination of the knowledge gained by story receivers as an approach to understanding knowledge transfer has been neglected by studies of storytelling. In this regard, the second aim of this study – to examine the holistic flow of storytelling, including the deliver and receiver sides, to discover means of using storytelling as an approach to knowledge transfer in organisations – is arrived at based on this gap. Both aims can facilitate the empirical discovery of the uses of stories and storytelling that contribute to organisations.

The empirical implementation of this study is divided into two phases to respond to the research aims. To achieve the first aim, a modified narrative analysis is proposed and applied in Phase 1 empirical component. This modified narrative analysis uses a qualitative deductive approach to systematically examine the knowledge carried by stories. Narrative theory and story schema theory are adopted as the bases for coding themes. Twenty-three stories were collected from seven semi-structured interviews, six of which were selected for analysis according to certain criteria. The interviewees are management staff of construction projects; thus, the six stories used present a rich context related to construction management issues. Managing activities in projects is similar to managing temporary organisations. The findings of this phase are significant to managerial issues in organisations. To achieve the second aim, cognitive mapping is used as a medium in the Phase 2 to qualitatively study the knowledge gained by individuals after they listen to collected stories. Cognitive maps were collected from members of construction project teams in story-listening workshops.

Phase 1 finds that the knowledge carried by stories is conceptual and contextual in nature and corresponds to the literacy context and significant causalities. Phase 2 offers two findings on the collected cognitive maps: First, individuals want to

understand stories in schematic and characterised patterns. Second, individuals can gain knowledge about experiences, the story context, the cognition of the storytellers, and story reflections.

The conceptual and contextual knowledge revealed from story content provides new dimensions and methods for investigating story knowledge. This finding provides promising recommendations for treating conceptual and contextual knowledge as organisational knowledge assets. The effective elicitation of contextual knowledge resolves the theoretical issue of the stickiness of narrative knowledge. On the other hand, the effective elicitation of conceptual knowledge suggests that an enriched literary context of a story is essential for knowledge transfer. The findings from phases 1 and 2 complete a holistic study of storytelling as a knowledge transfer approach that includes both delivery and receive sides. These findings also confirm that stories and storytelling have significant impacts to knowledge creation context.

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# **Chapter 1**

## **Research Statement**

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# 1. Research Statement

## 1.1. Introduction

Numerous studies on stories and storytelling have been conducted across a wide range of disciplines. Linguistics-related studies, such as those by Chatman (1978), Coste (1989), Prince (2003), Jahn (2005), Bal (1997), and Altman (2008), attempted to reveal the structures of stories and their means of expressions. These studies investigated how effective narratives can be constructed by capturing the distinctive features of a narrative from its structure. Storytelling is also employed as a teaching technique in education to facilitate effective learning. For example, Levit (2009) and Sochacki (2010) used storytelling to teach professional skills to law and nursing students. In organisation studies, scholars such as Czarniawska (1998), Gabriel (1991a, 1991b, 2000), and Boje (1991, 2008) have advocated the use of storytelling in organisations to achieve various business and management objectives. Knowledge management is a management discipline that adopts storytelling as an approach toward knowledge management processes, such as knowledge transfer, because stories are regarded as a mode of knowledge (Snowden, 2005; Geisler & Wickramasinghe, 2009), and storytelling is regarded as an approach to utilise this mode of knowledge under different aspects. The present study follows this trend in knowledge management and focuses on storytelling as an approach to facilitate knowledge transfer. The aims of this research are discussed and listed below. The rest of this chapter provides a comprehensive picture of this study to explain how it intends to achieve these aims.

### ***Purpose Statement:***

*This research proposes to discover the effective use of storytelling which contributes to organisations by understanding the storytelling process in terms of knowledge transfer which leads to knowledge creation.*

## 1.2. Background and Rationale

Stories and storytelling are used as knowledge management practices considering that knowledge is carried and transferred by stories, as well as the functions and implications of the storytelling process. In their case studies, Boje (1991), Gabriel (1991), Landrum (2000), and Meyer (2004) analysed organisational stories that attempt to reveal culture, facts, changes, and knowledge. Based on his experience in the World Bank, Denning (2001, 2004) proposed that a springboard, that is, a frame for organisational storytelling, functions by eliciting changes in organisations and revealing the underlying ideas to initiate members into these changes. Humphreys and Brown (2002), and Brown (2006) investigated the effects of narratives on organisational identities. These studies implied that stories carry knowledge with various natures that inform and influence both individuals and organisations. However, these scholars concentrated on one or a few particular issues revealed by stories at the organisational level, such as changes or culture. Caussanel and Soulier (2005) conducted a study to acquire knowledge from stories, but developed a model from an engineering perspective to improve a decision based analysis, and thus, did not show the effects of the original acquired knowledge from stories. Therefore, the literature lacks a holistic picture of knowledge carried by stories. Such a picture can help explore the use of storytelling in organisations. The first aim of the present study is thus established.

### ***Aim 1:***

*This study aims to develop a paradigm to reveal knowledge carried by stories in terms of their content through systematic analysis.*

The storytelling process is similar to the communication process. It entails a storyteller, story content, and an audience. Studies related to both storytelling and knowledge management, such as those by Humphreys and Brown (2002) and Meyer (2004), focused on story content and its implications on particular issues. Several studies, such as those by Denning (2004, 2005), focused on issues of storytellers, as well as on the effects of stories and storytelling, that is, the deliverer side, on leadership issues. However, the knowledge gained by story listeners and its effects on them, that is, the receiver side, has been neglected in the literature, thus leading to another gap in investigating the holistic flow of storytelling as a knowledge transfer approach. Understanding the knowledge gained by story receivers is potential to

direct the considerations of storytelling implementation. The second aim of this research is then arrived based on this gap.

**Aim 2:**

*This study aims to examine the holistic flow of storytelling, including the deliverer and receiver sides, to discover means of using storytelling as a knowledge transfer approach in organisations.*

## **1.3. Conceptual Framework**

This study proposes to investigate storytelling as a knowledge transfer approach. In fact, the processes of knowledge transfer and storytelling share common notions and they are interconnected. The brief definitions of these two processes and their connections adopted by the present study will be provided below. These definitions offer a foundation for understanding the conceptual framework of this study and act as effective communication with readers in this early stage.

### **Knowledge Transfer**

Knowledge transfer has been defined as the conveyance of knowledge from one place, person, or ownership to another (Liyanage et al., 2009; Wilkesmann, Fischer & Wilkesmann, 2009). This implies that knowledge transfer entails three elements: original place or person, knowledge, and received place or person. For an effective knowledge transfer, receivers must develop the received information into context of his/her knowledge. That is, new knowledge is consequently created after an effective knowledge transfer process (Liyanage et al., 2009; Szulanski, 1996, 2000; Wilkesmann, Fischer & Wilkesmann, 2009).

### **Storytelling**

A teller and an audience are necessary to activate a storytelling process (Koorey, 1996). A story is a form of message formulated by a storyteller when storytelling is regarded as a kind of communication. Thus, storytelling process entails three elements of storyteller, story and story receiver.

## **Bridging up Knowledge Transfer and Storytelling**

As knowledge transfer and storytelling carry similar features presented before, the elements of storytelling can be aligned with knowledge transfer elements as the following. First, storytelling is regarded as the origin of story that initiates the knowledge transfer process. Second, story is the content of knowledge transfer in which knowledge is embedded in story content. Third, story receiver is a potential agent of knowledge creation based on his/her context through storytelling. By adopting the aim of knowledge transfer to create new knowledge, storytelling is determined as a knowledge transfer approach which leads to knowledge creation.

As knowledge transfer leads to knowledge creation, that is, the goal of knowledge transfer is to create knowledge. Stories and storytelling can influence learning and cognitive processes that facilitate knowledge creation among individuals. The conceptual framework of this study, which is illustrated in Figure 1.1, delineates the roles of stories and storytelling in the knowledge transfer process under a linear flow. In this study, knowledge transfer encompasses the processes of knowledge sharing, learning, and creation, which will be discussed in details in Chapter 3. This conceptual framework enhances the linear processes among stories, storytelling, and individuals to address the research questions. Stories and storytelling function directly on knowledge sharing and learning processes that influence individuals. Knowledge creation of individuals is thus triggered by such influence. Learning and knowledge creation of individuals are triggered and affected by the cognitive processes, such as sensemaking and knowledge structure. In creating knowledge, individuals externalise their knowledge through practices that affect the innovation and performance of an organisation.

According to these beliefs, knowledge transfer resembles a system that consists of input, process and output. The conceptual framework also illustrates that stories function as knowledge input, individuals process such knowledge and create new knowledge as output.

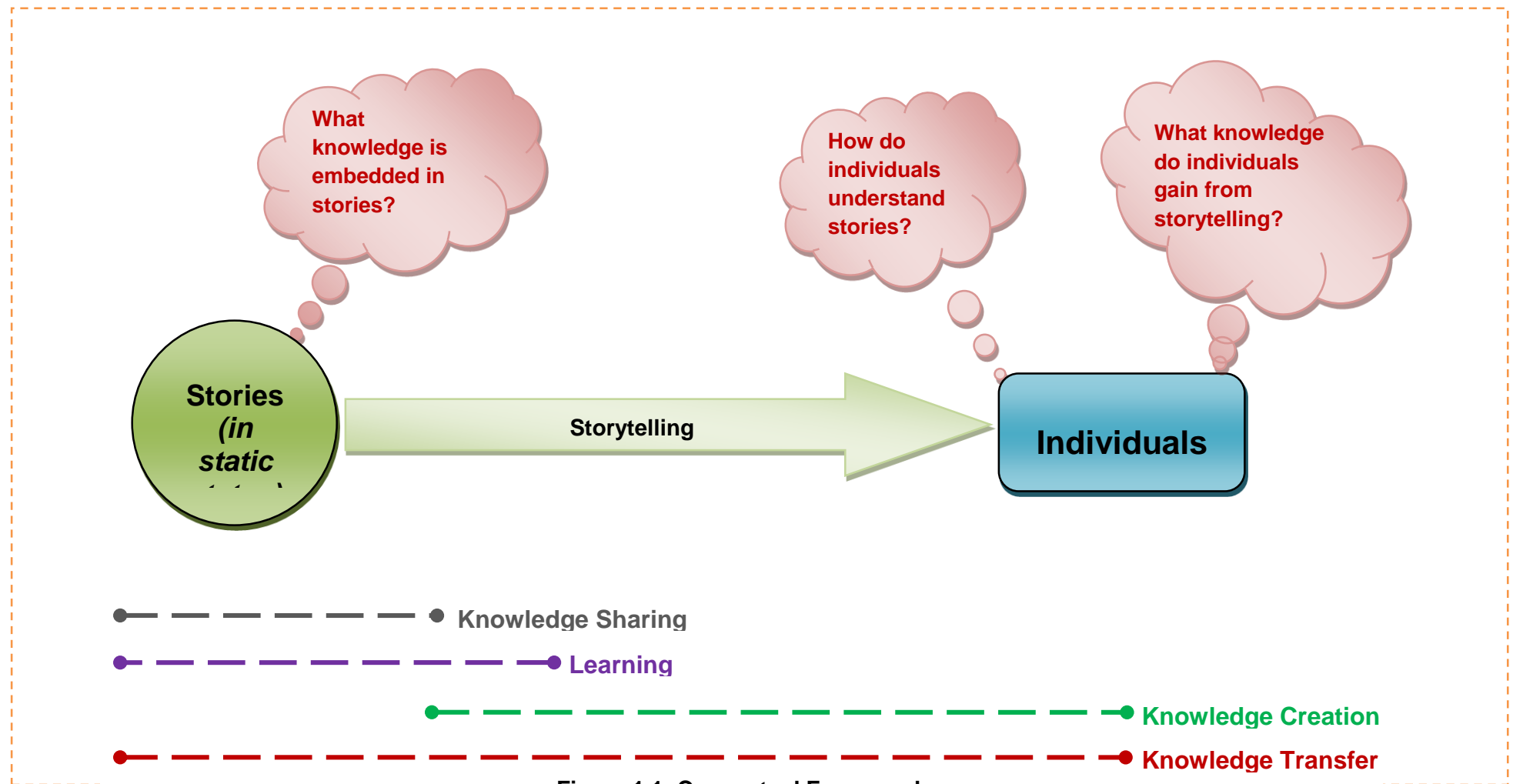


Figure 1.1: Conceptual Framework



## 1.4. Research Questions

To achieve the aims of this study, the research questions are constructed based on the research gaps and the aforementioned conceptual framework. Given that the purpose of this research is to discover the applications of storytelling, the impacts of storytelling should also be addressed. By applying the goal of knowledge transfer to the aim of this study, the main research question is revised as follows.

### ***Main Research Question:***

*How do stories and storytelling affect individual knowledge creation in terms of organisational practices?*

This study investigates the entire process of knowledge transfer. Therefore, stories, individuals, and newly gained knowledge are the foci of this investigation. Consequently, three sub-questions that correspond to these stages of knowledge transfer are constructed. These questions and their objectives are listed below. Figure 1.1 also shows the positions of the three questions within the conceptual framework.

### ***Sub-questions:***

1) What knowledge is embedded in stories?

#### ● Objective:

- To reveal and identify knowledge carried by stories

2) How do individuals understand stories?

#### ● Objective:

- To examine the structure of obtained knowledge in the minds of individuals

3) What knowledge do individuals gain through storytelling?

#### ● Objectives:

- To examine knowledge gained by individuals from stories
- To identify knowledge creation output of individuals in terms of knowledge assets and cognitive changes

## **1.5. Organisation of Thesis**

This chapter provides a comprehensive framework of this study, including its research gaps, beliefs, assumptions, research purpose, and research questions. Justifications for these issues are also provided. The details of each concept are stated in the rest of this thesis. Chapters 2 and 3 review the existing literature on stories and storytelling, as well as on knowledge management and transfer, respectively. Chapter 4 discusses the research methodology in detail – from the positivist and interpretivist research paradigms to the applied data collection and analytical techniques. Chapters 5 and 6 systematically present the data analysis of the two phases of empirical investigation and their findings. Chapter 7 offers discussions on theoretical and methodological implications of this study by relating the reviewed theories with the findings of this study. Chapter 8 provides managerial and practical recommendations based on the theoretical and methodological implications. Chapter 8 would also conclusion the whole thesis by revisiting the purpose statement and aims of the study.

## **Chapter 2**

# **Story and Storytelling**

---

## **2. Story and Storytelling**

### **2.1. Introduction**

Storytelling is considered as a fundamental means in which humans communicate with one another, whether stories are in the form of folklores, myths, or war stories. Storytelling has been a common practice among humans, providing a means to connect people, share knowledge about the world, create reality, remember the past, and envision the future (Sunwolf & Frey, 2001). Therefore, storytelling can also be regarded as a useful strategy to share knowledge. Stories work because they are memorable, economical, entertaining, and centre on people; they also encourage creativity, help handle emotions, help make sense of puzzling situations, and coevolve with culture (Allan, Fairtlough & Heinzen, 2002). Storytelling is prominently adopted in management and organisational practices to achieve specific objectives, such as developing the identity of an organisation or a leader (McCarthy, 2008), as well as transferring and preserving knowledge (Thier & Erlach, 2005). How can stories provide these features? This chapter explores the reason behind the contribution of stories to the aforementioned roles and their functions in individuals and organisations. First, this chapter investigates what a story is by exploring the literature on story structure from the fields of narratology and narrative psychology. Narratology stipulates a configuration for a well-structured story from a literary perspective. Meanwhile, the literature on story structure from the field of narrative psychology is discussed to understand the impacts of story structure on human knowledge. After drawing insights from these theories, we discuss the relationship between narrative and knowledge to obtain a deeper understanding on the position of a story as a type of knowledge. These theories and insights form the foundation for analysing knowledge from stories in the present study. Second, the nature of storytelling, its relationship with a story, and its functions in the management field are discussed. A clear picture of the aforementioned issues strengthens the theoretical framework of this research in the following chapter.

## **2.2. What a Story Is**

Using stories is deeply embedded into our daily lives in terms of memory, communication, and knowledge transfer. As such, ambiguities in what constitutes a story arise, and serve as gaps between daily life practice and academic research. A considerable number of studies have determined the structure of a story. Some of these studies are discussed in this chapter.

A story, similar to a fable, typically has a comprehensive structure. By contrast, Boje (2008) stated that stories told in organisations mostly have a non-comprehensive structure, that is, they are told in fragments. Boje (2008) defined this type of organisational story as a fragmented retrospective narrative, or telling fragments that are terse, interrupted, non-linear, moving, and rearranging. Most stories told informally during conversations are fragments; however, such stories are only one form of organisational stories. In fact, organisational stories can exist either as a complete story with plots, sequences, and one or more protagonists, or simply in fragments (Thier & Erlach, 2005). The present research focuses on comprehensive structured stories because such stories have the impacts of a fragmented retrospective narrative. In addition, studying comprehensive structured stories can reveal and demonstrate the effects of stories and storytelling concretely. The following section examines the literature on story structure from the perspectives of narratology and narrative psychology. These theories form the foundation for analysing knowledge from stories in the present study.

### **2.2.1. Narratology Perspective**

Narrative theory, also called narratology, is concerned with the structure of a narrative and seeks to understand how recurrent elements, themes, and patterns yield a set of universal features that determine the makeup of a story (Pradl, 1984). Nearly all theories of a narrative in this approach distinguish between a story and a discourse as what is narrated and how it is narrated, respectively (Chatman, 1978; Jahn, 2005). A narrative is placed under a broader sense than a story and a discourse, and is defined as anything that tells or recounts a story (Jahn, 2005; Denning, 2009). In contrast, story and discourse are positioned in narrower sense. A story is defined as a sequence of events that involves characters (Jahn, 2005) and their actions, that is, the content, whereas a discourse is defined as the expression or means by which the contents are communicated (Chatman, 1978). A story and a

discourse are two vital elements in the basic structure of a narrative, in which the former is regarded as the content plane and the latter is considered as the expression plane (Chatman, 1978; Prince, 2003). According to these definitions, a narrative cannot function without a story and storytelling can be considered as a narrative, whereas a narrative performs the functions of a story when it is presented. Altman (2008) emphasised that studying the construction of a narrative and analysing it should realise narrative elements. Although Altman did not distinguish between a story and a discourse in his work, the distinction between the content and the expression of a narrative is obvious. Thus, the present research adopts the term “story” to present the content of a narrative, the term “storytelling” to indicate the expression of a story, and the term “narrative” to represent storytelling and story as a whole.

#### **2.2.1.1. Formation of Plots and Contexts**

The structure of a story is illustrated in Figure 2.1. A story has two main kinds of elements, namely, event-elements and existent-elements; these elements are the fundamental constituents of a story (Chatman, 1978; Prince, 2003). A discourse is about expression. The present study focuses on stories. First, an event-element can appear in two different patterns: action (act) or happening (Chatman, 1978). According to Chatman (1978), the dimension of the events in a story is time-oriented, which he referred to as story-time. An event in a story can be identified by comparing the two states of a single entity that are separate in time and that differ from each other by at least one feature aside from their temporal situation (Coste, 1989). A temporal sequence and changes in state are necessary in a story to form an event. The basic form of a narrative includes an original state of affairs, an action or an event, and the consequent state of affairs (Czarniawska, 1998). This basic form demonstrates the temporal nature of a story. The events of a story are interconnected by their sequence, contingency, and causality to organise plots. Second, an existent-element can also appear in different patterns, either through a character or a setting, and the dimension of existents in a story is space-oriented, which is referred to as the story-space (Chatman, 1978). The context of a story can be developed through the features of existents and the interconnection among existents within a story-space. The development of story competence is based on three dimensions: the content of the stories, the application of patterns in plot structures, and the use of causal structures (Kemper, 1984). In this sense, the competence of a story to influence individuals is based on the plot and the context of the story.

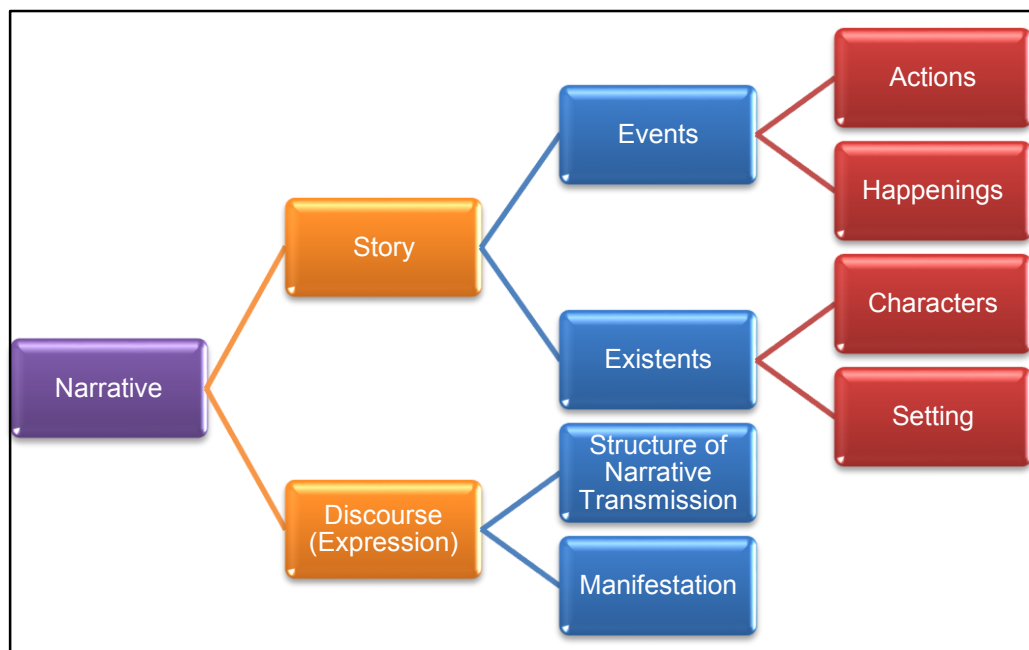


Figure 2.1: The Elements of a Narrative (adopted from Chatman, 1978, p. 19)

### 2.2.2. The Two Layers of Narrative

The content and expression of a story are the highest levels of elements in a structure. Bal (1997, 2009) introduced a model of a narrative structure that contains text, story, and fabula layers. The nature of the sub-elements of each layer is similar to those of the sub-elements in Chatman's model. First, the text-layer described by Bal (1997, 2009) is concerned with revealing the expression plan of a narrative, which is similar to Chatman's element of discourse in terms of form and context. Second, the story-layer of Bal's model (1997, 2009) refers to the content of the narrative text, which exhibits a particular manifestation, inflection, and colouring of a fabula. This layer connects to a discourse through a narrative voice and the point of view of a story. Third, the fabula layer of Bal's model (1997, 2009) explores the material or content that is worked into a story and focuses on events, the actors in an event, and the time and location of a narrative. The role of the fabula layer is similar to Chatman's point of view of a story, namely, the content. Bal's and Chatman's models of a narrative can be regarded as classical models that aim to capture the distinctive features of a narrative from its structure. In addition to these classical narratology models, Herman (2009) proposed a post-classical model of a narrative structure, called a prototypical narrative, which considers the narrative structure, as well as the purpose, function, and role of the narrative in a particular context for targeted recipients. A prototypical narrative aims to develop an account of what a story is, and differentiates between storytelling and other modes of representation.

Herman (2009) claimed that a prototypical narrative builds on classical models and is supplemented with theories concerned with human thinking and communication through language, such as philosophy of language and cognitive science. In this model, a narrative has four fundamental constituents: situatedness, event sequencing, worldmaking/world disruption, and what it is like. The first two constituents of Herman's model follow classical narrative models to examine the structure of a narrative in terms of a discourse and a story. By contrast, the last two constituents consider the narrative functions of human beings.

Theories in narrative analysis involve two layers of analysis: the content of the story world and the circumstance of a story being told in the real world. In common terms, these two layers of knowledge are the "told" story and the "telling" of a story, respectively. The former is associated with the explicit content of a story, whereas the latter relates to the meaning behind the content and the scope of the story being told. In particular, "told" refers to the content of a story, that is, "what is said" of a story (Lewis-Beck, Bryman & Liao, 2004). Investigating "told" through narrative analysis involves analysing the story content and the literary context. This process corresponds to the concepts of a story from the narratology perspective, namely, what is narrated. Mishler (1995, p. 90) referred to "told" as the idea of "connected succession." This approach directs the focus of analysis toward the temporal order of events in a narrative account. The "told" of a narrative includes the knowledge obtained by individuals from their experience. By contrast, investigating "telling" through narrative analysis involves analysing how a story is told and its underlying meaning. This process corresponds to the concept of a discourse, namely, how it is narrated, and the narrative functions of humans in the narratology perspective. Mishler (1995, p. 90) referred to "telling" as the concept of "actual succession of happenings." This approach directs the focus of analysis toward textual representation. The "telling" of a narrative includes the knowledge of storytellers and their purposes in telling particular stories.

In summary, the narrative structure models introduced by Chatman (1978), Bal (1997, 2009), and Herman (2009), as well as the foci of a narrative analysis, indicate that a narrative can be distinguished into two layers. These layers bring different perspectives with regard to the elements of a narrative, thus causing the two approaches to understand a narrative and to reveal knowledge from a narrative.



However, a narrative should be regarded as a holistic account to be meaningful and to transfer knowledge. According to Chatman's model, story content and expression are the two highest levels of elements in a narrative structure. Bal's model further emphasises that the expression of a story is twofold: the approaches for expression, and the voice and viewpoint of a story as stated by the storyteller. Herman's narrative model provides insights into two layers of effects on the knowledge carried by a story that is being told, namely, the content of a story and the meaning behind the content. Theories of narrative analysis support the idea that understanding the meaning of a narrative can help determine the content and scope of a story. Corresponding to models from the field of narratology, the story content provides the direct messages and knowledge of the storyteller and the expression artefact carries the meaning behind a particular story. The present study believes that the elements of content and scope interact with each other. Nevertheless, the core of the empirical sections of this study focuses on story content instead of narratives to examine the effects of knowledge from stories. This focus has been selected because knowledge from stories is the core resource of organisations when telling stories.

### **2.2.3. Narrative Psychology Perspective**

Narrative psychology offers two views on the narrative process. First, a narrative is a means of seeing the world, that is, a narrative is a mode of representation; second, humans construct the world through narratives, that is, a narrative is a form of ontology (Murray, 2008). From the perspective of a narrative as a mode of representation, narrative psychologists believe that a narrative is a basic property of the human mind (Hiles & Čermák, 2008). A story schema, which is aligned with narrative psychology, is a system that aims to investigate the internal structure of a story, thus reflecting its underlying cognitive structure. That is, a story schema is a mental structure that consists of expectation sets on the manner in which a story is processed (Mandler, 1984). A story schema relies on a schematic mental structure, that is, a structure obtained as a part of the entire nature of knowledge (Mandler, 1984; Polkinghorne, 1988). The connection between a story schema and grammar is "the fact that the story schema is a mental reflection of the regularities that the processor has discovered or constructed through interaction with stories" (Mandler, 1984, p. 18). Studies on story structure from the field of narrative psychology described a schema in terms of grammar. Thus, the distinction between story grammar and schema has not always been clear (Mandler, 1984). Several scholars, such as Rumelhart (1980), used story grammar and schema interchangeably in their

papers to represent story structure. Story grammar, while supplementing a schema, is a set of rules that describe the constituent structures of stories and the sequences in which such constituents appear (Mandler, 1984). The basic requirements for a story grammar include: (1) specifying the rules to define the categories of the information unit of the text, and (2) allowing the definition of the relationships among the various isolatable units of the story (Mancuso, 1986, p. 93). Story grammar is always used to arrange the information of stories into event categories by dividing a story into story statements. These categories are used to analyse the underlying cognitive structure through story schema theories. In addition to the categories of story grammar, a story schema extends the investigation of processing a story structure in terms of the causal relations between episodes and the hierarchical structure. Story grammar was recognised by scholars such as David Rumelhart, Jean Mandler, Nancy Johnson, Nancy Stein, and Perry Thorndyle during the 1970s and the 1980s. The earliest story grammar was developed by Rumelhart (1975). The studies of Mandler and colleagues (Mandler & Johnson, 1977; Johnson & Mandler, 1980; Mandler, 1984), and Stein and colleagues (Stein, 1978; Stein & Glenn, 1979; Trabasso, Stein & Johnson, 1981) resulted in two main streams of story grammar. These streams of story grammar share a number of common features, thus several researchers have attempted to merge them in later studies.

The two story grammars use a tree structure to present the structure of a story. In the tree structure, the setting and episode are the highest levels of story constituents. The setting of a story introduces the protagonist and the other characters, as well as describes the social, physical, or temporal circumstances (Mandler & Johnson, 1977; Stein & Glenn, 1979; Trabasso, Stein & Johnson, 1981). The information in the setting can also describe the habitual behavioural patterns of the characters (Stein & Glenn, 1979). The episode constituent of an episode is a complex system that contains one or more events. These events develop the beginning, middle, and end of a story, with numerous connections between each constituent under the episode system. The two story grammars emphasise the beginning or the initiation and the ending or the consequence events of each episode. In fact, the constituents and the subsequent categories of each event are extremely similar except for the ending event or the consequence. The difference between a beginning event and an ending event is that the latter initiates the consequent reaction of the characters and the emphasis of the story. A typical story event consists of natural occurrence and action. An event triggers a response or a reaction, and may cause one or more internal

events. A response caused by an event includes goal, affect, and cognition. The goal of an event can be the goal of the entire story or a sub-goal of a particular event with the purpose of achieving the ultimate goal of the story. The goal of the entire story represents the theme of the story in Thorndyke's story grammar (1977). Both the goal and the theme of a story reveal the objectives of a particular story. These objectives relay significant messages to listeners as they learn from a particular story. To achieve a goal, an attempt with actions or a new event is motivated under the response category. An attempt results in a state, a state change, or an action, depending on whether the goal has been attained (Trabasso, Stein & Johnson, 1981). Consequently, the final event or attempt results in an emphasis effect, cognition, and action. The story grammar discussed earlier is used as the foundation to develop the coding system in this research. The coding system is applied as a tool to analyse knowledge from collected stories. This coding system is discussed in detail in Chapter 5.

#### **2.2.4. Relationship between Knowledge and Story**

Theories of narratology and narrative analysis show that a narrative has two layers of elements. These theories reveal two perspectives of knowledge from a narrative by examining the two layers of elements. On one hand, the "telling" layer is influenced by the functions of a narrative to humans through its expression, thus leading to the consideration of the circumstance of a story being told in reality, such as the purpose of telling a particular story. On the other hand, the "told" layer is concerned with the story world, namely, story content. Story content delivers knowledge through the literary context in terms of characters, setting, actions, and happenings under a specific story context when transferring knowledge.

Story and storytelling are always associated with theories on cognition and knowledge, and are investigated from the perspectives of narrative psychology, such as in the studies of Mandler (1984), Polkinghorne (1988), McAdams (2007), Schiff (2007), and van Dijk (2008). Such approach is adopted because cognition and psychology theories investigate acquisition, organisation, and use of knowledge of individuals. A story is defined as a cognitive instrument (Herman, Jahn & Ryan, 2005) to evoke emotion and sensemaking, which, in turn, affect knowledge transfer. Previous studies, such as those of Gabriel (2000) and Meyer (2004), examined the types of characters, namely, existence-elements or context, and plot, namely, event-

elements, of organisational stories and their impacts on evoking emotion and sensemaking. A story is effective for the memory of the story structure of an individual. People remember events in story form (Levit, 2009). The human brain operates based on symbolic information, and one of the tricks of the brain is to extract meaningful patterns from confusion; hence, recognising new patterns can be evoked through the relationships among objects and ideas (Liston, 1994). Therefore, the mind of an individual is engaged strongly with story and storytelling. The precise examination of the structure of a story content, a story schema, and grammar grounded from narrative psychology shows that story structure reflects the schematic structure of knowledge in the human cognitive model. That is, generalised knowledge on an event sequence is rooted in the story plot, and knowledge about scenes and places is rooted in the story context. The plot structure evokes human predicaments and attempted resolutions (Sarbin, 1986) through the causation chain of story events linked in plots (Cobley, 2001). The context of a story evokes the settings and places in the human mind as those that share numerous characteristics with story events (Mandler, 1984). A story grammar indicates rich knowledge from a story. By understanding the structure of a story, a story grammar provides insights into the two dimensions of knowledge from a story. Such dimensions are event-oriented, namely, contextual knowledge, and belief-oriented, namely, conceptual knowledge. The next chapter discusses the proposal to apply these two kinds of knowledge on examining the type of knowledge carried by stories.

### **2.3. What Storytelling Is**

Based on the literature of narrative theory, storytelling can be regarded as an action to present and express a narrative that is concerned with both a story and a discourse. From the perspective of human communication, storytelling is the interactive art of using words and actions to reveal the elements and images of a story while stimulating the imagination of the audience (National Storytelling Network, n.d.). Storytelling, as defined in the present research, is applied to any medium or format, including oral, written, sound recording, and so on. In this study, storytelling is regarded as a mechanism that facilitates individual and organisational knowledge transfer. Mohan, McGregor, and Strano (2002) illustrated Berlo's model of the communication process. This model emphasises what happens to humans when they are transmitting messages. The communication process of Berlo's model is composed of four parts, namely, source, message, medium and channel, and

receiver. By applying Berlo's model to storytelling, a storyteller is regarded as the source and the audience is the receiver. The storyteller and the audience, as the start and end of the communication process, respectively, may be individuals, groups, or organisations. The storyteller conveys stories through one or more appropriate media to an audience, and the audience receives the story as a message through a corresponding channel, such as hearing and/or seeing. The relationship between story and storytelling is represented by messages and their actual delivery medium, and they are interconnected with one another. In addition, the functions of a story are inherent in storytelling when stories are being presented.

### **2.3.1. Functions of Storytelling and Story**

As an approach to communication, storytelling is applicable to human communication at an individual, organisational (including group), and social level at any time to achieve specific objectives. Studies by Henry (1988); Neuhauser (1993); Sunwolf and Frey (2001); Allan, Fairtlough, and Heinzen (2002); Prince (2003); Denning (2004); Thier and Erlach (2005); and Gargiulo (2006a) attempted to identify the functions of storytelling. According to Table 2.1, studying the influences of storytelling and story is not limited to a single discipline. Instead, studying this subject is a cross-disciplinary endeavour that encompasses individual cognition; narrative theory; leadership; organisational change, culture, and learning; general human communication; and organisations and management. The functions of stories and storytelling benefit both individuals and organisations, and are interconnected with one another. Henry (1988) offered a general explanation of the functions of stories and storytelling, which also involves both levels. For example, stories from communities have significant morals, events, and/or characters from the communities. Stories help people remember significant elements during storytelling through their structures and functions, which influence individuals in the communication and cognition aspects. Stories are passed on from person to person and from generation to generation. Stories that influence an organisation may extend such influence to society during this stage through the preservation and conveyance of organisational culture. The flow of stories behaves like loops among individuals and organisations. That is, stories do not only serve a particular level but also function at different levels.

**Table 2.1: Functions of Story and Storytelling**

Author(s)	Genre	Functions	Field(s) of Study
<b>Henry (1988)</b>	● Story ● Story-telling	● Cognitive function ● Social function ● Practical function ● Emotional function ● Developmental function	● Organisational culture
<b>Neuhauser (1993)</b>	● Story	● Makes information easier to remember ● Makes information more believable ● Consolidates leadership ● Connects individuals and organisations ● Manages change	● Communication in organisations ● Communication in management
<b>Sunwolf and Frey (2001)</b>	● Story-telling	● Connects people ● Enhances knowledge about the world ● Creates reality ● Assists in remembering ● Envisions the future	● Cognition ● Communication
<b>Allan, Fairtlough, and Heinzen (2002)</b>	● Story	● Communication ● Learning ● Professional development ● Resolving dilemmas ● Innovation and collaboration ● Scenarios (envisioning the future of organisations)	● Communication in organisations ● Communication in management
<b>Prince (2003)</b>	● Story	● Mirrors what can happen ● Explores and devises what can happen ● Represents changes in states ● Constitutes and interprets changes as significant parts of significant wholes (situations, practices, people, societies)	● Narrative theory
<b>Denning (2004, 2006)</b>	● Story-telling	● Sparks action ● Communicates who you are ● Transmits values ● Gets everyone working together ● Shares knowledge ● Tames the grapevine ● Leads people to the future	● Communication in organisations ● Leadership ● Organisational change ● Organisational learning

Author(s)	Genre	Functions	Field(s) of Study
<b>Thier and Erlach (2005)</b>	● Story	<ul style="list-style-type: none"> <li>● Creates and describes social constructs in organisations</li> <li>● Preserves and conveys organisational culture</li> <li>● Introduces and supports change processes</li> <li>● Transfers and saves (tacit) knowledge</li> </ul>	<ul style="list-style-type: none"> <li>● Organisational studies</li> <li>● Knowledge management</li> </ul>
<b>Gargiulo (2006a)</b>	● Story	<ul style="list-style-type: none"> <li>● Empowers speakers</li> <li>● Creates the environment</li> <li>● Binds individuals</li> <li>● Engages the human mind in active listening</li> <li>● Negotiates differences</li> <li>● Encodes information</li> <li>● Tools for thinking</li> <li>● Serves as weapons</li> <li>● Brings healing</li> </ul>	<ul style="list-style-type: none"> <li>● Communication in organisations</li> <li>● Communication in management</li> </ul>

## 2.4. Storytelling in Organisation Settings

*“The narratives – also called organisational myths, stories, sagas, and legends – function to help members interpret and signify the purpose of the organisation and the role of its individual members.”* (Polkinghorne, 1988, p. 122)

Recently, storytelling has been widely applied in management and organisational practices that aim to achieve specific business goals. Table 2.1 also indicates that a considerable number of studies have concentrated on organisational storytelling. Management activities and organisational practices involve stories, including informal conversations, training sessions, and the speech of a chief executive officer. The statement of Polkinghorne at the beginning of this section implies that organisational stories are competent in transferring messages from one person to another, and in exploring past and present situations. These methods transfer knowledge through organisational storytelling used to influence people to achieve specific purposes, such as developing leadership. With this regard, stories can also be treated as a kind boundary objects that enable people to understand other’s perspectives and help people to across knowing sharing boundaries (Fong, 2008). Scholars such as Czarniawska (1998) also suggested that a story can also be an approach to

organisation studies, particularly, narrative analysis, which aims to understand impersonal causes and human intentions embedded into stories that are main carriers of knowledge in modern societies. The studies of Boje (1991), Gabriel (1991), Landrum (2000), and Meyer (2004) analysed existing organisational stories that attempt to elicit culture, facts, changes, and knowledge in their respective cases. Boje (1991, 2008) initiated a concept of storytelling organisation, which is defined as “a collective storytelling system in which the performance of stories is a key part of the sensemaking of the members and a means that allow them to supplement individual memories with institutional memory” (Boje, 1991, p. 106). This concept emphasises that story and storytelling can transfer knowledge between individuals and organisations through their impacts on sensemaking, which is grounded in both individual and social activities (Weick, 1995). These studies on storytelling at the organisational and social levels are founded on the social constructivist paradigm, which suggests that stories are socially constructed and shared in a given organisation or society. As such, storytelling can transfer messages from organisations to individuals, and in turn, individuals can reuse this collective knowledge and return it to organisations and to society in the form of thoughts, applications, changes, and innovations.

#### **2.4.1. Storytelling Applications in Management and Organisational Practices**

*“The group narrative provides information about norms and values, and it fulfills a number of functions within an association – reduction of tension, concealment of power plays, the mediation of contradictions between theory and practice and between group and individual needs, and building of bridges between the past and the present.”*  
(Polkinghorne, 1988, p. 122)

The preceding statement from Polkinghorne provides an abstract of organisational storytelling functions in organisational management and practices in a broad sense. Various storytelling empirical applications and theoretical initiatives in management and organisational practices lead to different effects on individuals and organisations. Storytelling, in particular, contributes to a change in management. Denning (2001, 2004), based on his experience in the World Bank, proposed that a springboard,



which is a frame of organisational storytelling, functions by eliciting changes in organisations and by revealing the underlying ideas of changes to initiate members into those changes. Collins and Rainwater (2005); Adamson et al. (2006); and Fronda and Moriceau (2008), after reviewing literature and cases, suggested that storytelling can contribute to the change process by implementing strategic changes, revealing managerial impacts on change processes, and giving voice to perspectives denied during change processes. The empirical studies of Landrum (2000); Steuer and Wood (2008); and Law (2009) indicated that storytelling affects strategic and technological changes. Denning (2004, 2005) furthered the role of a springboard as a top-down approach to leadership that aims at different leadership objectives, such as leading people into the future and transmitting values. Harris and Barnes (2006); Parry (2008); Nissley and Graham (2009); and Sims, Huxham, and Beech (2009) discussed storytelling as a top-down leadership tool to build individual and organisation identities, transmit values, and influence organisation culture from different perspectives. Allan, Fairtlough, and Heinzen (2002) provided examples of strategic storytelling applications in a fast-growing technology company. One of the examples is also regarded as a top-down approach to the storytelling application; in this example, a company founder told a set of three fictional stories about the future of the technology company to the staff to envision the future of the organisation (Allan, Fairtlough & Heinzen, 2002). McCarthy (2008) conducted a study to investigate storytelling and organisational commitment empirically because “leadership is about commitment” (Sheridan, 1996). McCarthy concluded that storytelling functions as an active vehicle for organisational values. However, empirical studies of storytelling in the areas of leadership and organisational change in the field of organisational studies are relatively rare compared with conceptual studies.

Storytelling can also be adopted as a non-top-down approach to storytelling applications to capture, share, and transfer knowledge, particularly tacit knowledge, across the organisational hierarchy. Meyer (2004); Thier and Erlach (2005); Gargiulo (2006b); Wende and Haghirian (2009); Hernández-Serrano and Stefanou (2009); and Rozwell (2009) positioned their research to focus on these knowledge management processes. In addition, most of these studies, except for Gargiulo (2006b) and Rozwell (2009), are empirical studies that provide convincing evidence of the capability of storytelling to function in these knowledge management processes. On one hand, storytelling is qualified to capture, maintain, and share know-how in

organisation settings, which can break temporal and geographical barriers to tacit knowledge transfer (Thier & Erlach, 2005; Hernández-Serrano & Stefanou, 2009; Rozwell, 2009). Tacit-oriented knowledge can influence the practices of other organisation members under appropriate contexts. On the other hand, storytelling is also qualified to capture, maintain, and share know-what (or know-about) in organisation settings that attempt to reduce obstacles to knowledge transfer in terms of knowledge ambiguity (Newell & Galliers, 2006) through content and context developed by stories. That is, knowledge can influence individual thoughts in an organisational culture (Gargiulo, 2006b; Wende & Haghirian, 2009). Storytelling is regarded as a knowledge transfer mechanism with the ability to transfer tacit-oriented, know-how, and know-what knowledge. However, these scholars focused on one or few particular issues at the organisational level revealed from stories in their studies, such as changes or culture. This approach leads to a gap in the holistic picture of knowledge from stories. The present study will attempt to fill in this gap by developing a paradigm to reveal knowledge from stories in terms of content through systematic analysis.

## **2.5. Summary**

Through the aforementioned reviews and insights into the nature of story and storytelling, we found that story and storytelling exist at the individual, organisational, and social levels, and that they are capable of connecting these levels. Storytelling allows individuals to express and understand reality by telling and processing stories, whereas the content of stories carries the substance of organisations and society developed by individuals. From the perspective of storytelling at the organisational and individual levels, we found that knowledge, stories, storytelling, and individuals are tied together in organisational and social settings. Organisational storytelling, as demonstrated by the study of Wende and Haghirian (2009), indicates that a story possesses collective tacit knowledge in know-how, such as planning to develop a new business, and know-what, such as organisational culture. This feature empowers a story to transfer knowledge to individuals through storytelling. The competence of a story and storytelling is attributed to the content of a story (i.e. the plot and the context), whereas a story corresponds to a schematic knowledge structure in the human mental model.

## **Chapter 3**

# **Nature of Storytelling in Knowledge Transfer**

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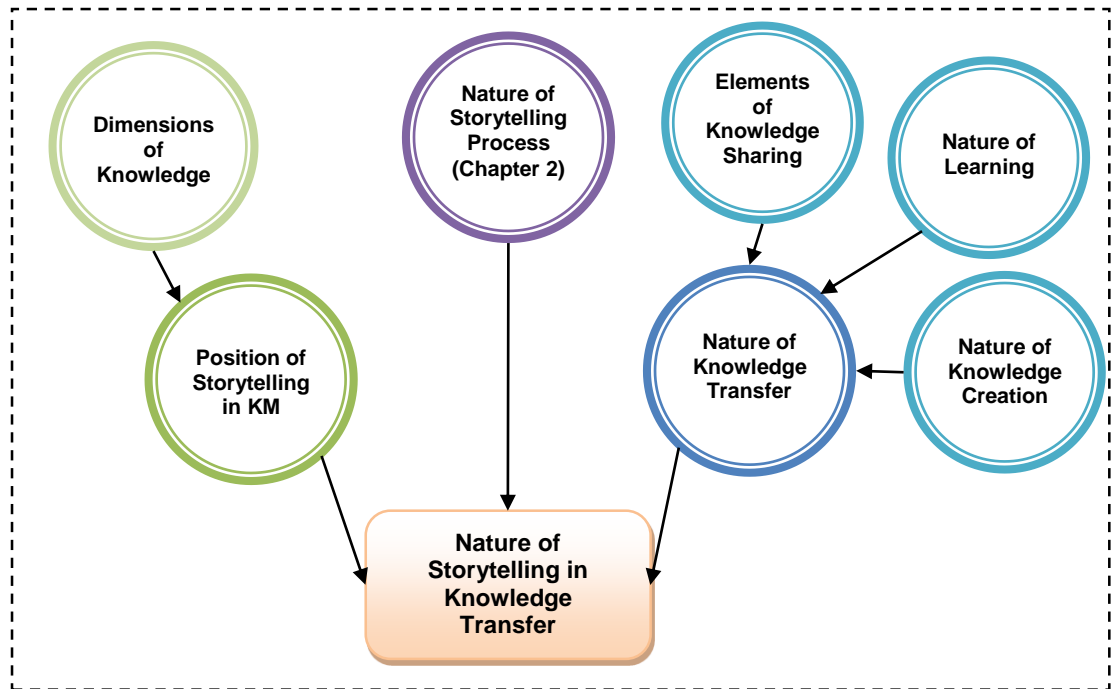
## **3. Nature of Storytelling in Knowledge Transfer**

### **3.1. Introduction**

Knowledge management is a management discipline that has evolved from a spectrum of theoretical traditions ranging from philosophy to computer science and economics (Nonaka & Peltokorpi, 2006). The objective of managing knowledge is to enhance the capabilities (du Plessis, 2007) and competitive advantages (Walters, 2000) of organisations by utilising knowledge inside and outside their domain. Apart from its value in organisations, the ultimate goal of knowledge management is to create knowledge and innovation for individuals, groups, organisations, and the society through knowledge management processes. Knowledge transfer, as one of the key processes in knowledge management, contributes to the achievement of this ultimate goal. The objective of this chapter is to align knowledge management and knowledge transfer with story and storytelling. To reach this aim, this chapter is divided into four parts. First, it attempts to place storytelling in knowledge management by employing perspectives from philosophy and sociology. Second, dimensions toward knowledge are discussed; then, a dimension toward the nature of knowledge from a story is proposed. Third, the elements of the knowledge transfer framework used in this study are examined in terms of knowledge sharing, learning, and creation. Fourth, these elements are associated with story and storytelling from a theoretical context to understand the nature of story and storytelling in knowledge transfer. Figure 3.1 illustrates the theoretical framework of the investigation on the nature of storytelling in knowledge transfer.

### **3.2. Positions of Storytelling in Knowledge Management**

Storytelling, as an approach in knowledge management, is established into different positions among knowledge management activities. Denning (2001, 2004);



**Figure 3.1: Theoretical Framework of the Investigation on the Nature of Storytelling in Knowledge Transfer**

Landrum (2000); Perret, Borges, and Santoro (2004); and Rozwell (2009) attempted to use storytelling as an approach to elicit, capture, and identify knowledge and critical changes in organisations. These studies adopt beliefs in positivism and interpretivism. These paradigms are discussed in detail in Chapter 4. The results of the aforementioned studies indicate that stories and storytelling can be applied as knowledge management approaches based on these paradigms. Moreover, Gabriel (1991b) focused on turning stories into facts in organisational settings. Hernández-Serrano and Stefanou (2009) investigated how storytelling influences knowledge creation for decision making, Mandler (1984) aligned schematic knowledge structure with stories to emphasise knowledge creation from the cognitive perspective. Denning (2001, 2004, 2005) and Gabriel (1991b) focused on articulating organisational storytelling. Gargiulo (2006b); Landrum (2000); and Wende and Haghirian (2009) investigated the dissemination of organisational stories with regard to time, context, and place. These studies indicate that stories and storytelling can be applied as knowledge management approaches based on the interpretivism paradigm. Landrum (2000) and Denning (2001, 2004) attempted to identify critical changes in the strategies of organisations by analysing the articulation and dissemination of organisational those stories. These studies reveal that storytelling, as a knowledge management approach, can be under both positivism and

interpretivism paradigms with regard to methodological stance when stories are regarded as knowledge packages with specific knowledge as purposes objectives and sources of knowledge creation. However, Akehurst et al. asked the question: “should ontology and epistemology be joined or separated?” (2011, p. 185). The present research agrees with Akehurst et al. (2011) that the context for creating knowledge and knowledge itself should be separated when performing analysis. This analytical approach potentially provides a deeper understanding of both context and knowledge. However, the present research advocates that knowledge is not independent, and that it is obtained through interactions among or between individuals and contextual elements. As such, this study tends to adopt the interpretivist paradigm in developing its framework. The forms and types of knowledge remain a concern of this study. Such information is applied to investigate the nature of knowledge from a story and the output of knowledge creation. These components are strongly associated with the context of knowledge creation. The approach of the present study, which places the positivism and interpretivism paradigms in the methodological stance, matches the approaches employed by Landrum (2000) and Denning (2001, 2004). Concerns in the forms of knowledge and contextual support to knowledge creation are ideal factors in investigating storytelling as an approach to knowledge transfer.

### **3.3. Dimensions of Knowledge**

Studies in knowledge management must have a good understanding of the nature of knowledge to make any knowledge management approach, advocacy, and activity effective, regardless of which philosophical paradigm is adopted by these studies. Various dimensions are used to describe the nature of knowledge founded from philosophical theories. This sub-section explores explicit and tacit, as well as individual and social, dimensions of knowledge to provide a common understanding of knowledge in the field of knowledge management. Then, the dimensions of scientific and narrative knowledge, as well as contextual and conceptual knowledge, are explored to discuss the relationship between knowledge and story.

### **3.3.1. Explicit-Tacit and Individual-Social Dimensions**

Explicit-tacit and individual-social knowledge are the most common dimensions mentioned in knowledge management frameworks (Heisig & Orth, 2007; Heisig, 2009). Nonaka (1994); Nonaka and Takeuchi (1995); and Nonaka, Toyama, and Konno (2000) adopted Michael Polanyi's dichotomy of knowledge for explicit and tacit nature, and applied this dichotomy to a classic knowledge creation model called the Socialisation-Externalisation-Internalisation-Combination (SECI) model. Explicit knowledge, also known as codified knowledge, refers to knowledge transmitted in formal and systematic language and shared in the form of data, scientific formulae, specifications, manuals, and other similar formats (Nonaka, 1994; Nonaka & Takeuchi, 1995; Nonaka, Toyama & Konno, 2000). Explicit knowledge is objective in nature (Nonaka & Takeuchi, 1995) because it is a form of articulated or generalised knowledge (Alavi & Leidner, 2001). By contrast, tacit knowledge has a personal quality, which makes it hard to be formalised and communicated (Nonaka, 1994; Nonaka, Toyama & Konno, 2000). Tacit knowledge is deeply rooted in actions, procedures, routines, commitments, ideals, values, and emotions involved in a specific context in which cognitive elements (namely mental) and technical elements (namely know-how applicable to a specific work) are inherent (Nonaka, 1994; Nonaka, Toyama & Konno, 2000; Alavi & Leidner, 2001). The cognitive elements of tacit knowledge refer to the images of reality and visions for the future of an individual (Nonaka & Takeuchi, 1995). Therefore, tacit knowledge is subjective in nature (Nonaka & Takeuchi, 1995). Alavi and Leidner (2001) claimed that individual knowledge is created by and transferred among individuals, whereas social or collective knowledge is created by and vested in the collective actions of a group. In this manner, individual knowledge tends to be subjective, whereas social knowledge tends to be objective.

A matrix of organisational knowledge (Figure 3.2) proposed by Spender (1996a, 1996b) combines explicit-tacit and individual-social dimensions of knowledge. To examine organisational knowledge, Spender (1996b, 1996a) adopted Nelson and Winter's evolutionary theory of firm, which focuses on explicit and implicit bodies of knowledge, in the matrix. According to Spender, the matrix "clarifies the non-explicit modes of knowing by separating the psychological individual type of tacit knowledge, on which Polanyi focused, from the sociological or collective type proposed by Durkheim" (1996a, p. 51). Although Spender used implicit knowledge in the matrix of organisational knowledge, the terms implicit and tacit knowledge were not distinct in

Spender's studies (Spender, 1996a, 1996b). Instead, these studies adopted the knowledge dimension of Nonaka and Takeuchi (1995) (i.e. explicit-tacit) based on Polanyi's book, *Personal Knowledge*. Therefore, these points imply that implicit and tacit knowledge are used in Spender's organisational knowledge matrix, whereas Naphapiet and Ghoshal (1998) used tacit knowledge instead of implicit knowledge to interpret the matrix. By contrast, Al-Hawamdeh (2002) regarded implicit knowledge to be different from tacit knowledge.

	<b>Individual</b>	<b>Social</b>
<b>Explicit</b>	<b><i>Conscious</i></b> Explicit contents that record the mental model of an individual and are available to others, such as notes.	<b><i>Objectified</i></b> Explicit contents that records public memory, such as patents, registered designs, and operating procedures.
<b>Implicit</b>	<b><i>Automatic</i></b> Cognitive and know-how elements that are embedded in the mental model of an individual but are not available to others, such as judgement.	<b><i>Collective</i></b> Social elements of the knowledge process of individuals that are embedded in social and institutional practices, such as knowledge production processes at the team, group, organisational, or social level.

**Figure 3.2: Different Types of Organisational Knowledge**  
(adopted from Spender, 1996a, 1996b; Nahapiet & Ghoshal, 1998)

Based on the matrix of organisational knowledge, the four types of knowledge are defined according to a static status of knowledge after it is created. This definition does not involve learning before knowledge is constructed and evolution after knowledge is learned and/or applied. Spender emphasised that "learning at the collective level is the outcome of the interplay between the conscious and automatic types of knowledge, and between the individual and collective types of knowledge as they interact through the collective social processes of the, such as teamwork" (1996b, p. 71). This statement implies that even individual knowledge can include social elements because individual learning, that is, the process of individual knowledge creation, should be considered within the context of social entities



(Spender, 1996a). This argument implies that the boundary between individual and social knowledge is imprecise. Instead, presenting this boundary as a continuum along individual, group, organisational, and social knowledge is more appropriate.

### **3.3.2. Knowledge Management Perspective toward the Nature of a Story as Knowledge**

The previous section offers classical views on knowledge from the perspective of knowledge management. This section applies these views to determine the nature of a story as knowledge. By applying the explicit-tacit and individual-collective dimensions of knowledge to examine the content of a story, stories become capable of carrying tacit knowledge as delivered by a storyteller. Story grammar and story structure, as defined by scholars, establish that stories carry automatic knowledge in terms of action, experience, cognition, sensation, emotion, thought, and reflection within a specific story context. Hence, knowledge carried by stories is subjective. In addition, telling stories involves meanings that go beyond the stories, such as the voices of storytellers and the value of telling a particular story. Simultaneously, stories that offer a holistic account of events, which transform into social elements, are commonly embedded in story content. As such, knowledge carried by stories also include collective knowledge, as proposed by Spender (1996b, 1996a), such as organisational culture embedded within stories (Connell, Klein & Meyer, 2004). However, a story itself can be regarded as explicit knowledge when it is considered as a means of human communication. None of the disciplines in the study of stories can avoid the influence of language. Story is a mode of communication that uses language to express knowledge from a storyteller to an audience. Stories are delivered with symbolic significance (Gabriel, 1991a) through language, and can provide vivid images to the audience. Given its association with language, a story can be recorded, stored, and codified into an explicit static status, although it is not objective, such as in the case of manuals or procedures.

Based on the aforementioned pieces of evidence, the present research argues that explicit-tacit and individual-social dimensions are not appropriate perspectives for investigating the nature of knowledge carried by stories. Instead, this study proposes a contextual-conceptual dimension of knowledge (Figure 3.3) to fill in the gap in this issue and to achieve the objective of this study, that is, to identify knowledge carried

by stories. The concepts of contextual and conceptual knowledge emerged from cognitive science. In the context of human communication, contextual and conceptual knowledge respectively represent the episodic and semantic memory of the communication source, namely, the origin of a message. By applying storytelling as a communication mode, contextual and conceptual knowledge is recalled from episodic and semantic memory, respectively, and delivered by the story author and/or narrator through language.

Contextual-Conceptual Dimension toward Knowledge		
	Contextual Knowledge	Conceptual Knowledge
Practical Nature	Know-When Know-Who Know-How Know-What Know-Why	Know-Who Know-What
Application	Context Specific	General Context
Function	Problem-Solving	Providing a basic framework to build other knowledge

**Figure 3.3: Characteristics of Contextual and Conceptual Knowledge**

On one hand, contextual knowledge refers to the episodic recollection of personally experienced events that are context-dependent (Tulving, 1972; Graham et al., 2000; Allen, Kaut & Lord, 2008; Ryan, Hoscheidt & Nadel, 2008). van Dijk (2008) studied context from different disciplines and stated that contexts are special types of mental models for everyday experience, namely, context models. Context models represent relevant properties of communicative situations in episodic memory, and control the processes of narrating those situations, therefore context models have a schematic structure (van Dijk, 2008). A story carries contextual knowledge because a story itself is rich in context. The specific context of a story involves a temporal, spatial, social, and emotional context for the information to be remembered and recalled from a cognitive state (Tulving, 1972; Allen, Kaut & Lord, 2008). Hence, contextual knowledge often involves knowledge on know-when and know-who (Muhammed, Doll & Deng, 2009, 2010). Contextual knowledge also involves procedural knowledge (Alavi & Leidner, 2001; Muhammed, Doll & Deng, 2009, 2010), namely, know-how, because such knowledge is found in episodic experienced events. Procedural knowledge is typically employed to solve problems. The problem-solving process is

always accompanied by declarative knowledge (Alavi & Leidner, 2001; Muhammed, Doll & Deng, 2009, 2010), namely, know-what and know-why. Declarative knowledge involves requirements and standards to complete a particular process within a particular context. In summary, the contextual knowledge carried by a story involves know-when, know-who, know-how, know-what, and know-why knowledge within a particular context. On the other hand, conceptual knowledge refers to the semantic recollection of a culturally shared understanding of the world without connection to a particular time or place (Graham et al., 2000; Patterson, Nestor & Rogers, 2007; Ryan, Hoscheidt & Nadel, 2008). Conceptual knowledge is general knowledge about objects, concepts, facts, and people (Graham et al., 2000; Patterson, Nestor & Rogers, 2007; Ryan, Hoscheidt & Nadel, 2008). Therefore, “[c]onceptual knowledge provides a lasting basic framework for building other types of knowledge, and contributes to building such knowledge” (Muhammed, Doll & Deng, 2010, p. 4), namely, know-who and know-what. The nature of contextual and conceptual knowledge matches several constituents of a story, as defined by story grammars and narratology, as well as possible facts revealed by a narrative analysis. The content of a story carries most of the knowledge in the story. Analysing story content is crucial to reveal the knowledge from a story by using storytelling as an approach to knowledge transfer. Hence, the present study analyse story content by applying the contextual-conceptual dimension to knowledge to accomplish one of the objectives of identifying knowledge from stories.

### **3.4. Knowledge Transfer from Sharing to Creating**

Knowledge transfer is a major function of the knowledge management initiative. This process encompasses knowledge strategy, knowledge flow, sharing behaviour, sharing content, learning, and knowledge creation. A qualitative study by Heisig and Orth (2007) examined knowledge management frameworks and found that among the most frequently conducted knowledge management activities, knowledge sharing ranked first, followed by knowledge creation, and then knowledge usage. In a later quantitative study, Heisig (2009) found that among the most frequently conducted knowledge management activities, knowledge usage ranked first, knowledge creation ranked third, and knowledge sharing ranked fifth. These results indicate that knowledge transfer is a crucial function that should not be ignored in knowledge management, whereas knowledge sharing is considered to be synonymous to knowledge transfer in these two studies.

Knowledge transfer is a complex and difficult process (Szulanski, 1996, 2000) that encompasses modes and methods of transfer, content of knowledge transferred, context for and objectives of transferring knowledge, and the cognition of senders and receivers. A considerable number of explanations are available to provide the meaning of knowledge transfer according to different perspectives. Knowledge transfer can be distinguished between intra-organisational and inter-organisational aspects (Wilkesmann, Wilkesmann & Virgillito, 2007; Wilkesmann, Fischer & Wilkesmann, 2009). Intra-organisational knowledge transfer refers to the process of exchanging and receiving knowledge, including experience among organisation actors (i.e. teams, units, or organisations), and the receiving actors are influenced by the received knowledge (van Wijk, Jansen & Lyles, 2008). According to Argote and Ingram (2000), the definitions of knowledge transfer are similar to the definitions of transfer at the individual level of analysis in cognitive psychology. Hence, inter-organisational knowledge transfer is a form of individual knowledge transfer framed within an organisational context. Organisational knowledge transfer engages the organisational and cognitive psychology aspects of individuals. The SECI model proposed by Nonaka (1994), the definition of knowledge transfer provided by Argote and Ingram (2000), and the organisation knowledge models proposed by Wilkesmann and colleagues (Wilkesmann, Wilkesmann & Virgillito, 2007; Wilkesmann, Fischer & Wilkesmann, 2009) imply that the individual is the key actor who drives the knowledge process at the organisational level. In addition, individuals transfer knowledge and learn from transferred knowledge on behalf of the organisation to form organisational knowledge transfer (Egbu, 2006). That is, knowledge transfer relies upon individuals at all levels because organisational experience is a social construction of reality that is institutionalised and reproduced by human actors (Berger & Luckmann, 1976)

The basic model of knowledge transfer at the individual level involves a sender, the content, a method of transfer, and a receiver, who is influenced by the content to a certain extent. This basic model agrees with Berlo's model of the human communication process (Mohan, McGregor & Strano, 2002). In this case, the communication process is composed of the source, the message, the medium or channel, and the receiver. Hence, the basic knowledge transfer model is found within the human communication process. For knowledge transfer to be successful, the receiver must develop the received information into the context of his/her personal knowledge and, consequently, create new knowledge (Wilkesmann, Fischer &

Wilkesmann, 2009). This process involves the learning process of an individual. Szulanski (1996, 2000) identified initiation, implementation, ramp-up, and integration as the four stages of the organisational knowledge transfer process. The initiation stage reflects the motivation of the knowledge transfer process, wherein the motivation can come from the source, the receiver, or both. The implementation stage reflects the knowledge sharing mode during the knowledge transfer process. The ramp-up and integration stages exhibit that the receiver creates new knowledge by placing the received knowledge into his/her own context and by applying the knowledge in practice. The aforementioned theories reveal that knowledge transfer strongly involves knowledge sharing, learning, creation, and outcome in both cognitive and practical aspects across individual and organisational levels. Effective knowledge transfer focuses on the consequences for the receivers in terms of accumulating or assimilating new knowledge (Liyanage et al., 2009). Ringberg and Reihlen (2008) proposed a socio-cognitive approach to knowledge transfer that emphasises social and cognitive aspects, as well as cognitive outcomes. Therefore, the present research proposes that knowledge sharing and learning results in knowledge creation, including cognitive outcomes. These three processes constitute the knowledge transfer framework.

### **3.4.1. Knowledge Sharing**

Knowledge sharing is regarded as one of the core stages in the knowledge transfer process. The scope of involvements in knowledge transfer is more extensive than that in knowledge sharing; knowledge sharing is one of the requirements of knowledge transfer (Wang & Nob, 2010). This notion corresponds to the proposed knowledge transfer model in the present study. Knowledge sharing is essential because it facilitates the connection between individuals and organisations. It is directly involved in the issues of an individual and an organisation (Foss, Husted & Michailova, 2010). Cummings (2004); Foss, Husted, and Michailova (2010); and Wang and Nob (2010) defined knowledge sharing as the provision or receipt of knowledge and feedback for solving problems or for developing new knowledge by implementing the received knowledge. However, the receipt and implementation of new knowledge correspond more with the later stages of the knowledge transfer model employed in the present study. Therefore, from a more precise perspective, this study states that the purpose of knowledge sharing is to provide knowledge and to reach appropriate receivers through knowledge transfer. Providing knowledge relies on the communication environment under inter- or intra-organisation.

Knowledge sharing in terms of communication under an organisational environment focuses on the knowledge flow and the knowledge sharing strategies employed by an organisation. Individuals are knowledge sharing actors within an organisation. Thus, individual knowledge sharing behaviour is also a factor that influences knowledge sharing (Foss, Husted & Michailova, 2010; Wang & Nob, 2010). In this manner, knowledge sharing can be examined through knowledge flows and knowledge sharing strategies at an organisational level, and knowledge sharing behaviour at an individual level, as discussed in the following section.

#### **3.4.1.1. Knowledge Sharing Strategy**

A knowledge sharing strategy refers to the use of principles and methods associated with the nature of knowledge flow to satisfy the processes of knowledge delivery and/or knowledge acquisition. The two popular knowledge sharing strategies, namely, codification and personalisation strategies, defined by Hansen, Nohria, and Tierney (1999), concur with the concepts of Snider and Nissen (2003). The knowledge sharing environment within an organisation involves physical environment and culture, such as information technology support and trust to share, which are influenced by knowledge sharing strategies employed by the organisation with management support. The codification strategy aims to provide information technology leads to codify, store, disseminate, and reuse codified explicit knowledge in an efficient and effective environment (Hansen, Nohria & Tierney, 1999). By contrast, the personalisation strategy aims to develop networks to link people, which allows sharing of tacit knowledge (Hansen, Nohria & Tierney, 1999). Similarly, by reviewing knowledge management literature, Swan, Newell, and Scarbrough (1999) developed cognitive network and community network models for sharing knowledge, which respectively correspond to codification and personalisation respectively. The cognitive model emphasises linear information flows through static IT-based networks, whereas the community model focuses on dialogues and sensemaking that occur through active networking (Swan, Newell & Scarbrough, 1999). Milton (2005) introduced two more knowledge transfer approaches, called connect and collect approaches. The connect approach focuses on connecting people as the core of knowledge transfer, whereas the collect approach emphasises collecting, storing, organising, and retrieving knowledge (Milton, 2005). The strategies developed by Hansen, Nohria, and Tierney (1999); Milton (2005); and Swan, Newell, and Scarbrough (1999) highlighted a significant distinction between technological and social perspectives in knowledge sharing in organisational environments.

Furthermore, they imply that socially-oriented knowledge sharing strategies help in sharing and creating tacit knowledge, whereas technology-oriented strategies assist in sharing and creating explicit knowledge.

#### **3.4.1.2. Knowledge Flow**

Knowledge flow is defined as “a process of knowledge passing between people or knowledge processing mechanism” (Zhuge, 2002, p. 24). It is concerned with developing channels or networks between knowledge senders and receivers (Shin, Holden & Ruth, 2001). One of the main streams on knowledge flow is found in network theory, particularly for studies in computer science. Bell and Zaheer (2007) investigated knowledge flow across organisational boundaries based on a geographical perspective by examining different types of ties in a network. Andersson, Holm, and Johanson (2007) argued that network structures and gained knowledge are influenced by establishing relationships and by the development of technology. Kwom, Oh, and Jeon (2007) explored the ontological structures of information processing networks and their effects on organisational restructuring. These studies imply investigating knowledge flow in terms of concerns with network structures, such as nodes, network ties, and patterns. However, the structure of knowledge flow varies under different natures because of dynamic contexts. Therefore, the present study focuses on the impacts of knowledge flow rather than on its structure.

One of the levels for examining knowledge flow is the inter-organisational level of transmission. At this level, the foci can be divided into the individuals of an organisation, such as in the research of Snider and Nissen (2003), and into units of an organisation (a team, for example), such as in the studies of Appleyard (1996), and Gupta and Govindarajan (2000). These studies stated that individuals enable knowledge transfer within the organisational context. Therefore, the following discussion on knowledge flow focuses on the individual level.

One of the factors in knowledge inflow and outflow is transmission channels (Gupta & Govindarajan, 2000). These channels can be regarded as contexts for passing knowledge that can cross physical or geographical space, across time, and across individuals. Based on this concept, knowledge as a solution, experience, and social

creation are three identified perspectives of the organisational knowledge flow (Snider & Nissen, 2003). First, the knowledge as a solution perspective considers real-time transfer of knowledge among practitioners who seek to solve problems or enhance operations; the principal flow of knowledge is across organisational or geographical space (Snider & Nissen, 2003). This kind of knowledge flow involves human-to-message interaction that attempts to retrieve shared explicit knowledge throughout an organisation (Lu et al., 2010) from knowledge owners to individuals who need a specific knowledge by employing technology. Second, the knowledge as an experience perspective can cross time, and considers capturing and storing the experiences of practitioners so that others may have access to and potentially learn from them (Snider & Nissen, 2003). The knowledge flow of this perspective is from human to system (Lu et al., 2010) by sharing and storing explicit knowledge through the technology in a system. This sharing flow facilitates real-time knowledge retrieval. Third, the knowledge as a social creation perspective suggests that knowledge emerges from social interactions among individuals under a problematic situation, and thus, social processes lead to knowledge creation and sharing (Snider & Nissen, 2003). This perspective of knowledge flow occurs among humans (Lu et al., 2010) and can span across individuals. On one hand, Snider and Nissen (2003) suggested that knowledge management efforts in the perspectives of knowledge as a solution and as an experience focus on technologies and processes such as groupware or lesson-learned systems. These two perspectives of knowledge flow are inherent with codification strategy (Fong & Kwok, 2009). On the other hand, they also suggested that knowledge management efforts in the perspective of knowledge as a social creation focus on the development of a social environment for information interactions among individuals who aim to create knowledge. These two perspectives of knowledge flow are inherent with personalisation strategy (Fong & Kwok, 2009).

#### **3.4.1.3. Knowledge Sharing Behaviour**

The knowledge sharing behaviour of an individual is influenced by factors of intent to share knowledge. A number of quantitative studies, such as those of Bock, Zmud, Kim, and Lee (2005); Chen, Chuang, and Chen (2012); Chennamaneni, Teng, and Raja (2011); Reyachav and Weisberg (2009); Wei, Liu, and Francesco (2010); Wu and Zhu (2012); and Zhang and Ng (2013) performed tests to determine factors of knowledge sharing intention by adopting theory of reasoned action and its extension theory of planned behaviour. These studies attempted to test factors of knowledge sharing intention in three behavioural determinants. The first determinant is attitude



toward knowledge sharing and its factors, such as economic rewards (Bock et al., 2005; Zhang & Ng, 2012, 2013), sense of self-worth (Bock et al., 2005; Chen, Chuang & Chen, 2012; Wu & Zhu, 2012; Zhang & Ng, 2013), and voluntary commitment to knowledge sharing (Wei, Liu & Francesco, 2010). Factors classified as attitude toward knowledge sharing refer to different levels of rewards to satisfy individuals. The second determinant is a subjective norm toward knowledge sharing and its factors, such as fairness, affiliation, innovativeness, and organisational climate (Bock et al., 2005; Chennamaneni, Teng & Raja, 2011; Chen, Chuang & Chen, 2012; Wu & Zhu, 2012), and support from management or team (Zhang & Ng, 2013). These factors of subjective norms refer to the organisational climate, which also influences the attitude of individuals toward sharing knowledge (Bock et al., 2005; Chen, Chuang & Chen, 2012; Wu & Zhu, 2012). The third determinant is perceived behavioural control and its factors, such as facilitating information technology (Chennamaneni, Teng & Raja, 2011; Wu & Zhu, 2012; Zhang & Ng, 2013). The factors classified as behaviour control toward knowledge sharing intention are limited to information communication technology environments in studies that focus on the technology perspective of knowledge sharing. Behavioural control, based on control beliefs, involves factors that facilitate or impede the performance of behaviour in interest (Wu & Zhu, 2012). By adopting this concept, the present study suggests that social-oriented factors can be included as determinants of behaviour control in the social perspective of knowledge sharing, such as the degree and frequency of official knowledge sharing opportunities, and the condition and area of physical knowledge sharing space. This type of social-oriented factors is strongly related to the organisational climate toward knowledge sharing as explained earlier. Such factors strongly influence knowledge sharing intention in organisation environments from the interpretivist paradigm toward knowledge management. Similar to the approach of the aforementioned studies, another stream of investigation on knowledge sharing intention is based on relational model theory, such as the studies of Boer, Berends, and Baalen (2011); and Lin, Wu, and Lu (2012). Factors that influence knowledge sharing intention are grouped into four determinants, namely, communal sharing, authority ranking, equality matching, and market pricing (Boer, Berends & van Baalen, 2011; Lin, Wu & Lu, 2012). Teng and Song (2011) conducted a study that attempted to observe knowledge sharing intention in two aspects, namely, voluntary and solicited sharing behaviours, which are based on whether knowledge is shared by request. This quantitative study found that organisations characterised by routine tasks and open communication support solicited sharing behaviour, whereas a culture of solidarity is significantly related to voluntary sharing behaviour; moreover,

knowledge tools and tacit-oriented knowledge management processes facilitate both solicited and voluntary sharing behaviours (Teng & Song, 2011).

The aforementioned empirical studies contribute to the identification of significant factors to optimise knowledge sharing intention among individuals. However, simply studying intent in knowledge sharing cannot complete the picture of the knowledge sharing behaviour of an individual in an organisational environment. Several studies have focused on different types of knowledge sharing behaviours. Teng and Song (2011) were concerned with voluntary and solicited sharing behaviours influenced by different factors of knowledge sharing intention. Bock et al. (2005) mentioned explicit and implicit knowledge sharing behaviours as two kinds of knowledge sharing behaviours. Reychav and Weisberg (2009) explored the relationships between intention and behavior in sharing explicit and tacit knowledge. Yang and Farn (2009) studied factors that affect tacit knowledge sharing. Suppiah and Sandhu (2011) identified organisational communications, personal interactions, mentoring or tutoring, and willingness to share knowledge freely as four indicators of tacit knowledge sharing behaviour. These studies investigated the influences of knowledge sharing behaviour, although they considered different kinds of knowledge sharing behaviours. Empirical studies that thoroughly investigate knowledge sharing behaviour, that is, in what ways and how a unit performs during knowledge sharing process, are rare.

### **3.4.2. Learning**

The learning process is crucial to effective knowledge transfer because it stimulates knowledge creation, which is the goal of knowledge transfer. Learning, as a set of processes to gain new knowledge, can be interpreted differently when it is established in an individual or in an organisation, that is, individual learning and organisational learning. Given that an organisation does not possess the ability to learn like a human being, then what does organisational learning mean? Argyris and Schön introduced general schemas of organisational learning that include:

- a learning product that can be learnt in the form of either product (i.e. that is, information) or process;
- “a learning process that consists [of] acquiring, processing, and storing information; and
- a learner to whom the learning process is attributed” (1996, p. 1).

**Table 3.1: Ertmer and Newby's Learning Paradigms**

Summary of Ertmer and Newby's Learning Paradigms (1993)			
Schunk's Five Definitive Questions	Behaviourism	Cognitivism	Constructivism
How does learning occur?	<ul style="list-style-type: none"> <li>● Learning involves changes in either the form or frequency of an observable performance.</li> <li>● Concern exhibits how the association between the stimulus and the response is formed, strengthened, and maintained.</li> <li>● The learner is characterised as being reactive to conditions in the environment as opposed to taking an active role in discovering the environment.</li> </ul>	<ul style="list-style-type: none"> <li>● Learning is equated with discrete changes between states of knowledge.</li> <li>● Cognitivist learning is concerned with what learners know and how they obtain it rather than what they do.</li> <li>● Knowledge acquisition is described as a mental activity that involves internal coding and structuring by learners.</li> <li>● The learner is regarded as an active participant in the learning process.</li> </ul>	<ul style="list-style-type: none"> <li>● Constructivist learning does not deny the existence of the real world but contends that what we know about the world stems from our own interpretations of our experiences.</li> <li>● Learners do not transfer knowledge from the external world into their memories; instead, they develop personal interpretations of the world based on their experiences and interactions.</li> </ul>

Schunk's Five Definitive Questions	Behaviourism	Cognitivism	Constructivism
Which factor influences learning?	<ul style="list-style-type: none"> <li>● The learner and the environmental factors are considered important.</li> <li>● The most critical factors are the arrangement of stimuli and consequences within the environment.</li> </ul>	<ul style="list-style-type: none"> <li>● The mental activities of the learner lead to a response and acknowledge the processes of mental planning, goal-setting, and organisational strategies.</li> <li>● The manner in which learners respond to code, transform, rehearse, store, and retrieve information.</li> <li>● The thoughts, beliefs, attitudes, and values of the learners are considered to be influential in the cognitivist learning process.</li> </ul>	<ul style="list-style-type: none"> <li>● The learner and the environmental factors are critical to constructivist learning.</li> <li>● Learning occurs in realistic settings and selected learning tasks are relevant to the life experiences of the learners.</li> </ul>
What is the role of memory?	<ul style="list-style-type: none"> <li>● Minimal attention is given to learning products stored and recalled for future use.</li> </ul>	<ul style="list-style-type: none"> <li>● Memory has a prominent role in this learning process.</li> <li>● Learning results when information is stored in memory in an organised and meaningful manner that includes applied knowledge and newly gained knowledge.</li> </ul>	<ul style="list-style-type: none"> <li>● Memory is always under construction as a cumulative history of interactions.</li> <li>● Representations of experiences are not formalised or structured into a single piece of declarative knowledge and then stored in the head.</li> </ul>

Schunk's Five Definitive Questions	Behaviourism	Cognitivism	Constructivism
How does transfer occur?	<ul style="list-style-type: none"> <li>● Transfer refers to the application of obtained knowledge in new ways or situations, as well as to how prior learning affects new learning.</li> <li>● Transfer results from generalization.</li> <li>● Situations that involve identical or similar features allow behaviours to transfer across common elements.</li> </ul>	<ul style="list-style-type: none"> <li>● Transfer occurs when a learner understands how to apply knowledge in different contexts.</li> </ul>	<ul style="list-style-type: none"> <li>● Constructivist learning always occurs in a context, and the context forms an inexorable link with the knowledge embedded in it.</li> <li>● Appropriate and effective use results from engaging the learner in the actual use of tools in real-life situations.</li> </ul>
What types of learning are best explained by this paradigm?	<ul style="list-style-type: none"> <li>● Useful for building and strengthening stimulus-response associations, including the use of instructional cues, practice, and reinforcement.</li> <li>● However, behavioural learning cannot adequately explain the acquisition of higher level skills such as language development and problem solving.</li> </ul>	<ul style="list-style-type: none"> <li>● Learning under cognitivism is considered more appropriate to explain complex forms of learning such as reasoning and problem solving.</li> </ul>	<ul style="list-style-type: none"> <li>● Advanced knowledge acquisition is best explained by constructivist learning. Learners acquire more knowledge that provides them with the conceptual power necessary to deal with complex and ill-structured problems.</li> </ul>

Argyris and Schön added that “learning may be attributed to an agent inside or outside the organisation, or even to the information itself” (1996, p. 1). The purpose of organisational learning is to leverage changes in an organisation by acquiring experience (Argote & Miron-Spektor, 2011). The present research emphasises that information or information content cannot be processed without individuals, and even computer systems that process such information are developed by individuals. Furthermore, individuals have to gain experience by practicing. This belief matches the perspective of organisational learning, which should be used by practitioners. In this manner, this perspective attempts to link organisational learning to the thoughts and actions of a practitioner (Argyris & Schön, 1996). This perspective relates cognition and behaviour dimensions to organisational learning introduced by Crossan, Lane, White, and Djurfeldt (1995), which is concerned with the relationship between knowledge, understanding, action, and learning at an individual level. This dimension is based on both cognitive and behaviour views of learning. It determines whether learning occurs and what kind of learning occurs by measuring the result of a particular learning process in terms of cognitive change, behavioural change, or both. In the cognitive view of learning, learning occurs when cognitive interpretation is developed; such interpretation can be an unobservable adjustment or change in the manner of processing information, developing shared meaning, or interpreting events (Crossan et al., 1995). Cognitive interpretation implies an understanding of processed information through thinking. These changes in knowledge will ultimately be reflected in action or behavioural changes (Crossan et al., 1995). By contrast, in the behavioural view of learning, learning occurs when behaviour adaptation is performed, which indicates a noticeable change in behaviour although no thought process is changed to induce the new behaviour (Crossan et al., 1995). Felin and Hesterly (2007) investigated new value and knowledge creation, namely, the learning product proposed in Argyris and Schön’s schemas (1996) for organisational learning, in a knowledge-based view of organisations from both individualism and collectivism paradigms. They concluded that new value and knowledge creation must begin by considering the individuals who make up the organisations. As a result, the individual learning process is crucial to knowledge transfer. Reviewing the organisational learning schemas proposed by Argyris and Schön (1996) leads to the development of a basic framework for learning. The cognitive and behaviour dimension of learning introduced by Crossan et al. (1995) provides a deeper understanding of the effects after the learning process. However, the influences of knowledge processing and learners are not discussed in their theories. To complete the understanding of

organisational learning schemas, the individual learning process has to be investigated.

Individual learning theory focuses more on the knowledge process and on learner issues. Ertmer and Newby (1993) introduced three paradigms for individual learning that aim to provide structured foundations for planning and conducting instruction design activities. The paradigms of behaviourism, cognitivism, and constructivism form a continuum of the individual learning process. Ertmer and Newby (1993) adopted Schunk's five definitive questions to analyse each paradigm. These three paradigms provide a more comprehensive picture of individual learning from different points of view. Table 3.1 summaries the explanations for the paradigms of Ertmer and Newby (1993) for comparison. These three schools of learning are used in the present study to discuss the role of storytelling in the knowledge transfer process later in this chapter.

### **3.4.3. Knowledge Creation**

As the goal of knowledge transfer, knowledge creation is soundly associated with knowledge transfer processes in literature. Knowledge is transferred when transmission and absorption occur; if knowledge is not absorbed, then it has not been transferred (Davenport & Prusak, 1998). Knowledge created through sharing and learning is changed into various forms of knowledge as assets at both the individual and organisational levels, and into behavioural and/or cognitive changes at the individual level. The learning process has been discussed in the previous section to start the development of the framework for this study in the area of knowledge absorption toward knowledge transfer. Learning assumes the function of processing knowledge under the knowledge creation concept toward knowledge transfer. The present study adopts the beliefs in cognitive and behavioural dimensions associated with the concept of knowledge absorption, which assumes that knowledge is created when a change in the interpretation or behaviour of an agent occurs after received knowledge is processed, even though the newly gained knowledge is not as observable as the original. Knowledge creation is concerned with the context and the output of knowledge transfer under the frame of knowledge absorption toward knowledge transfer.

Previous literature on both knowledge transfer and knowledge creation considers the created outcome after knowledge is transferred. The SECI model (Nonaka, 1994; Nonaka & Takeuchi, 1995; Nonaka, Toyama & Konno, 2000), a classical model that explains knowledge transfer, analyses the process of knowledge creation through the conversion between tacit and explicit knowledge. This model also considers explicit and tacit knowledge as created knowledge assets to discuss its four modes of knowledge creation. The SECI model comprises four modes of knowledge conversion, namely, socialisation (from tacit knowledge to tacit knowledge), externalisation (from tacit knowledge to explicit knowledge), combination (from explicit knowledge to explicit knowledge), and internalisation (from explicit knowledge to tacit knowledge). A later study on knowledge creation conducted by Nonaka, Toyama, and Konno (2000) asserted that context and knowledge assets are essential elements in the knowledge creation process, that is, the sharing context to create knowledge, knowledge assets, and the SECI model consolidated the knowledge creation process into a unified model. Experiential, conceptual, routine, and systematic knowledge assets are proposed as knowledge input and output of the knowledge creation process based on the dimensions of explicit and tacit knowledge (Nonaka, Toyama & Konno, 2000). Based on these four kinds of knowledge assets (Figure 3.4), experiential and routine knowledge assets encompass the nature of tacit knowledge. Experiential knowledge assets, such as trust, are cognitive and emotional in nature, whereas routine knowledge assets, such as patterns of thinking within an organisation, are practical in nature. By contrast, conceptual and systematic knowledge stem from explicit knowledge. Conceptual knowledge assets are in tangible forms and contain conceptual elements such as images, whereas systematic knowledge assets are visible in nature, such as a manual. The present study intends to employ this theory to determine knowledge assets. Other studies have also investigated knowledge output in detail through different knowledge processing activities, such as knowledge transfer and learning. Gagné (1984) identified learning outcomes in terms of human performance, namely, procedural knowledge, declarative knowledge, executive control processes, motor skills, and attitudes. His views on these learning outcomes have considered scaling human performance. Ringberg and Reihlen (2008) stated that negotiated, unique, collective, and stereotypical knowledge are possibly generated after being processed by a socio-cognitive approach to knowledge transfer. These knowledge transfer outcomes are identified based on cognitive and social paradigms. This approach leads knowledge transfer literature toward a broader perspective. However, organisational elements are neglected in the investigations of Gagné (1984), as well as of Ringberg and



Reihlen (2008). By contrast, knowledge asset theory proposed by Nonaka, Toyama, and Konno (2000) describes knowledge assets based on an organisational context. The present study is an empirical research that investigates organisational storytelling under the context of the construction industry. Furthermore, knowledge is always context-specific. Therefore, knowledge asset theory proposed by Nonaka and colleagues is appropriate for discussing knowledge carried by a story based on the view of knowledge as an object.

<b>Experiential Knowledge Assets</b> Tacit knowledge shared through common experiences <ul style="list-style-type: none"> <li>• Skills and know-how of individuals</li> <li>• Care, love, trust, and security</li> <li>• Energy, passion, and tension</li> </ul>	<b>Conceptual Knowledge Assets</b> Explicit knowledge articulated through images, symbols, and language <ul style="list-style-type: none"> <li>• Product concepts</li> <li>• Design</li> <li>• Brand equity</li> </ul>
<b>Routine Knowledge Assets</b> Tacit knowledge routinised and embedded in actions and practices <ul style="list-style-type: none"> <li>• Know-how in daily operations</li> <li>• Organisational routines</li> <li>• Organisational culture</li> </ul>	<b>Systemic Knowledge Assets</b> Systemised and packaged explicit knowledge <ul style="list-style-type: none"> <li>• Documents, specifications, manuals</li> <li>• Database</li> <li>• Patents and licenses</li> </ul>

**Figure 3.4: Four Knowledge Assets (Nonaka, Toyama & Konno, 2000, p. 20)**

The knowledge creation context, or the *ba* concept, is used to share, create, and utilise knowledge that can be physical, social, cultural, historical, or mental in nature (Nonaka, Toyama & Konno, 2000; von Krogh, Nonaka & Rechsteiner, 2012). The concept of knowledge creation context emerged based on a belief that creating knowledge requires a place because knowledge is context-specific (Nonaka & Konno, 1998; Nonaka, Toyama & Konno, 2000; von Krogh, Nonaka & Rechsteiner, 2012). The knowledge creation context is regarded as a crucial foundation to create knowledge creation. However, only a few studies, such as that of Chou and Wang (2003), have extended theory development to the area of knowledge creation context or the *ba* concept. However, Choo and de Alvarenga Neo (2010) attempted to increase awareness of the *ba* concept in research and managerial fields by reviewing studies that employed the *ba* concept under different contexts, such as that of Brannback (2003), who applied the *ba* concept in research and development

collaboration between universities and businesses. Meanwhile, the investigation of Hansson (2007) regarded science parks as a 'ba' (that is, a place) for processing knowledge production. Kostiainen (2002) applied the *ba* concept in urban region learning by developing networks. Therefore, the *ba* concept is still in its initial stage with regard to discussing the knowledge creation context. The elements of *ba* include interpretation, interaction, space, and time (Nonaka, Toyama & Konno, 2000). The four types of *ba* are identified, namely, originating *ba*, dialoguing *ba*, systemising *ba*, and exercising *ba*, which respectively correspond to socialisation, externalisation, combination, and internalisation of the SECI model (Nonaka & Konno, 1998; Nonaka, Toyama & Konno, 2000). These four kinds of *ba* are defined based on two dimensions: (1) the type of interaction, namely, individual or collective; and (2) the media used in such interaction, namely, face-to-face contact and virtual media. When these two dimensions are applied to the *ba* concept, the originating *ba* is defined by individual and face-to-face interaction, the dialoguing *ba* by collective and face-to-face interaction, the systemising *ba* by collective and virtual interaction, and the exercising *ba* by individual and virtual interaction. The concept of knowledge creation context is presented to discuss the role of storytelling in the knowledge creation process later in this chapter.

### **3.5. Storytelling as an Approach to Knowledge Transfer**

The proposed knowledge transfer framework for this study is discussed in the first part of this chapter. Storytelling is proposed as an approach to knowledge transfer. To demonstrate that storytelling is appropriate with knowledge transfer, the determinants of the knowledge transfer framework are applied to discuss storytelling as an approach to transfer knowledge. The basic model of knowledge transfer, which involves a sender, a message, a method of transfer, and a receiver, has been reviewed earlier. When this basic model of knowledge transfer is applied to storytelling, the storyteller, the content of story, the manner of delivery, and the audience are regarded as the sender, the message, the method of transfer, and the receiver, respectively. This alignment preliminarily indicates that storytelling is a potential approach to knowledge transfer, which is discussed in the following section. Figure 3.5 demonstrates the alignment between storytelling and knowledge transfer,

as well as characteristics of storytelling toward knowledge transfer as adopted by the present study.

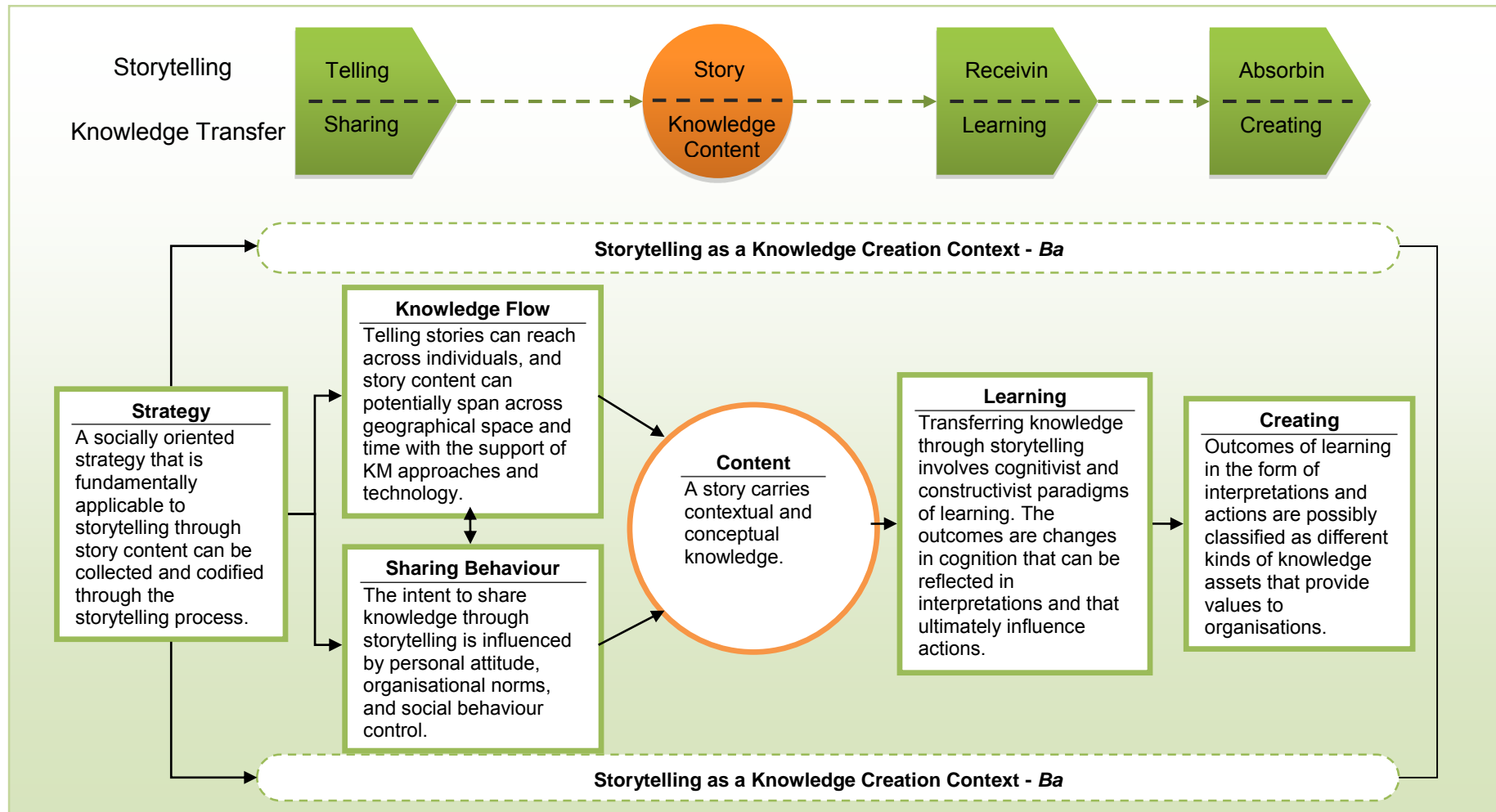
### **3.5.1. Nature of Storytelling in Knowledge Sharing**

Knowledge sharing is interpreted by scholars as a sharing process that involves knowledge exchange between the host and the receiver (Fernie et al., 2003; Reychav & Weisberg, 2009). Knowledge sharing includes sharing and seeking knowledge (Wang & Nob, 2010). Based on these definitions, storytelling tends to suit the knowledge sharing dimension rather than the seeking aspect. Therefore, the term knowledge sharing in this research does not indicate seeking and exchanging, that is, aiming to understand the knowledge transfer process precisely. Instead, this study determines that the knowledge sharing process in an organisation that is influenced by the storytelling strategy associated with knowledge flow and sharing behaviour.

With regard to the knowledge sharing strategy, storytelling can be applied to both codification and personalisation. For example, in technology-oriented knowledge sharing, Perret, Borges, and Santoro (2004) developed a system, called TELLSTORY, to support the collaborative construction of stories. This system aims to establish explicit tacit knowledge elements through storytelling. Gargiulo (2006b) also provided a case study in an organisation called Socexho, wherein a story contest was held and all employees were invited to submit a story based on the theme “what I like best about my job at Socexho.” This contest aimed to preserve and convey organisational culture. These cases are intended as socially oriented knowledge sharing strategies that consider distributing stories as social interaction. These examples prove that stories and storytelling have a role in influencing the environment of knowledge sharing in both physical and cultural aspects. The knowledge sharing strategies presented by Dixon (2000); Hansen, Nohria, and Tierney (1999); and Swan, Newell, and Scarbrough (1999) implied that in applying knowledge transfer approaches, one has to pay attention to the types of transferred knowledge, the uses of transferred knowledge after conversion, and appropriate methods of transfer. Having senders and receivers reach a consensus on the content of transferred knowledge in terms of what should be shared and what should be retrieved is beneficial to knowledge transfer. Selecting an appropriate method to transfer a particular type of knowledge results in a better consensus between both sides, thus enhancing knowledge transfer processes.

Storytelling is regarded as a process for communicating and transferring knowledge. This approach intends to be a form of personalisation to knowledge sharing because it leads to social interaction with a high degree of social elements in the story content. Furthermore, story content can be codified under the methodological stance, such as in a narrative inquiry, and storytelling can be launched through technology. The present study primarily places storytelling under the socially oriented approach to knowledge transfer, and story content is regarded as a resource for codification through storytelling. Newell and Galliers (2006) also suggested applying both strategies to support knowledge transfer in an organisation, thus implying that storytelling is a potential approach to knowledge transfer.

Corresponding to socially oriented approach to knowledge transfer, the knowledge flow of applying storytelling is driven by the perspective of knowledge as a social creation. In this manner, knowledge, under both explicit and tacit transfer dimensions, is able to cross among individuals through storytelling. A story circle or a story anecdote circle (Snowden, 2000; Callahan, Rixon & Schenk, 2006; O'Neal, 2006) is a knowledge management activity that applies storytelling. This activity is capable of demonstrating how knowledge is socially created, and thus, is able to cross among individuals under a controlled social environment. The objective of story circles is to use stories and storytelling to build coalition networks, facilitate community collaborations, and capture knowledge from stories. In a story circle, the participants sit in a circle and share stories about a selected theme under the guidance of a facilitator. During the process, transferred knowledge is created socially across all participants. In the previously discussed theories, knowledge flows in the perspectives of knowledge as a solution and knowledge as an experience become a real-time knowledge transfer process to seek, capture, and store knowledge. These perspectives of flow enable knowledge to span across geographical space and time. The present research claims that knowledge from stories can cross geographical space and time through storytelling. However, story and storytelling do not suit the characteristics of flow in knowledge as a solution and knowledge as an experience, as introduced by Lu et al. (2010) as well as by Sinder and Nissen (2002), because knowledge from stories can be captured and preserved easily in the memory of people because of its sequential nature. One of the aims of a story circle is to capture stories from social interactions, thus implying that a story can be recorded and stored,



**Figure 3.5: Framework of Storytelling in Knowledge Transfer**

and that the dimensions of knowledge carried by a story are unique. In summary, storytelling primarily suits knowledge flow across individuals, and knowledge from stories can cross geographical space and time with the support of codification and technology.

Storytelling, regarded as a socially oriented approach to knowledge transfer, is significantly affected by individual and social factors of the knowledge sharing behaviour. The discussion of intention toward knowledge sharing in the previous sections indicates that personal attitudes, subjective organisational norms, and social behaviour controls influence knowledge sharing behaviour. These determinants can be affected or controlled by the strategies of an organisation. A socially oriented knowledge sharing strategy for storytelling can affect these determinants and encourage members to share experiences and values by telling stories within an organisation. Thus, the goal of obtaining high knowledge circulation in organisations, particularly for knowledge-based firms, is reached. Connell, Klein, and Meyer (2004) classified two motives for organisational storytelling based on the view of storytelling as an interaction: (1) control of content, which refers to the degree to which stories can be intended and designed to deliver specific meaning; and (2) audience selection, which refers to how receivers are selected in a storytelling process based on a particular purpose. To a certain extent, these motives concur with the determinants of knowledge sharing intention in personal attitude and subjective social norms.

### **3.5.2. Nature of Learning Process in Storytelling**

Storytelling, regarded as a communication process, obviously matches the general schemas of organisational learning proposed by Argyris and Schön (1996), which include an informative learning product; acquiring, processing, and storing information; and a learner. By aligning story and storytelling with the three paradigms of learning discussed earlier, story and storytelling tend to be placed under cognitivist and constructivist learning when listening to stories is regarded as a learning process. Knowledge embedded in a story is context specific. The factors in the cognitivist learning paradigm include what learners know, how they acquire the knowledge, and mental archives for coding and structuring knowledge. These factors are crucial to effective storytelling. By contrast, constructivist learning is driven by individual experience, social interactions, and environments. Telling stories is a form of social

interaction, as well as an interpretation of social interactions and individual experiences that leads to the formation of story plots. However, these kinds of interactions and experiences from stories are considered as indirect experiences or “the process through which individuals or social units learn to perform activities by absorbing the experiences of others” (Gino et al., 2010, p. 103). These indirect experiences delivered by storytelling can affect constructivist learning. A successful learning process leads to changes in cognition and behaviour, which turn to observable interpretations and actions. Learning through storytelling is not the same as learning through training. The latter always turns to direct behavioural changes before a deep understanding of the received information is achieved. By contrast, learning through storytelling always results in changes in cognition and interpretation. Hence, learners need to have an in-depth understanding of the story content before integrating it into their own knowledge. By applying the explanation on knowledge management, the changes in cognition imply the creation of tacit knowledge among individuals. In turn, the newly created knowledge will affect the behaviours of the learner in the long term. Therefore, learning by listening to stories stimulates a deep level cognitive learning. Instead of merely changing behaviours, this deep level of learning can possibly influence individual beliefs, which can bring changes in the organisational norm.

### **3.5.3. Storytelling as a Knowledge Creation Context**

Storytelling can function as a knowledge creation context. By applying the SECI model, the effects of story and storytelling on knowledge creation are placed under internalisation and socialisation, respectively. Knowledge from stories can be both explicit and tacit in nature, although knowledge is not comprehensive but context-specific. Therefore, telling stories involves the process of converting explicit knowledge into tacit knowledge (i.e. internalisation), as well as the process of creating new tacit knowledge through shared experience during social interactions (i.e. socialisation). The positions of storytelling in the SECI model indicate that storytelling is fundamentally capable of contributing to knowledge creation. However, explicit and tacit knowledge conversions are not adequate to evaluate the effects of newly created knowledge of individuals or organisations. The interpretations of individuals can reflect changes in their cognition, that is, successful learning. Therefore, interpretations can be acquired as knowledge assets for organisations. Corresponding to the SECI model, Nonaka, Toyama, and Konno (2000) introduced four kinds of knowledge assets, and their nature is classified by the explicit-tacit

dimension toward knowledge. Storytelling leads to changes in cognition, thus implying that newly created knowledge in the mental model of an individual tends to be tacit in nature. “Sharing the background to and ‘stories’ about the company also helps members to form routine knowledge” (Nonaka, Toyama & Konno, 2000, p. 22). This statement supports the claim that newly created knowledge is possibly tacit in nature because it defines routine knowledge as tacit knowledge. The empirical finding of this research will further the discussion on new knowledge created through storytelling by applying the concept of organisational knowledge assets in a later section.

The present research agrees that creating knowledge requires a place because knowledge is context-specific (Nonaka & Konno, 1998; Nonaka, Toyama & Konno, 2000; von Krogh, Nonaka & Rechsteiner, 2012). This research states that storytelling provides a place to create knowledge because of its nature. Nonaka, Toyama, and Konno (2000), corresponding to the SECI model, introduced four kinds of *ba*, which were reviewed earlier. However, these four kinds of knowledge creation contexts are bounded by the dimensions of interaction types and medium types used in such interactions. Thus, they are not applicable to explaining the nature of storytelling as a knowledge creation context. However, the elements of knowledge creation context can explain the nature of a story and storytelling as a knowledge creation context. The elements of a knowledge creation context should include interpretation, interaction, space, and time. Storytelling also includes these elements. First, storytelling, as a mode of communication, is used by the storyteller to interpret story content by using language as his/her medium. Thus, storytelling is a form of interpretation of the mental model of an individual. Second, storytelling is always embedded in social interactions because telling stories is a common human communication practice. In addition, story contents typically include social interaction in their plot; that is, the story content itself contains interactions at the story level. Furthermore, stories bring social elements to the receivers through their content. Hence, an interaction occurs between story content and receivers when a story is being told. Third, knowledge carried by a story itself is constructed by a story context that allows events to happen there. The elements of a story context include space and time. These three characteristics indicate that story and storytelling are capable of forming a knowledge creation context by creating knowledge. A knowledge creation context is defined as place for establishing meaning (von Krogh, Nonaka & Rechsteiner, 2012). This concept matches theory of sensemaking, which is also



concerned with the process of constructing meaning through a narrative (Weick, 1995). The content of a story is key resource in sensemaking that is processed by individuals because of the meanings of the content. In addition, story content is embedded in cues, frames, and connections; and the basic situation of sensemaking constitutes these three elements (Weick, 1995). This concept implies that telling stories can provide a vivid simulated context in the mental model, thus leading to knowledge creation. In summary, the storytelling *ba* is constructed during processing when storytelling is allowed by a socially oriented sharing strategy.

### **3.6. Summary**

This chapter has reviewed literature from the field of knowledge management to form the foundation for this study. The philosophical paradigms of positivism and interpretivism have been adopted to examine knowledge and knowledge management that coincide with story and storytelling. The evidence indicates that stories and storytelling can assume different roles in terms of ontological, epistemological, and methodological stances. This chapter has also proposed the contextual-conceptual dimension to analyse knowledge from a story in a later chapter of this study. The framework of knowledge transfer has been developed in this chapter through the support of knowledge management literature. Investigating individual factors of knowledge transfer is crucial because they influence knowledge sharing, learning, and knowledge creation concretely, although organisational factors cannot be neglected. The proposed knowledge transfer framework and storytelling process have been aligned to provide evidence for discussing the empirical findings later of this study.

## **Chapter 4**

# **Research Methodology**

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## **4. Research Methodology**

### **4.1. Introduction**

Numerous theories regarding research methodology have been introduced in social science. A research framework adopted by a study is determined according to the purpose of the study, questions, theories of research methodology, and source availability. These features affect the adaptation of a philosophical research paradigm, the approach of the research methodology, the research method, the data collection technique, and the data analytical techniques in a study. This chapter attempts to look into these aspects to provide a concrete framework for the research design in this study.

### **4.2. Philosophical Research Foundations**

Philosophical paradigms drive the foundation of a research. A philosophical paradigm, which is a general organising framework for theory and research (Neuman, 2011), that is adopted by a researcher studies the ontological, epistemological, and methodological assumptions. Ontology stance is the nature of the reality under investigation (Schultze, 1998; Pickard, 2007; Neuman, 2011). Epistemological stance is concerned with how reality can be determined, interpreted, and communicated. That is, ontological stance explores the context, such as physical, technical, or social contexts, that supports knowledge creation resulting from interaction, whereas epistemological stance is concerned with the particular forms or types of knowledge (Akehurst et al., 2011). Methodological stance focuses on the practices that determines how we arrive at knowledge as the reality (Pickard, 2007). Positivism, post-positivism, and interpretivism are the three major research paradigms (Cornford & Smithson, 2006; Pickard, 2007). These paradigms toward the nature of knowledge lead to a continuum between objective and subjective perspectives in knowledge management. According to Kumar (2005), the positivist research approach is also known as the systematic or scientific approach, whereas the interpretivist research approach is also known as the qualitative, ethnographic, ecological, or naturalistic approach. Creswell (2003) considered research paradigms as knowledge claims and introduced post-positivism, constructive, advocacy/participatory, and pragmatism as

the four other schools of philosophical paradigm. Functionalism, which emerged from social and organisational inquiry, is also a popular paradigm used to explore aspects aligned with positivism in terms of ontological and epistemological stances. Positivism and interpretivism, the two major paradigms with extreme positions (Cornford & Smithson, 2006), are explored in the following section to determine the position of this research. These two paradigms are frequently used to investigate and position research studies, as well as the practices in knowledge management. In addition, positivism and interpretivism are apparent in their views on knowledge, humans, and social entities (Nonaka & Peltokorpi, 2006) by adopting ontological and epistemological stances.

#### **4.2.1. Adopted Philosophical Research Paradigm– Interpretivism**

*“This [positivist] paradigm assumes that human behaviour is determined by external stimuli and that it is possible to use the principles and method traditionally employed by the natural scientist to observe and measure social phenomena.” (Pickard, 2007, p. 297)*

*“Interpretivism sees the world as a construction of multiple realities; individuals each perceives their reality through their own unique understanding and experience. Interpretivist research focuses on individual experiences and lives.” (Pickard, 2007, p. 295)*

#### **Ontological Position**

The positivist ontological stance holds that objective facts are independent of interpretation, event, or the presence of any person, and are available for discovery and analysis (Cornford & Smithson, 2006; Nonaka & Peltokorpi, 2006; Pickard, 2007). In contrast, the interpretivist ontological stance holds that facts are multiple, constructed, and holistically dependent and cannot exist outside social contexts; in addition, facts are time- and context-bound (Pickard, 2007). The present research aims to discover the use of storytelling by understanding its process in terms of knowledge transfer. The statement delineates that this study considers storytelling and knowledge transfer as its foci. These processes have been described in the last

two chapters that involve a deliverer, a recipient, and content. Thus, the present research adopts the paradigm in social-constructed reality and value relativism (Neuman, 2011), rather than independent reality. In addition, the structure of story involves special and temporal elements. This evidence indicates that a story reflects an interpretivist ontological stance with a smaller scope, in which, the time- and context-bound nature is crucial to a story. Therefore, the present study fundamentally stands on the interpretivist research paradigm from the ontological viewpoint.

### **Epistemological Position**

Corresponding to the positivist ontology, the positivist epistemological stance assumes that knowledge exists as an object that is independent of human action and perception (Schultze, 1998). The relationship between the “knower” and the “known” is one of the objective observers (Pickard, 2007). This relationship influences the concepts of the objective nature of knowledge (Schultze, 1998; Nonaka & Peltokorpi, 2006) and knowledge as an asset (Empson, 2001) in knowledge management research based on positivism. The positivist epistemological stance neglects the human element of knowledge (Egbu & Botterill, 2001; Egbu, 2012). By contrast, interpretivist epistemology believes that knowledge is a social practice of (Schultze, 1998), the knower and the known influence one another (Pickard, 2007). This paradigm directs the concepts of the subjective nature of knowledge (Schultze, 1998; Nonaka & Peltokorpi, 2006) and knowledge as a process (Empson, 2001) in knowledge management research. On one hand, knowledge management theories and practices that adopt the objective perspective towards knowledge are highly scientific and employ accounting methods, codification, and structure to exploit knowledge as an asset of organisations (Venters, 2002). Therefore, the objective of knowledge management research and practices that draw from the objective perspective is to identify valuable knowledge and develop effective mechanisms for managing knowledge within organisations (Empson, 2001). On the other hand, knowledge management theories, studies, and practices that are influenced by interpretivism focus on supporting social structures and processes within which knowledge is shared (Venters, 2002). Hence, the objective of knowledge management research and practices that draw from the subjective perspective is to understand how knowledge is created, articulated, disseminated, and legitimated within organisations (Empson, 2001). The aforementioned theories about epistemology toward positivism and interpretivism indicate that the present study follows the interpretivist epistemology stance with regard to knowledge. The present

study believes that knowledge embedded in stories and transferred by storytelling is subjective and influenced by social reality. Constructivism, extended from interpretivism (Pickard, 2007), provides a deeper view of knowledge in social situations. Aforementioned in Chapter 3, constructivist epistemology stance believes that knowledge is developed based on individuals' experiences and interactions with the social context. In this manner, social and organisational surroundings possess no ultimate truth or reality (Jashapara, 2004), that is, belief in multiple (Pickard, 2007). It has been introduced in Chapter 2 that story plot is rooted in story context. In addition, the truth of knowledge carried by stories fall into self-legitimation (Lyotard, 1984), that is, there is no ultimate truth. Hence, knowledge carried by stories investigated by this study, follows interpretivism, is placed on the constructivist epistemological stance. In an organisational context, organisational influences affect the knowledge carried by related organisational stories. The data analysis of Phase 1 operational implementation in this research attempts to reveal knowledge carried by stories, but this approach may lead to a thought of positivist spectrum in the revealed knowledge. However, the revealed knowledge potentially reflects the socially constructed phenomena of the cases. Therefore, the present study firmly adheres to the interpretivist research paradigm. This paradigm acknowledges inductive reasoning (Hennink, Hutter & Bailey, 2011). Thus, the development of a conceptual framework in this study is regarded as inductive. Details of the conceptual framework design are presented in Chapter 1.

### **4.3. Research Methodology**

Based on different viewpoints, Kumar (2005) classified research into three types, namely, application of the research, objective in understanding the research, and inquiry mode employment. Kumar (2005) added that application research is concerned with an investigation from the perspective of its application, objective research examines from the perspective of the objectives of the study, and inquiry research is concerned with the adopted process of the research to answer the research questions. This study is consistent with inquiry research. Thus, it stated a main research question and three sub-questions to design the research framework precisely. The two approaches of inquiry mode are structured approach, quantitative research and unstructured approach, qualitative research (Kumar, 2005). Quantitative research and qualitative research are two major research methodologies

used in social science, education, and organisation studies. The position of the present study in terms of research methodology is justified in the following section.

### 4.3.1. Employed Research Methodology – Qualitative Research

This research is conducted via qualitative research methodology, which is implied by the interpretivist research paradigm (Gorman & Clayton, 2005; Pickard, 2007) in an earlier section. By contrast, a quantitative research method implies the positivist paradigm (Gorman & Clayton, 2005; Pickard, 2007). Quantitative and qualitative research methodologies have different characteristics. Table 4.1 summarises the viewpoints in assumptions, purposes, characteristics of data, and methods for data analysis of quantitative and qualitative research introduced by Burns (2000), Gorman and Clayton (2005), Kumar (2005), and Pickard (2007).

**Table 4.1: Differences between Quantitative and Qualitative Research**

	<b>Quantitative Research</b>	<b>Qualitative Research</b>
<b>Assumption</b>	<ul style="list-style-type: none"> <li>● Objective reality of social facts</li> </ul>	<ul style="list-style-type: none"> <li>● Social construction of reality</li> </ul>
<b>Purpose</b>	<ul style="list-style-type: none"> <li>● Generalisation, prediction, and casual explanation</li> </ul>	<ul style="list-style-type: none"> <li>● Observe and describe the occurrences of environment, situation, and problem</li> <li>● Explore the nature</li> </ul>
<b>Types of Research Question</b>	<ul style="list-style-type: none"> <li>● How many?</li> <li>● How often?</li> <li>● Where?</li> </ul>	<ul style="list-style-type: none"> <li>● Why?</li> <li>● How?</li> <li>● What?</li> </ul>
<b>Data Characteristics</b>	<ul style="list-style-type: none"> <li>● Can be counted, measured, tested, and identified by quantity</li> <li>● Variables</li> </ul>	<ul style="list-style-type: none"> <li>● Description of what happened or what people did</li> <li>● Use humans as instrument</li> <li>● Interactive processes or events</li> </ul>
<b>Data Analysis Methods</b>	<ul style="list-style-type: none"> <li>● Control</li> <li>● Operational definition</li> <li>● Replication</li> <li>● Hypothesis testing</li> </ul>	<ul style="list-style-type: none"> <li>● Comprehending</li> <li>● Synthesising</li> <li>● Theorising</li> <li>● Recontextualising</li> </ul>

According to the characteristics of the two major research methodologies listed in the table, the present study obviously suits qualitative research. The preceding section on philosophical research paradigms has confirmed the qualitative research nature of

this study in terms of its assumption, purpose, and research question. Regarding data, this research has two kinds of collected data. The first type is a group of stories collected in Phase 1 operational component of this study. A story is regarded as a transfer instrument of the knowledge of humans as the result of interactions among individuals, as well as between individuals and the context. In addition, each collected story is a description of an event that involves humans and context. The process of analysing stories in Phase 1 aims to map a holistic picture of the knowledge embedded in stories, which is regarded as a synthesis to analysis. The second type is a cognitive map collected in Phase 2. In this study, a cognitive map is used to reflect and describe the received knowledge delivered by stories. Cognitive maps can be analysed quantitatively, but they also represent interactions between the story received and the knowledge delivered by the story. In addition to the collected stories and cognitive maps, the relationships between the stories and the maps demonstrate both the supply-side and receive-side of storytelling. The purpose of requiring both kinds of data is to theorise how stories and storytelling influence knowledge creation to address one of the sub-research question. The aforementioned roles of stories and cognitive maps as data in this study indicate that data characteristics and method of analysis are driven primarily by qualitative research.

#### **4.4. Research Method**

The research method is defined as “the bounded system created by the researcher to engage in empirical investigation, the overall approach to the investigation” (Pickard, 2007, p. 83). Scholars, such as Hennink, Hutter, and Bailey (2011), called this research method the fieldwork approach. This research foundation concerns strategies, for example, survey research in quantitative research and Delphi study in qualitative research, and appropriate techniques for a research design (Bulmer, 1984), regardless whether it is called a method or an approach. The term “research method” is used in this chapter by adopting the definition of research method provided by Pickard (2007) to represent research strategy because the employed research method leads the overall empirical designs and operations for this study. The term is also necessary to explain and justify the employed research techniques precisely. The employed techniques are addressed separately from the section of research method later in this chapter. In the following section, the employed research method is discussed and justified by comparing other potential methods for this research.



#### **4.4.1. The Employed Research Method – Instrumental Case Study**

Case study is chosen as the research method for this study from other potential research methods, such as ethnography. Case study is one of the research methods with a field setting as the research environment (Cooper & Schindler, 2011). Other methods with field settings include ethnography and action research. The present study is designed to be launched under actual environmental conditions because it aims to discover the uses of story and storytelling empirically, which is better in studying the influences and outcome of a story and storytelling under actual environmental conditions and to examine the interactions between storytelling and people. The present study also intends to provide more practical suggestions in using stories and storytelling to manage issues. Hence, studying storytelling by directly involving people and acquiring the viewpoints of insiders through a case study, that is, the two characteristics of conducting research inherent in a field setting (Neuman, 2011), is an appropriate method for the present study. The three research methods that are launched in a field setting, namely, case study, ethnography, and action research are similar in terms of implementation. Thus, all can be applied in this research. Table 4.2 attempts to demonstrate the differences among these research methods. The justifications for adopting case study as the research method in the present study are explained after the table.

With regard to the main research question of this study, the objective is to investigate the processes of individual creation of knowledge through stories and storytelling in the organisational context. By matching the research question with the data in Table 4.2, ethnography is obviously an unsuitable method for this study. Ethnography describes and interprets a cultural group and its culture from a holistic view (Creswell, 2007; Pickard, 2007). Ethnography researchers seek to understand how human behaviours reflect the culture of a group (Leedy & Ormrod, 2001). By contrast, this study does not intend to study the pattern and culture of a particular group, and the outcome of the research is not expected to be the descriptions of a social setting. Furthermore, ethnography seeks to retrieve unstructured data (Atkinson & Hammersley, 1998). By contrast, this study purposefully searches for stories as the data for analysis. The investigation focus is a practice, which is storytelling. Action

**Table 4.2: Characteristics of the Three Field Research Methods**

	Action Research	Ethnography	Case Study
<b>Definition</b>	Discovering the most effective solution to a problem in sequential trial- and-error manner (Cooper & Schindler, 2011)	“Field research that emphasises providing a very detailed description of a different culture from the viewpoint of an insider in the culture to facilitate understanding.” (Neuman, 2011, p. 423)	“A case study is an empirical inquiry that investigates a contemporary phenomenon in depth and within its real-life context, especially when the boundaries between phenomenon and context may not be clearly evident” (Yin, 2014, p. 16)
<b>Investigation Focus/Unit of Analysis</b>	Practices/Experiences	Culture/Groups/ Human interactions	Phenomena
<b>Expected Form of Outcome</b>	Solutions	Descriptions/Interpretations	In-depth knowledge of a specific problem
<b>Role of Researcher</b>	Insider of setting, making changes	Insider of setting, observing	Outsider of setting, facilitating
<b>Time Dimension</b>	Longitudinal	Longitudinal	Cross-sectional / Longitudinal

research is a potential research method for this study from this standpoint. However, this study does not seek changes in applying stories and storytelling.

Correspondingly, the generated solutions from the field research are unexpected. Moreover, a longitudinal study is unnecessary because of the aforementioned two points. In addition, participating inside the field setting is difficult for the researcher of the present study, although the researcher is available for any kind of cooperation with participating organisations and attempts to propose possible cooperations. The difficulties include the intent of participating organisations, possible recourses provided by participating organisations, and the training background of the researcher. Research resources are also crucial considerations when designing a research method for a study (Flick, 2007a). Hence, among the research methods, both action research and ethnography, which require researchers to be an insider in field settings, are not implementable because of the limitations in research resources.

As mentioned earlier, if storytelling is regarded as a practice, then other characteristics of action research will not suit the research design. In this manner, the position of this research in terms of the research method becomes critical. According to the research statement and the main research question, knowledge transfer,

knowledge creation, and organisation practices, apart from stories and storytelling, are determined as phenomena. First, the organisation practice defined in the research question does not refer to an action or a process, but to the routine system of an organisation that reflects on the organisation. Second, this study aims to determine the processes of knowledge transfer and creation as phenomena that happened at the individual and organisational levels. The circumstance of this study is then described as studying the phenomena of knowledge transfer and creation by applying storytelling in an organisational context. Therefore, a case study is appropriate for the present research. Organisational context is the case of this research. In addition, the environment of a construction project is selected to represent the case of organisational context, which is further discussed later in this chapter.

A narrative inquiry is another possible method that can be applied in this research based on its notion. A narrative inquiry is the study of the ways in which humans experience this world (Connelly & Clandinin, 1990; Clandinin & Huber, 2010). The present study determines the story as the unit of analysis in Phase 1 operational implementation. However, this research is not a narrative inquiry. First, the focus of a narrative inquiry is life experience under a specific theme. For example, Sisson (2011) conducted a narrative inquiry to study the professional identities of public preschool teachers through the experiences of five preschool teachers. Morris (2011) used narrative inquiry to discover the ethnic identity development of single mothers by understanding their life experience. By contrast, this research focuses on the phenomenon of knowledge creation through storytelling. Hence, as a research method, narrative inquiry is inappropriate for the present study in terms of the research purpose. Moreover, this study argues that the definitions of a narrative inquiry as a research method are loosely used in the literature. Discussions on associations between narrative inquiry and research methodology, as well as philosophical foundation, in the literature also have a gap. The scholars of narrative inquiry, such as Clandinin and colleagues (Connelly & Clandinin, 1990; Clandinin & Huber, 2010), as well as Wells (2011), focus on narrative analysis when introducing a narrative inquiry. The terms narrative inquiry, research, and analysis are used interchangeably in the literature. Therefore, this research does not employ narrative inquiry as the research method. Instead, it claims that narrative inquiry shares several common notions with this research through data collection and analysis techniques. The present research adheres to case study as the employed research method.

Another interesting connection between case study and narrative inquiry is that the latter is one of the methods framed by a case study (Stoecker, 1991; Wells, 2011).

The three types of case study are intrinsic, instrumental, and collective. An instrumental case study is adopted by the present research. It aims to provide an insight into a focus on an issue, concern, phenomenon, or theory (Stake, 2003; Creswell, 2007; Pickard, 2007). Cases are then selected to illustrate the focus, and the cases themselves become less important as a vehicle of investigation (Stake, 2003; Creswell, 2007; Pickard, 2007). In a case study, an event, program, activity, or one or more individuals can be the unit of analysis (Creswell, 2007). The stories in Phase 1 and the cognitive map in Phase 2 of the operational implementations of this study are the units of analysis. Both employed stories and collected cognitive maps are instruments that can reflect the phenomena of knowledge transfer and creation in organisational context.

## **4.5. Operational Implementation**

The operational implementation of this research is divided into two phases to answer the main and sub-research questions and their corresponding research objectives. The objective of Phase 1 operational implementation is to identify the knowledge carried by stories. Meanwhile, Phase 2 operational implementation addresses the objectives in examining the types and structure of knowledge gained by individuals after listening to stories. These objectives provide evidence to construct a holistic picture of knowledge creation through the transfer of knowledge by storytelling. The following section describes and justifies the operational portions of this study in terms of invited engaged projects and participants, selection of data collection, and selection of data analysis. The following section also recorded the journey of the researcher in operational implementations, which is one of the challenging steps in conducting a research.

### **4.5.1. Journey to Engaged Parties Invitation**

The researcher started inviting organisations to participate in this research in June 2011. The first contacted organisation was the Hong Kong office of a British-owned global construction consulting firm. The researcher presented this research to the

senior management of this consulting firm. After the presentation, the senior staff expressed an intent to be involved in this project, and the researcher was invited to attend a few workshops about knowledge management held by the consulting firm. Unfortunately, the researcher lost contact with the senior staff after several months without a specific reason. The researcher attempted to seek another engaged party in March 2012. The second contacted organisation is a Chinese-owned stock-listed construction company in Hong Kong. The researcher spoke with a senior management staff of this company. A formal letter (Appendix A) accompanied by a proposal (Appendix B), was sent to the management staff via email. The management staff responded positively in terms of cooperation but subject to the approval of the director of the company. Unfortunately, the director turned down the proposal because the company was expanding and no resource could be dedicated for research and development.

After two failed attempts, the researcher changed her strategy in May 2012. From focusing on a particular organisation, the strategy was changed to spreading connections to different construction project teams. The researcher attempted to use her network to contact some middle or senior management staff in different construction project teams from different companies. This strategy adopts the notion of a snowball sample of purposive sampling in qualitative research, which relies on chains and networks (Flick, 2007a; Pickard, 2007; Merriam, 2009). Formal invitation letters (content is similar with Appendix A) to introduce the study and the manner of cooperation were sent by e-mail. The result of this strategy was positive. The researcher successfully collected data for Phase 1 operational implementation. A strong network was developed through smooth cooperation between the researcher and the engaged parties in this phase. The established network resulted in the successful data collection for Phase 2 operational implementation.

#### **4.5.2. Phase 1 Operational Implementation**

This phase of operational implementation is designed to address the first research sub-question of this study, that is, what knowledge is embedded in stories? If storytelling is divided into the supply side and the demand side, then this operational phase establishes a new method to examine the knowledge that can be supplied through storytelling. According to the function of this phase, a story is regarded as the unit of data account in both data collection and analysis. The decision for the unit of data is consistent with the sample selection (Merriam, 2009). Stories are also the cases to be studied in this qualitative research, as discussed earlier. Therefore, the

core in the sampling criteria for this phase of the study is not the participants and their employing organisations, but the stories.

A total of seven participants joined data collection during this operational phase. Brief information about the participants is provided in Table 4.3. The participants came from four construction companies. Among them, three were contractors and one was a consultant. All participants are members of the management staff of construction projects, which offers the benefit of accommodating the common nature of the content of the collected stories from a qualitative sampling viewpoint. This common nature of the content of the stories helps generate convincing results in terms of revealing knowledge through inductive analysis because the findings will generate significant diversity without a common nature connecting the collected stories. The findings of this phase of the study are expected to have a rich context related to construction project management. Hence, the findings may generate effects in this field. Projects are classified as a secondary type of organisation with limited time and resources, huge complexity, and a new team each time (Schindler & Eppler, 2003). Management activities within projects are similar to managing organisations with high complexities but with a temporal nature. Aside from contributing to construction project management, the findings of this phase are also significant to managerial issues in organisations, such as ways to apply storytelling as a knowledge transfer approach. In addition, construction project management can particularly benefit from the effects of knowledge transfer because of the short and temporary lifetime of project teams. Therefore, studying storytelling under the context of construction project management can undoubtedly reflect knowledge and experience to organisations or teams in different forms. Although the sampling strategy used is snowball, the aforementioned arguments indicate that the collected stories during this phase are concrete representative cases to study storytelling under the organisational context and to ensure the external validity of the data, that is, the collected data can be generalised (Cooper & Schindler, 2011; Yin, 2014) to other management studies.

**Table 4.3: Background of Participants in Phase 1 Operational Implementation**

Participant Initial	Company	Position	Work Experience in Field (Yrs.)
Participant A (Pilot Test)	A (Contractor)	Site Engineer	5
Participant B	B (Contractor)	Commercial Manager	40
Participant C	C (Contractor)	Senior Safety Officer	15
Participant D	B (Contractor)	Senior Quantity Surveyor	17
Participant E	A (Contractor)	Site Engineer	12
Participant F	D (Consultant)	Senior Quantity Surveyor	12
Participant G	D (Consultant)	Works Package Manager	14

#### **4.5.2.1. Storytelling Sessions –**

##### **Collecting Stories through Semi-Structured Interviews**

Phase 1 of the operational implementation of this research aims to collect stories to understand knowledge carried by such stories. Therefore, this operational phase began by asking participants to tell stories. The most direct approach to accomplish this task is to interview the participants and have conversations with them (Clandinin & Huber, 2010). A story circle, also called an anecdote circle, is another technique to collect stories. A story circle aims to generate and gather collective stories and simultaneously share stories within a specific group (Snowden, 2000; Callahan, Rixon & Schenk, 2006; O'Neal, 2006). However, the present research seeks individual stories because it aims to investigate knowledge evolution at the individual level. Therefore, story circle is inappropriate because the contents of the stories generated from such circle will be influenced by others outside the story world.

An interview can provide a data-collection environment where the interviewer and interviewee can discuss a specific topic comprehensively. An interview is suitable for this phase of data collection because it is not a two-way dialogue, that is, only the interviewees share their real-life stories, and the role of the interviewer is simply to elicit those stories (Hennink, Hutter & Bailey, 2011). In addition, the interviewer, who is also the researcher in this study, assumes the role of a research instrument and avoids affecting the content of the collected stories. The three typical types of interview are structured, semi-structured, and unstructured. The researcher intends to develop a casual and comfortable atmosphere that encourages knowledge sharing based on the willingness of the participants. However, the researcher cannot decide on the location of the interviews that is convenient for the participants. The

researcher exerts efforts to conduct an informal interview. Hence, a formal, highly structured interview is not suitable. Unstructured and semi-structured interviews offer a more relaxing atmosphere to elicit stories. If the interviews in this phase of data collection adopt an unstructured format by using direct, flexible, exploratory, and open-ended questions to elicit work-related stories from the participants (Pickard, 2007; Merriam, 2009), then the only question that can be asked during the interviews is: Can you tell me an impressive story about your project? However, the researcher considers this approach to be inappropriate for this phase of data collection. Although such approach provides participants with flexibility and freedom to share their thoughts, which is good for knowledge capture and sharing, it will make them feel lost and tense easily when they do not recognise the term that the “story” embraces. The participants may think too much on what they believe is the right format, or they may be clueless with regard to what constitutes a story. Moreover, the participants may share their thoughts and experiences with a loose structure in terms of story. Data analysis during this phase aims to analysis structured stories. The structure of a story is defined in the previous chapter. Stories with a complete structure are necessary because they can direct the effects of storytelling as an approach to knowledge transfer. If stories with loose structures are used in this research, then the validity of studying stories and storytelling will be denied. Therefore, unstructured interviews are inappropriate for this research.

Semi-structured interviews are the most suitable type of interview for this phase of data collection because it can offer a casual atmosphere for knowledge sharing. Semi-structured interviews are typically applied to elicit a specific data format by flexibly asking pre-determined questions (Merriam, 2009). Hence, semi-structured interviews can lead to structured story formation by flexibly using of a set of prepared questions. Before the interviews, the researcher prepared a set of questions to elicit stories from the participants. The complete set of proposed questions used in the interviews is found in Appendix C. This set of questions has been designed to guide the flow of the interviews and to provide reminders to the researcher during each interview. The proposed questions are classified into seven categories based on the knowledge of the researcher on the comprehensive structure of a story revealed from the literature. The purpose of each category and the asking space of the proposed questions are listed in Table 4.4. Several questions are prepared for each category. The questions are asked flexibly based on the situation and progress of the interview. The questions are asked following a causal sequence to collect structured stories.



Questions for initiating a particular interview and for eliciting a story, such as “Can you share with me a (some) memorable event(s) related to your work?” are asked in the beginning of the interview. Questions about experiences, feelings, and the background of each event are asked if such elements are missing in a particular story. At the end of each storytelling, comments, reflections, and the rationale for sharing a particular story are asked from the interviewees to round up the structure of a story. Cantonese is the medium of the interviews because all the participants are Chinese-Hong Kongers. Cantonese is the best medium for the interviews to encourage knowledge sharing and to make the participants feel at ease while telling their stories.

#### 4.5.2.2. Process and Outcome of Eliciting Collected Data

The first interview was held separately and in advance as a pilot test to assess the design of the semi-structured interview for eliciting stories. The first interview was conducted successfully. No significant change in the questions was made for future interviews. The only difference is that most participants in Phase 1 data collection required interview questions for preparation. However, the researcher does not want to make the interviews too formal. Therefore, a brief summary of the interview and several sample questions (Appendix D), and not the complete set of questions in Appendix C, was sent to the participants by e-mail before the interviews. This action helps the participants feel comfortable by having a better concept of the interviews.

**Table 4.4: Categories of the Prepared Questions in Phase 1 Data Collection**

Category	Asking Space and Purpose
Initiating the interview	Asking at the beginning of the interview to have a warm-up session for the interviewer and interviewee
Eliciting events	Asking after the initiating session of the interview or at the beginning of eliciting each event to create a space for a story
Eliciting experiences and practices	Asking during eliciting a particular event
Eliciting feelings and emotions	Asking during eliciting a particular event
Eliciting background and rationale of events	Asking during eliciting a particular event
Eliciting comments, emphases, reflections, or lessons learned	Asking at the end of eliciting a particular event
Eliciting background and rationale of sharing a particular event/experience	Asking at the end of eliciting a particular event

However, the distributed sample questions are less structured. The questions sufficiently provide the concepts of the content of the interview, but not that of the actual interview. As a result, the researcher easily controls the atmosphere and progress of the interviews, and the interviews are bounded by the prepared answers of the participants.

Seven storytelling sessions were conducted during Phase 1 data collection through semi-structured interviews. These seven sessions correspond to the seven participants described in Table 4.3. All interviews were recorded with the permission of the participants. The researcher has considered the ethical issues of research conduct thoroughly. The summary of the interview states clearly that the interviews are intended to be recorded with permission obtained beforehand (Appendix D).

**Table 4.5: Collected Stories from Seven Interviews**

Interview and Participant Initial	No. of Collected Stories	Title of the Stories
Participant A (Pilot Interview)	3	<ul style="list-style-type: none"> <li>● Change of Design by Architect</li> <li>● Potentially Hazardous Architectural Design</li> <li>● Handling Design Fault</li> </ul>
Participant B	3	<ul style="list-style-type: none"> <li>● Underestimation of Budget in a Project Outside Hong Kong (Macau)</li> <li>● A Project Manager in a Different Culture</li> <li>● Subcontracting in Macau</li> </ul>
Participant C	3	<ul style="list-style-type: none"> <li>● Low Electric Power on Site</li> <li>● Avoidance of Wooden Ladder on Site</li> <li>● Scaffolding Accident</li> </ul>
Participant D	2	<ul style="list-style-type: none"> <li>● Ceiling Leak</li> <li>● Scratched Marble Floor</li> </ul>
Participant E	3	<ul style="list-style-type: none"> <li>● Drawing on Fairface Concrete Surface</li> <li>● Mistaking Paving Block Materials</li> <li>● Content of Subcontracting</li> </ul>
Participant F	1	<ul style="list-style-type: none"> <li>● Project Suspension and Termination of Works</li> </ul>
Participant G	5	<ul style="list-style-type: none"> <li>● Removal of Mildew from Building Materials</li> <li>● Delay in Package Procurement</li> <li>● Substantial Change in Interior Design</li> <li>● Off-site Production Management</li> <li>● Handling of Misbehaviour on Site</li> </ul>

Permissions for recording were asked again verbally by the researcher before each interview. These actions exhibit honesty, which is one of the critical ethical values in research management (Korac-Kakabadse, Kakabadse & Kouzmin, 2002). All participants allowed the recording of the interviews. The researcher did the transcription of each interview. The transcriptions are used to represent the selected aspects of the behaviours of individuals engaged in interviews (Kowal & O'Connell, 2004). Therefore, the researcher attempts to transcribe the content that encompasses the elements of a story. The transcription was done in Cantonese–Chinese to preserve the authentic content of the stories and to avoid deviations.

**Table 4.6: List of Selected Stories**

Initial of Selected Story	Title
Story 1	Handling Design Fault
Story 2	Removal of Mildew from Building Materials
Story 3	Delay in Package Procurement
Story 4	Handling Misbehaviour on Site
Story 5	Project Suspension and Termination of Work
Story 6	Scratched Marble Floor

A total of twenty-three stories have been transcribed from the seven successful interviews. Each collected story was given a title according to its content. Table 4.5 lists the titles of the twenty-three stories and their storytellers. A selection from these stories is needed for analysis because a large amount of content must be analysed with very limited human resource, that is, only a single researcher. In addition, not all stories have a good structure. This research sets the following criteria to select appropriate stories for analysis based on the necessary elements revealed in a well-structured story.

- The elements of each episode in a story should be balance, that is, comments from the storyteller should be limited and the story should not lack content for a plot.
- The plot or patterns of events of a particular story should be obvious.
- The elements of the plot should be coherent.
- Ideally, the setting should be clear.

The researcher carefully studied all the collected stories. Six stories were selected for analysis based on the aforementioned criteria. The titles and initials of the six selected stories are listed below (Table 4.6).

#### **4.4.2.3. Data Analysis – A Modified Narrative Analysis**

Data analysis during Phase 1 is consistent with the principles of a narrative analysis by revealing knowledge from the stories; however, no common procedure exists for doing so. The function of this method is to map narratives and to provide a formal meaning structure (Neuman, 2011). Narrative analysis is a fuzzy analytical technique with an unclear definition because the rationale and processes for its application vary as a result of the influences of discourse, content, and conversation analysis in qualitative analysis. Narrative, discourse, content, and conversation analyses relate with one another because all deal with words during the analytical process. In general, content analysis ascertains words, discourse illuminates marginalised ideas, narrative analysis reveals the experiences of individuals (Grbich, 2007), and conversational analysis generates linguistic issues. Sharing the assumption with discourse analysis, narrative analysis is concerned with the use of words in stories that construct reality. Content is one of the foci of narrative analysis that shares the function of content analysis. Correspondingly, narrative analysis examines the theme and pattern of content in stories. Linguistic features, such as vowel sounds and turn-taking in conversations, are also considered in narrative analysis, as influenced by conversation analysis. In addition to these influences, the core values of narrative analysis are the reality of the stories being told, the literary genre, the story world, and the causal relationships between actions and events in a story. The causalities within a narrative involve the concept of narrative reasoning (Bruner, 1986; Polkinghorne, 1988).

Narrative analysis and the analysis of a narrative are different analytical approaches under the umbrella of narrative inquiry from the cognitive psychology perspective (Polkinghorne, 1995; Smeyers, 2008). On one hand, the analysis of a narrative adopts the concept of paradigmatic knowing designated by Bruner (1986). The principle of paradigmatic cognition is to employ categorisation or conceptualisation to classify one or more instances according to its or their attribute concept (Bruner, 1986; Polkinghorne, 1995) and to discover the relationships among those categories or concepts (Smeyers, 2008). The paradigmatic cognitive process results in a categorical and matrix structure of knowledge defined by Mandler (1984), such as

taxonomy. By applying a paradigmatic thought in analysing a narrative, the analysis of a narrative aims to examine themes across stories or the taxonomies of types of stories, characters, or settings (Polkinghorne, 1995). On the other hand, narrative analysis adopts the concept of the narrative mode of knowing designated by Bruner (1986). Narrative cognition involves understanding human intentions and actions that are the consequences of the interaction of previous learning and experiences, presently situated pressures, and the proposed goals and purpose of a person (Bruner, 1986; Polkinghorne, 1995). By applying the concept of narrative cognition, narrative analysis aims to synthesise or configure collected events and happenings (Polkinghorne, 1995). The present study develops a new analytical method to reveal contextual and conceptual knowledge that adopts the concepts of narrative cognition. The process of data analysis in the present study is modified narrative analysis grounded on the cognitive psychology perspective. The present study is concerned with the intentions, actions, and experiences of, as well as the lessons learned by the characters in the story. Therefore, this study employs narrative analytical procedures rather than paradigmatic analytical ones. The function of narrative analysis is to answer how and why a particular outcome came about based on the contribution of events and happenings into the story plot (Polkinghorne, 1995; Smeyers, 2008). This study designs a new analytical method following the principles of narrative analysis that attempts to reveal contextual knowledge carried by stories by linking the causalities of events. This process adopts the concept of the causal analysis of story structure designated by Trabasso, Stein, and Johnson (1981) that reflects the causal relationship between human actions and consequences within a particular story. This relationship is based on the temporal order between actions or events. Temporal order, also known as content, reflects the meaning of a story and is one of the analytical concerns of narrative analysis from the methodological perspective (Mishler, 1995; Elliott, 2005). Hence, examining the causality of story content provides a clear understanding of the meanings of those actions and events in a particular literacy context. However, the new analytical method employs identification of story constituents from a discourse level and organises them into a coherent developmental account, that is, the story level. The identification process of this analysis does not aim to categorise the concepts carried by a story, but deals with story structure and constituents. From a methodological perspective, identification examines the textual structure of the story, which is another analytical concern of narrative analysis proposed by Mishler (1995). This process aims to provide a deeper understanding of a particular story structure and significant story constituents. The story structure and significant story constituents of a particular story potentially

provide evidence to reveal conceptual knowledge from the story. Identifying data falls into the paradigmatic mode of reasoning, which may contradict the principle of narrative analysis based on the cognitive psychology perspective. However, the configuration process aligns seamlessly with the concept of narrative analysis. Nevertheless, the present study keeps identification to provide a comprehensive picture of knowledge from stories. If either the paradigmatic or narrative mode of thought is ignored, then the study will fail to capture the rich diversity of thought (Bruner, 1986). According to Polkinghorne (1995), the result of narrative analysis is typically explanatory stories. Nonetheless, the essence of narrative analysis is to synthesise or configure events into explanations with the interpretation of the researcher (Polkinghorne, 1995; Smeyers, 2008). Instead of producing an explanatory story, the explanations of contextual and conceptual knowledge revealed from a story are given to provide a clear representation of knowledge.

### ***Coding Development and Analytical Procedure***

A coding scheme is developed by the researcher of this study for analysing stories to reveal knowledge embedded. A coding scheme can lead to systematic coding. The process of coding embraces the notion of categorisation (Cooper & Schindler, 2011). The coding of the present research is used to induce different story constituents from stories. The data analysis of Phase 1 aims to reveal contextual and conceptual knowledge as the two main categories of knowledge from stories. Code development is carried out by keeping this aim in mind. Therefore, code development adopts theories of narratology and story grammar from the literature to achieve this aim. This kind of code development generates deductive codes (Hennink, Hutter & Bailey, 2011) that are not raised from the data but from the knowledge of the researcher learned from the literature. By contrast, the analytical procedure functions as an inductive approach to induce different types of story information from the story content according to the coding scheme. The researcher of this study is also the coder of this study due to resources limitation of this project. In this case, the validity of the results would be criticised due to researcher's bias. This research study would like to admit that the final content of the results, namely the revealed knowledge from stories, is possible to be different if the stories are coded by other researchers. This is because qualitative research involves subjective interpretation of the researchers due to the philosophical logic aforementioned. However, kinds of knowledge revealed from stories, like problem solving knowledge or characteristics of characters, would remain if one follows the proposed analytical procedure. This is because the coding

scheme directs the kinds of revealed knowledge. Therefore, the proposed coding scheme and analytical procedure function in the same way if other researchers operate them. In addition, the research study aims to explore what knowledge is carried by stories in general, not to explore what knowledge is carried by a few specific stories. Based on the above point, researcher's bias raised from her knowledge of stories' background does not influence the validity of the results. Details of the coding scheme and the analytical procedure are provided in the next chapter.

### ***Role of Translation in Data Analysis***

Translation was applied in Steps 3 and 9 of the story analysis during this phase (the complete analytical procedure can be found in the next chapter). This process was used to translate the story content from Cantonese-Chinese to English. Typical translation procedures were not followed in the research method, such as involving a bilingual translator and processing the transcript in formal procedures (Guest, Namey & Mitchell, 2013) because story information is processed in the original language, Cantonese-Chinese, and translation is embedded in the interpretation of the researcher of the results of the story analysis during this phase. Therefore, translation during those procedures will not affect the validity of data analysis. Moreover, introducing the modified analytical method to the story and the types of knowledge revealed are two of the main contributions of this study. The content of knowledge does not affect this study. That is, translation was only performed to help readers who do not know Cantonese-Chinese understand the analytical content and results of the thesis. Translation is not an analytical tool for this study. However, it must be performed more seriously if the analytical method applied aims to present the revealed knowledge content of a particular case.

### **4.5.3. Phase 2 Operational Implementation**

Phase 2 of the operational implementation aims to address the second and third research sub-questions of the present study: How do individuals understand the story? What knowledge is gained by individuals through storytelling? This phase studies the recipient side of storytelling to round up a holistic investigation of storytelling. Phase 2 requires collecting and analysing the cognitions of individuals after listening to the stories. Another batch of seven participants joined data-collection

process during this phase. They came from three of the construction contractors in Phase 1. Table 4.7 summaries the information on the seven participants in this phase. This group of participants also came from the construction industry. The selected stories are relevant to construction project management. Therefore, the storytellers from Phase 1, the six employed stories, and the seven participants for this phase share common general knowledge and language about the field. Thus, the study is more significant to knowledge transfer and creation because knowledge transfer and sharing need a context. This common background is regarded as a context that facilitates knowledge transfer.

**Table 4.7: Brief Information on Participants in Phase 2**

Participant Initial	Company	Position	Work Experience in Field (Yrs.)
Participant H (Pilot Test)	A (Contractor)	Site Engineer	6
Participant I	C (Contractor)	Assistant Building Service Engineer	4
Participant J	B (Contractor)	Quantity Surveyor	7
Participant K	B (Contractor)	Quantity Surveyor	4
Participant L	B (Contractor)	Assistant Quantity Surveyor	2
Participant M	B (Contractor)	Assistant Building Engineer	2
Participant N	B (Contractor)	Quantity Surveyor	6

#### **4.5.3.1. Story-Listening Workshop –**

##### **Cognitive Mapping as a Data-Collection Technique**

This phase of implementation is designed to examine the outcome of storytelling and stories toward individuals. Telling stories to participants and inquiring about their understanding are means to achieve the purpose. This step initiates the preliminary design of data collection in this phase. One of the approaches to inquire about the understanding of individuals is through interviews. However, one of the disadvantages of interviews is that the thoughts of the participants are led by the interviewer and the questions. Thus, the outcome may not reflect pure understanding of the stories delivered by individuals. Therefore, cognitive mapping is chosen as the data-collection technique in Phase 2. Using cognitive mapping as a research technique is common. A considerable number of studies, such as those by Brown (1992), Ahmad and Azman (2003), Wheeldon and Faubert (2009), Franzosi (2010), and Wheeldon (2010, 2011), have emphasise the applications and contributions of



cognitive mapping in research methods. For example, Brown (1992) demonstrated that cognitive maps provide better data quality than repertory grids for qualitative research. Cognitive mapping is a visual representation technique that entails a low degree of involvement of the researcher during data collection. Cognitive mapping enables a researcher to clarify and save thinking, conceptions, and subjective paradigms of individuals on particular issues through the graphical expressions of meaning (Eden, 2004; Tikkanen et al., 2006; Siau & Tan, 2008; Wheeldon & Faubert, 2009). The outcome of the cognitive mapping technique is the cognitive map. A cognitive map can reflect the knowledge of individuals based on the assumption that meaning is based on cognitive structure (Siau & Tan, 2008; Wheeldon, 2010). Cognitive maps can be used to elicit structure and content of the mental process of individuals (Ahmad & Ali, 2003). Understanding the cognitive structure of an individual implies the pattern of their knowing in a particular story, which helps address the “how” question in this phase. A cognitive map is also a visual representation that describes the internal mental model of the concepts of an individual as well as their relationships. Therefore, a cognitive map helps address the “what” question in this phase. Hence, cognitive mapping is applied to examine the knowledge gained by an individual from storytelling.

A story-listening workshop was conducted to collect cognitive maps of the knowledge gained by individuals from storytelling. The seven participants attended the workshop individually. They were asked to draw a cognitive map for each story they listened to. At the beginning of each workshop, a written summary of information about the workshop including its purpose and process, as well as a guide on cognitive map development, (Appendix E) was given to each participant. Time was provided for each participant to read the information carefully and to ask questions about the workshop to enable them to understand what will happen during the workshop. This step is also an ethical procedure that provides the participants with the opportunity to give their informed consent (Pickard, 2007) and to develop trust between the researcher and participants. The researcher also explained the workshop and introduced the steps for developing cognitive maps in detail. The guide is listed below and the details are in Appendix E. Providing a guide ensures smooth and successful cognitive map development because not everyone knows about the use of cognitive maps. The researcher acts as the facilitator in the story-listening workshop, and avoids influencing the reflection and recollection of the participants regarding the stories they have listened to during cognitive map development.

- Step 1: Listening to a story
- Step 2: Identifying concepts/keywords
- Step 3: Linking concepts/keywords and describing the relationships among them
- Step 4: Explaining concepts/keywords and their relationships

The first workshop was designated as the pilot. A story was broadcasted via a recording to Participant H. The pilot workshop was successful, and thus, the same procedures were used in future workshops. Two stories from the six stories selected in Phase 1 were broadcasted to each participant via a recording. Permissions were given by the participants in Phase 1 to use their stories in Phase 2. The six stories were assigned twice equally among the six participants, except for Story 4, which was also delivered in the pilot workshop. As a result, 13 cognitive maps were collected from the 7 participants. The details of the allocation of stories and the identities of the corresponding collected maps are presented in Table 6.1 in Chapter 6.

#### **4.5.3.2. Interpretation of Collected Cognitive Maps**

The map is the unit of analysis in Phase 2 implementation. Analysing visual data is a huge challenge in research. Categorisation and interpretation are applied to analyse the collected data to address the research sub-questions for this phase. The collected cognitive maps were categorised in two ways. The first step is to categorise the structure of the maps. The structure of a cognitive map can reflect the processing and the constructed pattern of the story information by the mental model of an individual. No strict rule was given to the participants in drawing their cognitive maps, which is conducive to achieving primary reflections from the structure of the maps. The maps are classified into concept, semantic, and casual maps. The characteristics of these maps are presented in Chapter 6. The structure of the maps was also grouped as schematic or characterised, thus implying two types of knowledge structure in the human mind. This classification provides evidence to determine how individuals process story information. The second categorisation step is concerned with the contents of map constructs and their relations, which were categorised as interpretation of story content and reflections on stories. These two categories provide evidence to understand what knowledge is gained by an individual through storytelling.

## **4.6. Summary**

This chapter attempts to describe the research design and its philosophical foundations in a logical and concise manner. Justifications of the research design in terms of the selection of the research methodology, research method, participant sampling, data-collection techniques, analytical techniques, and implementation issues are also addressed. This detailed acknowledgement implies a serious construction of the research validity of this study, which refers to whether the study is true and certain (Guion, Diehl & McDonald, 2013). Several scholars have argued that the term validity is inapplicable to qualitative research, and that the term trustworthiness implies validity and reliability in qualitative research (Golafshani, 2003). Validity and reliability are measureable in quantitative research, and the traditional means of evaluating them are difficult to apply in qualitative research (Flick, 2007b). This research also attempts to ensure reliability, which aims to guarantee that the same procedures for conducting a research can be followed by future researchers (Yin, 2014). As a qualitative research, the reliability of the present study is difficult to evaluate. However, this study adopts the standardisation concept (Flick, 2007b) in both design and implementation stages. For example, standardised steps to analyse stories (refer to Chapter 5) and a guide to cognitive map development are provided. Such procedures indicate that this chapter provides concrete infrastructure for and connection with the next two chapters.

## **Chapter 5**

# **Analysing Stories**

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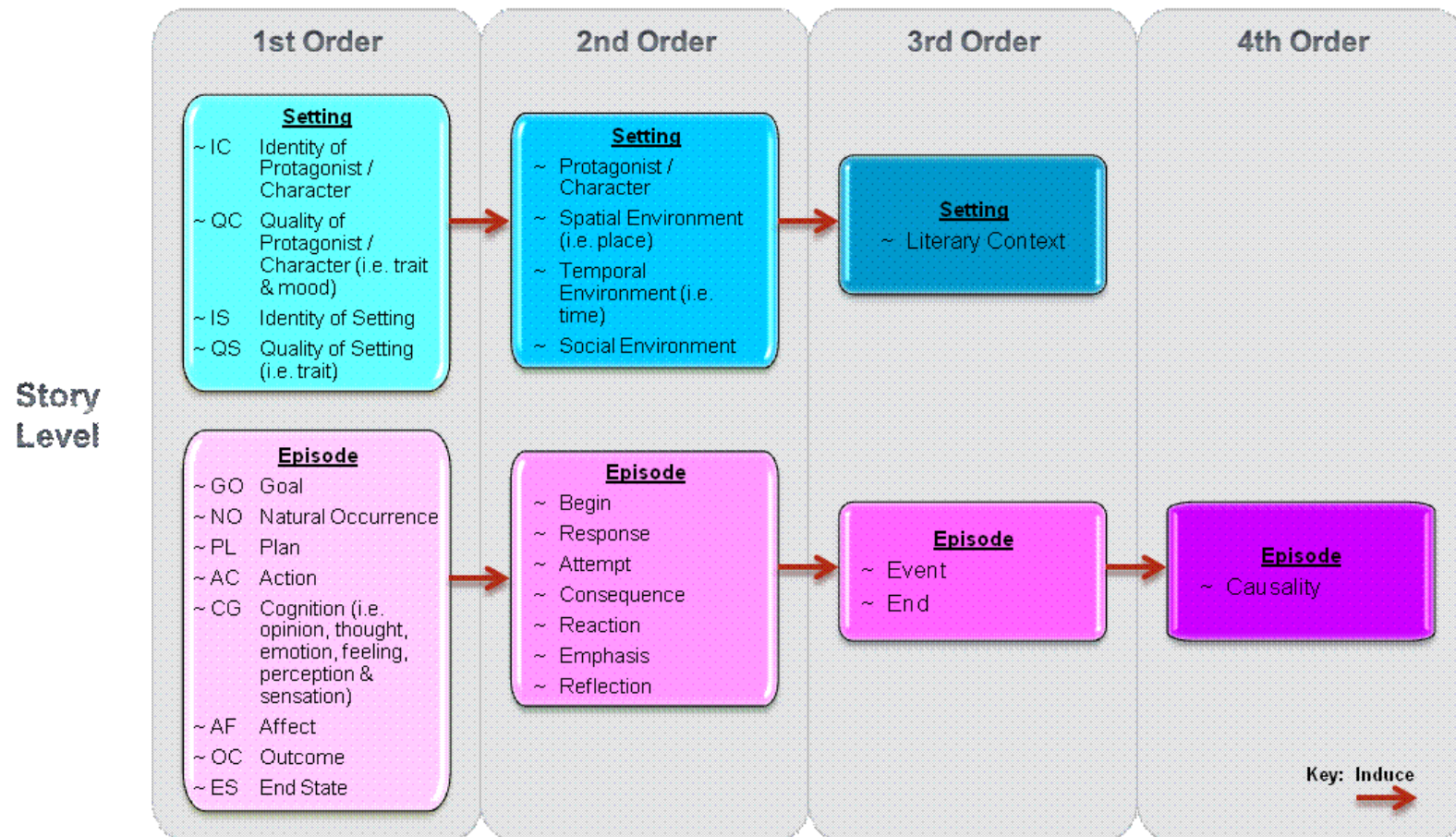
## **5. Analysing Stories**

### **5.1. Introduction**

Analysing stories is crucial in data analysis to address a sub-question in this study, namely, “what knowledge is embedded in a story?”, and to develop an inductive theory for this research. This chapter introduces an analytical method to reveal contextual and conceptual knowledge embedded in a story. The six stories that are collected from Phase 1 of the data collection process are analysed in this chapter. A coding scheme is also developed to carry out the analysis procedure, which answers the aforementioned sub-question of this research.

### **5.2. Coding Scheme**

Figure 5.1 shows the proposed coding scheme, which comprises several codes (Hennink, Hutter & Bailey, 2011), that are grounded on story grammar and narratology. Story grammar is concerned with the causal relationships between each story constituent, whereas narratology is concerned with the sequence of events, story time, and story space. The proposed coding scheme also comprises four orders of codes that apply the deductive data search approach (Hennink, Hutter & Bailey, 2011) to conceptualise story information. The present research is built upon an inductive conceptual framework. The proposed coding scheme applies the codes-to-theory model for qualitative inquiry (Saldaña, 2009) and uses specific codes to generate abstract concepts.



**Figure 5.1: The Proposed Coding Scheme for Story Analysis**

The coding scheme comprises all the constituents at the story level of the narrative. The analysis procedure identifies the different types of knowledge that are embedded in a story. Therefore, this research focuses on the story layer (content of the story) rather than on the discourse layer of the narrative, even though the latter may include knowledge in other aspects. The story-level codes are divided into two streams, namely, setting and episode attributes. The setting codes under the first order are related to the setting of the narrative and are arranged based on narratology. For example, identity (IC) and quality (QC) are assigned to a particular character by adopting the story existence notion of Chatman (1978). The setting codes in the second order comprises the protagonist/character, spatial environment, temporal environment, and social environment, which are all related to literary context, that is, the only setting code in the third order. These codes are applied to induce additional information from the story characters and to instigate different contexts from the narratives. The literary context induces information on the story setting, which, in turn, is used to shed light on the connection between a story and conceptual knowledge.

The episode codes in the first order correspond to the constituents at the lowest level of the story grammar, such as action (AC) and affect (Golafshani). The episode codes in the second order are connected to the codes that are related to the story episode in later orders. These codes, such as begin and response, contain a temporal feature that induces other episode-related codes with a temporal feature. The episode codes in the third order, such as event and end, cluster the information on the story episode that is induced by the codes in the first and second orders. These two codes in the third order also contain a temporal feature, which reflects the causal relationships within a story in terms of their sequence. Given the nature of a story, only the event code can be used repeatedly throughout the four orders. A new event is identified from the story when a clear time gap is present in the story flow. The fourth order comprises only the causality code, which aims to identify the causal relationships among the story constituents that are coded by the second- and third-order episode codes. Given that the uniqueness of a story is reflected in its plot, this part of the analysis mainly focuses on causality because this code reflects the plot of a story. Plot is a recognisable pattern of linked events (Sarbin, 1986; Cobley, 2001) that is similar to the schematic knowledge structure of the human memory. The causality of a story may come in different types, which include INITIATE, MOTIVATE, CAUSE, THEN, AND, and RESULT. These causalities are designated based on the grammatical rules of the story (Stein & Glenn, 1979; Trabasso, Stein & Johnson,

1981). The significant causal relationships among the episode codes reveal the contextual knowledge that is embedded in stories. Table 5.1 describes the applications of each causality type. MOTIVATE, CAUSE, and THEN share similar characteristics, in which the former story constituent affects the latter in a temporal sequence. They provide potential foundations for significant causalities determinations. Therefore, the significant causalities were decided based on these four types of causalities. These causalities differ in terms of the activeness of their actions and the effectiveness of their influences. Among these three causality types, MOTIVATE produces the greatest effect on activeness and effectiveness, CAUSE produces a fair effect, and THEN produces the most insignificant effect.

**Table 5.1: Causality Types and their Applications**

Causality	Applications
INITIATE	This causality is assigned between two story constituents when the former (usually the begin section) introduces the rationale of the latter (usually the response, attempt, or reaction).
MOTIVATE	This causality is assigned between two story constituents when the former motivates an active action(s) that is performed by a character or narrator in the latter constituent.
CAUSE	This causality is assigned between two story constituents when the former initiates a passive action(s), reaction(s), or response(s) that is(are) performed by a character or narrator in the latter constituent.
THEN	This causality is assigned between two story constituents when they produce similar effects to the story but occur in a temporal sequence. These two constituents are coherently influenced by the preceding constituent.
AND	This causality is assigned between two story constituents when they produce similar effects to the story and occur simultaneously. These two constituents are coherently influenced by the preceding constituent.
RESULT	This causality is assigned between two story constituents when the former produces the consequence or ends the story.

### 5.3. Analysis Procedure

The analysis procedure is preceded by 10 steps that contribute to the application of the induction approach. A story comprises micro-scale practices and settings that



stimulate macro-scale contexts and meanings. The analysis procedure codes these micro-scale pieces of information into macro-scale views. These 10 steps are designated based on the structure of the story to deal with the episode and setting attributes of the story structure and to improve the accuracy of the analysis procedure. Steps 1 to 3 were conducted to deal with the setting-related story information and to determine the literary context of the stories that could help connect the story with the embedded conceptual knowledge. Steps 4 to 10 were conducted to deal with the episode-related story information and to determine the causalities of the stories that could help identify the embedded contextual knowledge in those stories. Figure 5.2 illustrates these 10 steps one by one. The demonstration of the whole analysis would be showed in Appendix F. Steps 1 to 6 were conducted using NVivo version 10, a software package for qualitative research, to improve the manageability and organisation of story information. Each story was regarded individually in NVivo.

In Step 1, each story information was allocated into lines to improve their manageability. The setting codes in the first order, such as the identity and quality of a particular character, were applied to the story information that introduced the setting of a story. Such story information included information on the character, spatial context, temporal environment, and social context of the story. Each identity was assigned a unique number based on its quality. For example, Character 1 in Story 1 referred to the protagonist of the story. This identity number was then used to cluster each story information on a particular setting into different groups. Step 2 corresponded to the setting codes in the second order. The information on character, spatial environment, temporal environment, and social environment were grouped into sections, which altogether composed the literary context. Therefore, Step 2 also induced the story information that was related to the literary context. Step 3 clustered and tabulated the coded story information that was collected in the preceding two steps. The coded information on the literary context was described by the literary existence and was translated from Cantonese to English, which would be discussed in the methodology chapter of this thesis. The implied conceptual knowledge of each literary existence was interpreted one by one to tabulate the coded story information on literary context and to determine how the conceptual knowledge was carried out by stories. The results of this analysis are presented in the latter part of this chapter. In Step 4, the story processing information was identified through the episode codes in the first order, such as goal and action. In Step 5, the coded information in the previous step was assorted into begin, response, attempt, reaction, consequence,



**Figure 5.2: Roadmap for Story Analysis**

emphasis, and reflection. These codes reflected the change in state of a particular event and the end state of the end section that was induced into an event or of the end sections that were identified in the following step. This process corresponded to the episode codes in the second order. Given the story structure, all codes except for begin could appear more than once throughout the four orders. Each group of coded information was also assigned with a unique number, such as Reaction 1 and Attempt 2. In Step 6, the grouped story information was divided into two sections, namely, event and end, to determine the episode structure of the story that was being analysed. This step corresponded to the episode codes in the third order. Each story had a unique end section, but might include more than one event section. Therefore, each event was given a unique identity number, such as Event 1.

In Step 7, the coded story information and sections were mapped based on the induction process that was carried out in the previous steps to ascertain and visualise the grouped story information, event/end sections, and latent causalities, as well as to develop a visualised platform for determining and classifying the causalities in the following step. Figure 5.3 shows an example of a story map, and Appendix G shows the maps of all the six stories. Figure 5.4 is the English version of the same story for non-Cantonese readers. In Step 8, different types of causalities were assigned into the coded story information that was found in each event/end section. The flow and change in state of the story could be visualised through the story map that was developed in the previous step. This step corresponded to the episode codes in the second and third orders. Each of the identified causalities was given a unique number, such as MOTIVATE 1.1. Given that the changes in state and event/end section presented two different levels of influence, the causalities were separately assigned based on their respective group of codes. Steps 3 to 6 reflected the temporal feature of the story.

In Step 9, the significant causalities were pinpointed among all the identified causalities. A causality was considered as significant if its story information provided a story-level implication to a particular story. Given the interpretive nature of this research, no formula or straight-and-fast rules were adopted to measure the significance of these causalities. However, the story constituents and their causal relations, which reflected the crucial experiences and thoughts of a story in terms of

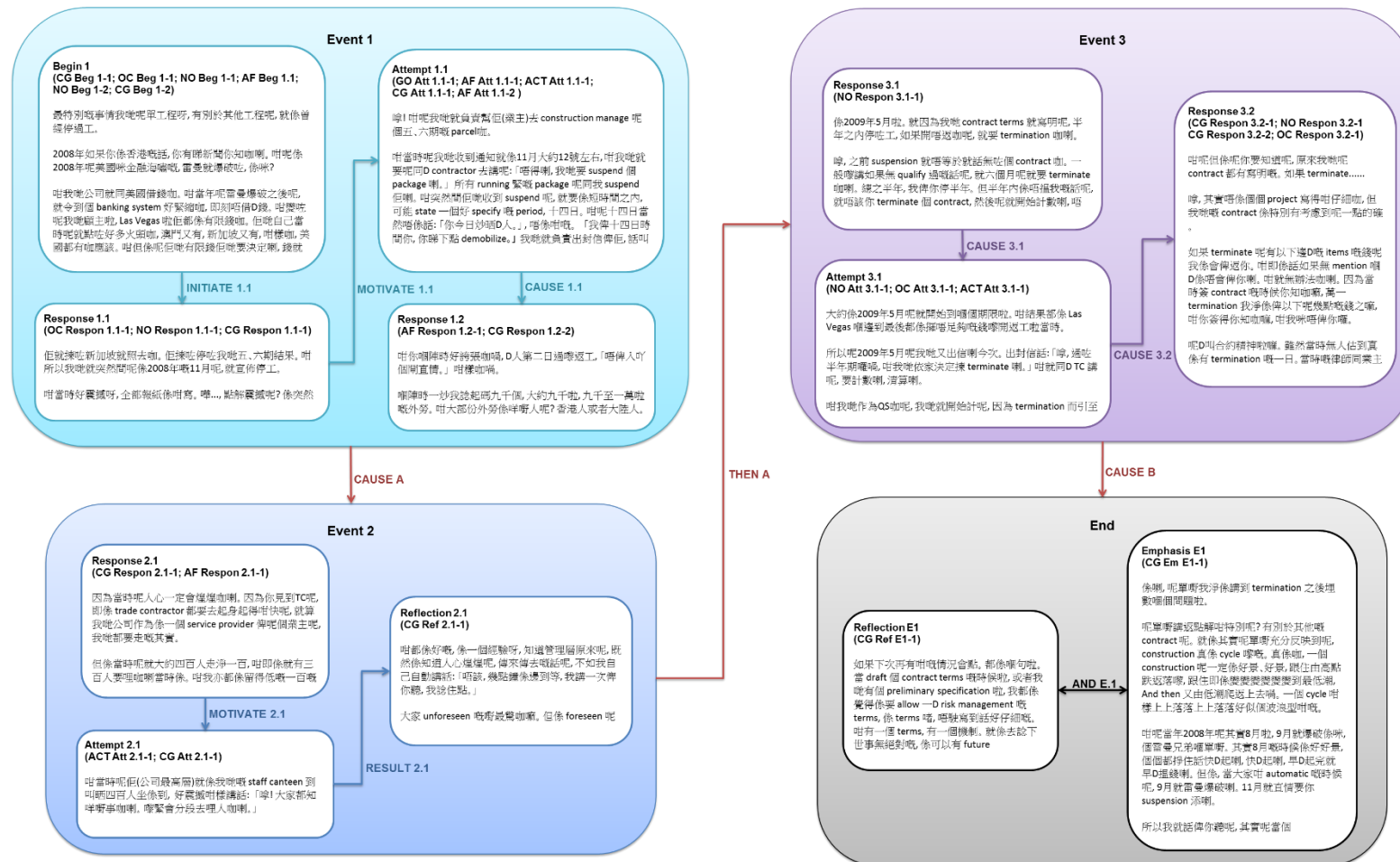


Figure 5.3: Example Story Map (in original language – Cantonese) – Story 5, Project Suspension and Termination of Work

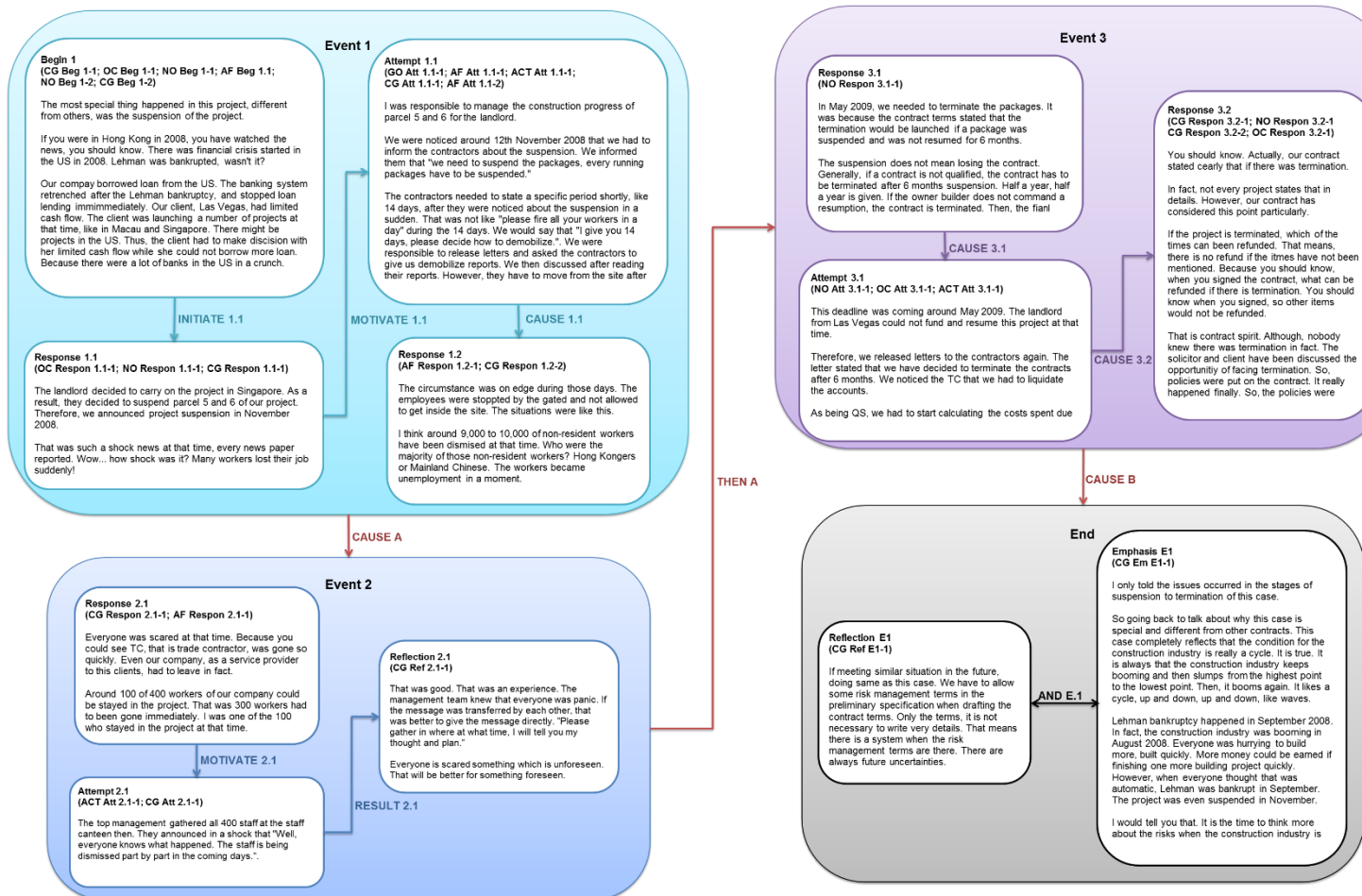


Figure 5.4: Example Story Map (in English translation) – Story 5, Project Suspension and Termination of Work

transferring contextual knowledge, could be used to identify the significance of a particular causality. Implications are typically derived from the RESULT causality and from the story information on crucial attempt, consequence, end state, outcome, reflection, or emphasis. Aside from their eventual state, the comprehensive circumstance of significant causalities must result from causation.

Therefore, the significant causalities were analysed through their causative story information and eventual state. The contents of each significant causality were translated from Cantonese into English to satisfy the requirements and objectives of this research. The role of translation have been discussed in the last chapter.

In Step 10, the rationales for identifying each of the identified significant causalities were explained and tabulated to strengthen the credibility of this research (Golafshani, 2003). The identified significant causalities would be justified with illustrative examples in the latter section of this chapter.

### **5.3.1. The Procedures under NVivo**

Steps 1 to 6 were processed through NVivo. However, this software presents an entirely different working condition for the coding of stories. The information coding process and coding scheme structure were enforced given the restrictions in the working environment of NVivo. Figure 4 shows a portion of the node structure in the NViv working environment. The changes in the environment did not affect the foundation and concept of the coding scheme in the NVivo working environment. Steps 1 to 3 were processed through NVivo to handle literary context information, whereas Steps 4 to 6 were processed to handle episode information.

In Step 1, a new node was created for each identity that was coded in the NVivo working environment. For example, the nodes of Characters 1 and 2 of Story 1 in the NVivo working environment represented the protagonist and the boss of the protagonist in Story 1, respectively. The quality of each identity was assigned a new node, such as the Quality of Character 1, where the node of Quality was a sub-node of that of Character 1. Such node structure organised the story information into clusters to allow the researcher to find a particular group of coded story information

easily. For example, the researcher could find all story information on Character 1 in Story 1 by simply clicking on the node of Character 1.

Episode
End
Event 1
Event 2
Attempt 2.1
Action Att2.1-1
Action Att2.1-2
Cognition Att2.1-1
Outcome Att2.1-1
Attempt 2.2
Action Att2.2-1
Cognition Att2.2-1
Reflection 2.1
Response 2.1
Response 2.2
Event 3
Setting
Literary Context
Protagonist - Character
Social Environment
Identity of Social Existence 1
Identity of Social Existence 2
Spatial Environment
Temporal Environment

**Figure 5.5: Node Structure in the NVivo Working Environment**

In Step 2, four nodes were created in the node tree, namely, character, spatial environment, temporal environment, and social environment. These nodes induced the setting information that was coded by the first order codes. Therefore, these nodes were placed at a higher level in the node tree. The nodes at the lowest level were then accordingly allocated into higher levels. The names of each identity and quality nodes were re-organised based on their setting type. For example, a setting identity that was classified as first appearing social existence was given the node name, “Identity of Social Existence 1,” and was placed in the node tree as the sub-node of the temporal environment. Each existence was given a sub-node to contain

its quality information. The literary context node was then created to dominate the nodes of character, spatial environment, temporal environment, and social

environment. This node could also induce all the coded setting information. Therefore, a setting node was created to dominate all the nodes that were placed under the setting division. The story information that was coded by using the setting node was used to complete the structure of the story. In Step 3, the coded literary context information of each story was retrieved by NVivo and was then tabulated. The story existence information of each story could be viewed by simply clicking on their respective nodes. The literary context of each story was described based on the story information that was retrieved in the NVivo working environment.

In Step 4, the episode codes in the first order were given their respective nodes in the NVivo working environment. Different groups of coded information were assigned with unique numbers and were then used for coding the related story information. In Step 5, the nodes of begin, response, attempt, reaction, consequence, emphasis, and reflection were assigned with unique numbers and were placed in a higher level of the node tree. These nodes were then used to induce the story information that was coded in the previous step by following the temporal sequence of a particular story. In Step 6, the event and end nodes were created with unique numbers to group the coded story information into event and end sections, such as Events 1 and 2. The identity numbers of the nodes that were used in the preceding steps were modified to improve the accessibility and manageability of the coded story information.

For example, the second response of Event1 would be given a new identity number (that is, Response1.2, where “1” refers to Event 1 and “2” refers to the second response in the particular event). The identity numbers of the lowest-level nodes, such as cognition, were also modified. For example, a cognitive coded information in the first group of a cognition content that appeared in Response 2 of Event 1 would be named “cognition respon 1.2-1” to make the node tree more systematic.



## **5.4. Findings of Story Analysis**

The results of the analysis are shown in two parts. First, the results of Steps 1 to 3 reflect the coded story information on the literary context and on the implied conceptual knowledge of each story. Second, the results of Steps 4 to 10 show the significant causalities from the episodes of each story, which, in turn, indicate the embedded contextual knowledge in each story.

### **5.4.1. Conceptual Knowledge from Employed Stories**

This sub-section shows the conceptual knowledge that is embedded in each story. The findings are tabulated to provide a distinct analytical concept. The content of each literary existence is reflected in its setting. Their implied conceptual knowledge, as interpreted by the researcher, is explained along with the content of each literary existence.

#### 5.4.1.1. Story 1 – Handling Design Fault

**Table 5.2: Literary Context and Implied Conceptual Knowledge – Story 1**

Category of Literary Context	Codes	Content	Implied Conceptual Knowledge
<b>Protagonist / Character</b>	Identity of Character 1; Quality of Character 1	<ul style="list-style-type: none"> <li>~ The storyteller is not the protagonist of the story.</li> <li>~ The storyteller works as an assistant engineer. (This information was not taken from the content of the story, but was obtained from the conversation between the storyteller and the researcher).</li> <li>~ The assistant engineer is a novice in the construction industry.</li> <li>~ The assistant engineer takes part in the construction of a footbridge.</li> <li>~ The assistant engineer works under the supervision of a senior engineer.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the role of the assistant engineer in the construction industry:               <ul style="list-style-type: none"> <li>○ The assistant engineer plays a basic role in the construction industry.</li> <li>○ The assistant engineer must always be supervised by a senior engineer.</li> <li>○ The assistant engineer works under a project environment in the construction industry.</li> </ul> </li> </ul>
	Identity of Character 2; Quality of Character 2	<ul style="list-style-type: none"> <li>~ The senior engineer is the protagonist of the story.</li> <li>~ The senior engineer takes part in the construction of a footbridge. The senior engineer is a newcomer in the project at the time of the story.</li> <li>~ The senior engineer is the supervisor of the storyteller.</li> <li>~ The senior engineer has the power to decide on certain aspects of the project.</li> <li>~ The senior engineer is liable for any fault in the project.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the role of the senior engineer in the construction industry:               <ul style="list-style-type: none"> <li>○ The senior engineer works under a project environment in the construction industry.</li> <li>○ The senior engineer can decide on certain aspects of the project.</li> <li>○ The senior engineer must bear the responsibility for any fault in the project.</li> <li>○ The senior engineer supervises and works with assistant engineers in construction projects.</li> </ul> </li> </ul>

**Table 5.2 (Cont. 1): Literary Context and Implied Conceptual Knowledge – Story 1**

Category of Literary Context	Codes	Content	Implied Conceptual Knowledge
<b>Protagonist / Character (Cont.)</b>	Identity of Character 3; Quality of Character 3	<ul style="list-style-type: none"> <li>~ The architect is a stakeholder in the footbridge project.</li> <li>~ The architect is a character in this story.</li> <li>~ The architect has designed the footbridge.</li> <li>~ The architect is the representative of the design party.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the role of the architect in the construction industry: <ul style="list-style-type: none"> <li>o The architect is a stakeholder in a construction project.</li> <li>o The architect designs buildings, footbridges, and drainage plans.</li> <li>o The architect plays a key role in the design team, and he/she can directly communicate with other stakeholders.</li> </ul> </li> </ul>
	Identity of Character 4	<ul style="list-style-type: none"> <li>~ The Buildings Department is one of the characters in the story.</li> <li>~ The Buildings Department approves construction plans in Hong Kong.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the role of the Buildings Department in the construction industry: <ul style="list-style-type: none"> <li>o All construction plans in Hong Kong must go through the Buildings Department for approval.</li> </ul> </li> </ul>
<b>Social Environment</b>	Quality of Character 1; Quality of Character 2; Quality of Character 3; Identity of Character 4	<ul style="list-style-type: none"> <li>~ The assistant engineer (the storyteller) works under the supervision of a senior engineer.</li> <li>~ The senior engineer is the supervisor of the storyteller.</li> <li>~ The architect is the representative of the design team.</li> <li>~ The Buildings Department is one of the characters in the story.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the social network of the construction project: <ul style="list-style-type: none"> <li>o The working relationship between the senior engineer and the assistant engineer is supervisory and hierarchical in nature.</li> <li>o The architect communicates with other parties, including the senior engineer of the project.</li> <li>o The Buildings Department controls building projects in certain aspects. Therefore, the stakeholders of a construction project have to abide by the policies and regulations that are set by the Buildings Department.</li> </ul> </li> </ul>

**Table 5.2 (Cont. 2): Literary Context and Implied Conceptual Knowledge – Story 1**

Category of Literary Context	Codes	Content	Implied Conceptual Knowledge
<b>Spatial Environment</b>	Identity of Spatial Existence 1; Quality of Spatial Existence 1	~ The footbridge is one of the spatial existences that develops the literary context of the story. ~ The footbridge has a ramp under the staircase.	~ Understanding the role of the footbridge in the construction project: <ul style="list-style-type: none"> <li>○ A footbridge must be built.</li> <li>○ The footbridge comprises a staircase.</li> <li>○ The footbridge has a ramp under the staircase.</li> </ul>
	Identity of Spatial Existence 2; Quality of Spatial Existence 2	~ The drainage plan is one of the spatial existences that develops the literary context of the story. ~ The drainage plan includes plans for drainage and water catchment. ~ The drainage plan illustrates the pipe network and the direction of the drainage.	~ Understanding the role of the drainage plan in the construction project: <ul style="list-style-type: none"> <li>○ The drainage plan shows the drainage layout of the footbridge.</li> <li>○ The drainage plan includes the drainage and catchment plans.</li> <li>○ The drainage plan shows the pipe network, the collection of surface water, and the direction of the drainage.</li> </ul>
	Identity of Spatial Existence 3; Quality of Spatial Existence 3	~ The gully check is one of the spatial existences that develops the literary context of the story. ~ The gully check collects water from the upper level of the footbridge.	~ Understanding the role of the gully check in the construction project: <ul style="list-style-type: none"> <li>○ The gully check collects the water from the upper level of the footbridge.</li> </ul>
	Identity of Spatial Existence 4; Quality of Spatial Existence 4	~ The concrete is one of the spatial existences that develops the literary context of the story. ~ The concrete is used to build the footbridge.	~ Understanding the role of concrete in the construction project: <ul style="list-style-type: none"> <li>○ Concrete is used to build footbridges and other infrastructure.</li> </ul>

Table 5.2 (Cont. 3): Literary Context and Implied Conceptual Knowledge – Story 1			
Category of Literary Context	Codes	Content	Implied Conceptual Knowledge
Temporal Environment	N/A	~ No specific timeframe is indicated for this story.	N/A
	Identity of Temporal Existence 1; Quality of Temporal Existence 1	~ The story commences at the first day of the storyteller (the assistant engineer) in the construction project. ~ The story commences after the senior engineer joined the construction project.	N/A
	Identity of Temporal Existence 2; Quality of Temporal Existence 2	~ The concrete is applied two days after the senior engineer reported for duty in the construction project. ~ The concrete is applied a day after the senior engineer asked about the drainage design of the footbridge.	N/A
	Identity of Temporal Existence 3; Quality of Temporal Existence 3	~ The footbridge plans will take two months to secure the approval of the Buildings Department.	~ Understanding the schedule of the construction project: ○ The Buildings Department would take two months to approve the footbridge plans.

#### 5.4.1.2. Story 2 – Removal of Mildew from Building Materials

**Table 5.3: Literary Context and Implied Conceptual Knowledge – Story 2**

Category of Literary Context	Codes	Content	Implied Conceptual Knowledge
<b>Protagonist / Character</b>	Identity of Character 1; Quality of Character 1	<ul style="list-style-type: none"> <li>~ The storyteller is the protagonist of this story.</li> <li>~ The storyteller is a work package manager. (This information was not obtained from the story, but from the conversation between the storyteller and the researcher).</li> <li>~ The work package manager is a member of a project team that represents the client. (This information was not obtained from the story, but from the conversation between the storyteller and the researcher).</li> <li>~ The work package manager claims that it is his second time to participate in this project because the project has been previously terminated.</li> <li>~ During his first day, the work package manager is tasked to remove the deteriorated materials from the building materials. The work package manager decides to remove as many deteriorated materials as possible.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the role of the work package manager in the construction project: <ul style="list-style-type: none"> <li>○ The work package manager collaborates with a team in construction projects.</li> <li>○ The work package manager collaborates with a team that represents the client.</li> <li>○ The work package manager must solve the problems in a construction project.</li> <li>○ The work package manager decides on certain aspects of the project.</li> </ul> </li> </ul>
	Identity of Character 2	<ul style="list-style-type: none"> <li>~ The storyteller has mentioned “we” in the story, thus implying that the storyteller works with a team.</li> <li>~ The team is one of the characters in this story.</li> <li>~ The project team represents the client in the construction project.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the role of a project team in the construction industry: <ul style="list-style-type: none"> <li>○ Project teams organise and manage the construction project.</li> <li>○ Project teams can act as representatives of the client.</li> </ul> </li> </ul>

**Table 5.3 (Cont. 1): Literary Context and Implied Conceptual Knowledge – Story 2**

Category of Literary Context	Codes	Content	Implied Conceptual Knowledge
<b>Protagonist / Character (Cont.)</b>	Identity of Character 3; Quality of Character 3	<ul style="list-style-type: none"> <li>~ The consultant is one of the characters in this story.</li> <li>~ The consultant comes from the Chinese University of Hong Kong.</li> <li>~ The consultant is an expert in certain aspects.</li> <li>~ The consultant has studied removing deteriorated materials from building materials.</li> <li>~ The consultant is a professional in solving the problem in the story.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the role of the consultant in the construction industry: <ul style="list-style-type: none"> <li>○ The consultant may come from other industries.</li> <li>○ The consultant must be a professional in certain areas.</li> <li>○ The consultant is an expert in certain aspects that are uncommon in the construction industry.</li> <li>○ The consultant may provide some valuable advice for the construction project.</li> </ul> </li> </ul>
	Identity of Character 4; Quality of Character 4	<ul style="list-style-type: none"> <li>~ The contractors are among the characters in the story.</li> <li>~ The contractors collaborate with the management team to resolve some issues.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the role of the contractors in the construction project: <ul style="list-style-type: none"> <li>○ The contractors function as stakeholders in a construction project.</li> <li>○ A construction project may have more than one contractor working at the same time.</li> <li>○ Sometimes, the contractors may oppose the suggestions of client representatives.</li> </ul> </li> </ul>
<b>Social Environment</b>	Identity of Social Existence 1; Quality of Social Existence 1	<ul style="list-style-type: none"> <li>~ The construction project environment serves as the social environment of this story.</li> <li>~ The project has been initially suspended, but is later resumed..</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the role of the project in the construction industry: <ul style="list-style-type: none"> <li>○ The project is the working model in the construction industry.</li> <li>○ Construction projects may be suspended.</li> <li>○ A suspended construction project may be resumed.</li> </ul> </li> </ul>

**Table 5.3 (Cont. 2): Literary Context and Implied Conceptual Knowledge – Story 2**

Category of Literary Context	Codes	Content	Implied Conceptual Knowledge
<b>Social Environment (Cont.)</b>	Quality of Character 1; Identity of Character 2; Quality of Character 3; Quality of Character 4	<ul style="list-style-type: none"> <li>~ The work package manager represents the client. (This information was not obtained from the story, but from the conversation between the storyteller and the researcher).</li> <li>~ The team is one of the characters in the story.</li> <li>~ The consultant, who is an expert in removing deteriorated materials from building materials, give some valuable advice for the project team in the story.</li> <li>~ Contractors collaborate with management teams in dealing with certain issues in the construction project.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the social network in a construction project: <ul style="list-style-type: none"> <li>o The work package manager maintains a working relationship with the team. They work together as a project team in a construction project.</li> <li>o A project team collaborates with contractors to complete a construction project.</li> <li>o The project team and the contractors assume different roles and functions in a construction project. Therefore, these two parties must collaborate to function effectively.</li> <li>o The project team hires consultants with special expertise.</li> <li>o Consultants advise the project team on handling highly specialised issues.</li> </ul> </li> </ul>
<b>Spatial Environment</b>	Identity of Spatial Existence 1; Quality of Spatial Existence 1	<ul style="list-style-type: none"> <li>~ Buildings are among the spatial existences that develop the literary context of the story.</li> <li>~ The building in the story is a hotel building.</li> <li>~ Most components of the building are already built at the time of the story. The building has a curtain wall.</li> <li>~ The fit-out of the building has mildew at the time of the story. The building has many drywalls and plasterboards at the time of the story.</li> <li>~ The quality of the plasterboards is easily tarnished by mildew.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the role of the building in the construction project: <ul style="list-style-type: none"> <li>o A building may be used by hospitality or accommodation businesses.</li> <li>o Mildew may affect the quality of a building.</li> <li>o A building may comprise a curtain wall.</li> <li>o Buildings may have a fit out.</li> <li>o Drywalls are used to construct buildings.</li> <li>o Plasterboards are used to construct buildings.</li> <li>o Gypsum boards are used to construct buildings.</li> <li>o Woodworks are used to construct buildings.</li> </ul> </li> </ul>



**Table 5.3 (Cont. 3): Literary Context and Implied Conceptual Knowledge – Story 2**

Category of Literary Context	Codes	Content	Implied Conceptual Knowledge
<b>Spatial Environment (Cont.)</b>	Identity of Spatial Existence 1; Quality of Spatial Existence 1 (Cont.)	~ The hotel building has bathrooms. ~ The bathroom floors are made of marble. ~ The hotel building has gypsum boards and woodworks.	<ul style="list-style-type: none"><li>○ Plasterboards can easily attract mildew.</li><li>○ Bathrooms are among the components of a hotel building.</li><li>○ Bathroom floors may be made out of marble.</li></ul>
	Identity of Spatial Existence 2; Quality of Spatial Existence 2	~ The mildew-affected building materials are painted over. ~ Paint can repel mildew. ~ Paint is mildew-resistant.	~ Understanding the role of anti-mildew paint: <ul style="list-style-type: none"><li>○ An anti-mildew paint is resistant to mildew.</li><li>○ This paint can be applied on building materials.</li><li>○ This paint can be applied on mildew-affected building materials.</li></ul>
<b>Temporal Environment</b>	N/A	~ The story has no specific timeframe.	N/A
	Identity of Temporal Existence 1; Quality of Temporal Existence 1	~ The story commences after the work package manager has resumed his duties in the previously suspended project. ~ The story commences after the project has resumed.	~ Understanding the schedule of the construction project: <ul style="list-style-type: none"><li>○ A construction project can be suspended and resumed. Therefore, a construction project that has been previously suspended may take a long time to finish.</li></ul>

### 5.4.1.3. Story 3 – Delay in Package Procurement

**Table 5.4: Literary Context and Implied Conceptual Knowledge – Story 3**

Category of Literacy Context	Codes	Content	Implied Conceptual Knowledge
<b>Protagonist / Character</b>	Identity of Character 1; Quality of Character 1	<ul style="list-style-type: none"> <li>~ The storyteller is the protagonist of this story.</li> <li>~ The storyteller is a work package manager in a project team that represents the client. (This information was not obtained from the story, but from the conversation between the storyteller and the researcher).</li> <li>~ The work package manager monitors the tasks of the contractors.</li> <li>~ The work package manager attempts to influence the commencement of on-site works.</li> <li>~ The work package manager organises the procurement of the work package. The work package manager discusses the terms of the contract with the contractors.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the role of the work package manager in the construction project:               <ul style="list-style-type: none"> <li>○ The work package manager collaborates with a team in a construction project.</li> <li>○ The work package manager collaborates with a team that represents the client.</li> <li>○ The work package manager organises the tasks of the contractors.</li> <li>○ The work package manager may influence the commencement of on-site works.</li> <li>○ The work package manager organises the procurement of the work package.</li> <li>○ The work package manager discusses the terms of the contract with the contractors.</li> </ul> </li> </ul>
	Identity of Character 2; Quality of Character 2	<ul style="list-style-type: none"> <li>~ The contractor of the renovation package is one of the characters in this story.</li> <li>~ The contractor is responsible for the renovations.</li> <li>~ The contractor employs plaster renderers and brick layers.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the role of the renovation package contractor in the construction project:               <ul style="list-style-type: none"> <li>○ The renovation package contractor is responsible for the renovation tasks in a construction project, including plaster rendering and brick laying.</li> <li>○ The renovation package contractor employs labourers for renovation work.</li> <li>○ The renovation package contractor organises and manages the renovation tasks of the workers.</li> </ul> </li> </ul>

**Table 5.4 (Cont. 1): Literary Context and Implied Conceptual Knowledge – Story 3**

Category of Literary Context	Codes	Content	Implied Conceptual Knowledge
<b>Protagonist / Character (Cont.)</b>	Identity of Character 3; Quality of Character 3	<ul style="list-style-type: none"> <li>~ A mechanical, electrical, and plumbing (MEP) contractor is one of the characters in this story.</li> <li>~ The MEP contractor is tasked to install elevators.</li> <li>~ The MEP contractor is tasked to perform MEP-related works in the building.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the role of the MEP package contractor in a construction project: <ul style="list-style-type: none"> <li>○ The MEP contractor handles MEP-related tasks in the construction project.</li> <li>○ The MEP contractor also installs elevators in buildings.</li> </ul> </li> </ul>
	Identity of Character 4	<ul style="list-style-type: none"> <li>~ The storyteller has mentioned “we” in the story, thus implying that the storyteller works with a team.</li> <li>~ The team is one of the characters in this story.</li> <li>~ The project team represents the client in the construction project.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the role of the project team in the construction industry: <ul style="list-style-type: none"> <li>○ The project team organises and manages the construction project.</li> <li>○ Project teams can represent the client.</li> </ul> </li> </ul>
	Identity of Character 5; Quality of Character 5	<ul style="list-style-type: none"> <li>~ The senior executive of the storyteller is one of the characters in this story.</li> <li>~ The senior executive can influence the progress of the construction project.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the role of the senior executive in the construction industry: <ul style="list-style-type: none"> <li>○ The senior executive is ranked higher than the work package manager.</li> <li>○ The senior executive is more powerful than the work package manager.</li> <li>○ The senior executive can influence the progress of a construction project.</li> </ul> </li> </ul>
	Identity of Character 6; Quality of Character 6	<ul style="list-style-type: none"> <li>~ A second contractor who works for another MEP contractor is one of the characters in this story.</li> <li>~ This MEP contractor performs MEP-related tasks in the podium.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the role of the MEP contractor in the construction project: <ul style="list-style-type: none"> <li>○ More than one MEP package contractor can work in different locations for the same construction project.</li> </ul> </li> </ul>

**Table 5.4 (Cont. 2): Literary Context and Implied Conceptual Knowledge – Story 3**

Category of Literary Context	Codes	Content	Implied Conceptual Knowledge
<b>Social Environment</b>	Identity of Social Existence 1; Quality of Social Existence 1	<ul style="list-style-type: none"> <li>~ The construction project environment serves as the social environment of this story.</li> <li>~ The project has been previously suspended, but has resumed after a certain period. However, the packages of the construction project are completely out of sequence.</li> <li>~ The project aims to construct a hotel building. (This information was obtained from the last story, and this story was told after the last story. The storyteller narrated the events in the same project during the interview with the researcher.)</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the role of the project in the construction industry: <ul style="list-style-type: none"> <li>o The project is the working model in the construction industry.</li> <li>o A construction project may be suspended for various reasons, such as insufficient funds.</li> <li>o A suspended construction project may be resumed.</li> <li>o A construction project may aim to build a hotel infrastructure.</li> </ul> </li> </ul>
	Quality of Character 1; Quality of Character 2; Quality of Character 3; Identity of Character 4; Quality of Character 5; Quality of Character 6	<ul style="list-style-type: none"> <li>~ The work package manager collaborates with a project team that represents the client. (This information was not obtained from the story, but from the conversations between the storyteller and the researcher.)</li> <li>~ The work package manager administers the tasks of the contractors.</li> <li>~ The work package manager attempts to influence the commencement of on-site works.</li> <li>~ The work package manager discusses the terms of the contract with the contractors.</li> <li>~ The renovation package contractor handles the renovation tasks in a construction project.</li> <li>~ An MEP contractor handles MEP-related works in a construction project.</li> <li>~ The project team represents the client in the construction project.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the social network in a construction project: <ul style="list-style-type: none"> <li>o The work package manager maintains a working relationship with a team in a construction project.</li> <li>o The project team collaborates with contractors in a construction project.</li> <li>o The project team and the contractors assume different roles and functions in a construction project. Therefore, they need to communicate and work with one another.</li> <li>o The project team can represent the client in a construction project.</li> <li>o Several contractors, such as MEP contractors, serve the same purposes, but work in different parts of a building. Such contractors separately communicate with their respective project teams.</li> <li>o Senior executives may strongly influence the progress of a construction project.</li> </ul> </li> </ul>

**Table 5.4 (Cont. 3): Literary Context and Implied Conceptual Knowledge – Story 3**

Category of Literary Context	Codes	Content	Implied Conceptual Knowledge
<b>Social Environment (Cont.)</b>	Quality of Character 1; Quality of Character 2; Quality of Character 3; Identity of Character 4; Quality of Character 5; Quality of Character 6 (Cont)	~ The senior executive can influence the progress of the construction project. ~ The contractor handles the MEP-related duties in the podium.	<ul style="list-style-type: none"> <li>○ The senior executive can influence the progress of a construction project by giving orders to the work package manager and his/her project team.</li> </ul>
<b>Spatial Environment</b>	N/A	~ This project aims to construct a hotel building. (This information was obtained from the last story, and this story was narrated after the last story. The storyteller narrated the events that happened in the same project during the interview with the researcher). ~ The storyteller has not mentioned any spatial context for this story.	N/A
	Identity of Spatial Existence 1; Quality of Spatial Existence 1	~ The storyteller has mentioned “elevators” in this story. ~ The MEP contractors have not installed elevators during the time-space of this story.	~ Understanding the role of the elevator in a construction project: <ul style="list-style-type: none"> <li>○ The elevator is among the major components of a building.</li> <li>○ The MEP contractor is responsible for installing the elevator.</li> </ul>
	Identity of Spatial Existence 2; Quality of Spatial Existence 2	~ The storyteller has mentioned “bricklaying” in this story. ~ Bricklaying has not been completed within the time-space of this story.	~ Understanding the role of bricklaying in a construction project: <ul style="list-style-type: none"> <li>○ Bricklaying is one of the processes in the construction of a building.</li> <li>○ Bricks are used in the construction of a building.</li> </ul>

**Table 5.4 (Cont. 4): Literary Context and Implied Conceptual Knowledge – Story 3**

Category of Literary Context	Codes	Content	Implied Conceptual Knowledge
<b>Spatial Environment (Cont.)</b>	Identity of Spatial Existence 3; Quality of Spatial Existence 3	~ The storyteller has mentioned the podium of the hotel building in this story. ~ A new MEP contractor has received an award for his exemplary handling of MEP-related tasks in the podium.	~ Understanding the role of the hotel building in a construction project: <ul style="list-style-type: none"> <li>○ A hotel building may have a podium.</li> </ul>
	Identity of Spatial Existence 4; Quality of Spatial Existence 4	~ The storyteller has mentioned the tower of the hotel building in this story. ~ The MEP-related works in this tower has not been completed within the time-space of this story.	~ Understanding the role of the hotel building in a construction project: <ul style="list-style-type: none"> <li>○ A hotel building may have a tower.</li> </ul>
	Identity of Spatial Existence 5	~ The storyteller has mentioned plaster rendering in the story.	~ Understanding the role of plaster rendering in a construction project: <ul style="list-style-type: none"> <li>○ Plaster rendering are among the processes in the construction of a building.</li> <li>○ Plasters are used in the construction of a building.</li> </ul>
<b>Temporal Environment</b>	N/A	~ This story has no specific time frame.	N/A
	Identity of Temporal Existence 1; Quality of Temporal 1	~ The story commences after the suspension of the project has been lifted. ~ The procurement of the packages is inconsistent and does not follow a specified schedule. ~ A six-month time difference is observed in the procurement of the renovation and MEP packages.	~ Understanding the schedule of the construction project: <ul style="list-style-type: none"> <li>○ A construction project may be terminated and resumed. Therefore, previously suspended construction projects may take a long time to complete.</li> <li>○ Packages must be procured consistently.</li> <li>○ The inconsistent procurement of packages may result in a six-month time difference.</li> </ul>

#### 5.4.1.4. Story 4 – Handling Misbehaviour on Site

**Table 5.5: Literary Context and Implied Conceptual Knowledge – Story 4**

Category of Literary Context	Codes	Content	Implied Conceptual Knowledge
<b>Protagonist / Character</b>	N/A	~ No protagonist is identified in this story.	N/A
	Identity of Character 1; Quality of Character 1	~ The head labourer is one of the main characters in this story. ~ The head labourer is employed by the consultant project team that represents the client. ~ The head labourer is suspected to be the perpetrator of an act of misbehaviour, namely, an indecent assault, in this story. ~ The head labourer is advised by the work package manager.	~ Understanding the role of the head labourer in a construction project: <ul style="list-style-type: none"> <li>○ The head labourer is one of the main positions in a construction project.</li> <li>○ Some subordinates are assigned under the head labourer.</li> </ul>
	Identity of Character 2; Quality of Character 2	~ The amah is another main character in this story. ~ The amah is employed by a contractor of the project. ~ The amah claims that she is a victim of the act of misbehaviour.	~ Understanding the role of the amah in a construction project: <ul style="list-style-type: none"> <li>○ The amah is one of the positions in a construction project.</li> </ul>
	Identity of Character 3; Quality of Character 3	~ The on-site construction manager is another character in this story. ~ The on-site construction manager is the first to receive the complaint of the amah.	~ Understanding the role of the on-site construction manager in a construction project: <ul style="list-style-type: none"> <li>○ The on-site construction manager is a member of the project team.</li> <li>○ The on-site construction manager handles affairs that are irrelevant to the progress of a project, such as acts of misbehaviour.</li> </ul>

**Table 5.5 (Cont. 1): Literary Context and Implied Conceptual Knowledge- Story 4**

Category of Literary Context	Codes	Content	Implied Conceptual Knowledge
<b>Protagonist / Character (Cont.)</b>	Identity of Character 4; Quality of Character 4	~ The senior construction manager is another character in this story. ~ The senior construction manager is the second to receive the complaint of the amah. ~ The senior construction manager is the first to investigate the act of misbehaviour.	~ Understanding the role of the senior construction manager in a construction project: <ul style="list-style-type: none"> <li>○ The senior construction manager holds a higher position in a construction project.</li> <li>○ The senior construction manager handles affairs that do not contribute to the progress of a project, such as acts of misbehaviour.</li> </ul>
	Identity of Character 5; Quality of Character 5	~ The storyteller has mentioned a member of the project team who ranks higher than the senior construction manager, but has failed to specify the title of this project member. ~ This team member has been mentioned in the complaint. ~ This team member has not responded to the complaint.	~ Understanding the nature of the construction project team: <ul style="list-style-type: none"> <li>○ The senior construction manager is not the highest position in a construction project team.</li> </ul>
	Identity of Character 6; Quality of Character 6	~ The storyteller has mentioned a foreigner from the project team in the story. ~ The foreigner has been directly addressed in the complaint. ~ The foreigner has forwarded the complaint to the director of the mother company of the project team. ~ The foreigner is assumed to be of higher rank because he was able to report directly to the director.	~ Understanding the nature of a construction project team: <ul style="list-style-type: none"> <li>○ A foreigner can be assigned to a team in a construction project.</li> </ul>



**Table 5.5 (Cont. 2): Literary Context and Implied Conceptual Knowledge – Story 4**

Category of Literary Context	Codes	Content	Implied Conceptual Knowledge
<b>Protagonist / Character (Cont.)</b>	Identity of Character 7; Quality of Character 7	<ul style="list-style-type: none"> <li>~ The director of the mother company of the project team is another character in the story.</li> <li>~ The foreigner has redirected the complaint of the amah to this director.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the role of the director in a construction project: <ul style="list-style-type: none"> <li>○ The director takes part in the progress of a construction project.</li> <li>○ The director must handle serious affairs that do not contribute to the progress of a project, such as acts of misbehaviour.</li> </ul> </li> </ul>
	Identity of Character 8; Quality of Character 8	<ul style="list-style-type: none"> <li>~ The storyteller is one of the characters in this story.</li> <li>~ The storyteller is a work package manager in the story. (This information was not obtained from the story, but from the conversation between the storyteller and the researcher).</li> <li>~ The work package manager is a member of the project team that represents the client. (This information was not obtained from the story, but from the conversation between the storyteller and the researcher).</li> <li>~ The work package manager has ordered his subordinate to respond to the complaint.</li> <li>~ The work package manager is one of the project members who decided to fire the perpetrator.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the role of the work package manager in a construction project: <ul style="list-style-type: none"> <li>○ The work package manager collaborates with a team in a construction project.</li> <li>○ The work package manager collaborates with a team that represents the client.</li> <li>○ The work package manager may give orders to his/her subordinates.</li> <li>○ The work package manager can make decisions on certain aspects of the project.</li> </ul> </li> </ul>

**Table 5.5 (Cont. 3): Literary Context and Implied Conceptual Knowledge – Story 4**

Category of Literary Context	Codes	Content	Implied Conceptual Knowledge
<b>Social Environment</b>	Quality of Character 1; Quality of Character 2; Quality of Character 3; Quality of Character 4; Quality of Character 5; Quality of Character 6; Quality of Character 7; Quality of Character 8;	<p>~ The head labourer, who is employed by the consultant project team that represents the client, is identified as the perpetrator of an act of misbehaviour.</p> <p>~ The amah, who is employed by a contractor, claims that she is a victim of an act of misbehaviour.</p> <p>~ The on-site construction manager is the first to receive the complaint of the amah.</p> <p>~ The senior construction manager is the first to investigate the complaint.</p> <p>~ A project member who ranks higher than the senior construction manager does not respond to both the complaint and the act of misbehaviour.</p> <p>~ The foreigner in the project team redirects the complaint to the director of the mother company of the project team. Therefore, the foreigner is assumed to be of higher rank.</p> <p>~ The director of the mother company of the project team receives the complaint from the foreigner.</p> <p>~ The storyteller is a work package manager of the project team that represents the client. (This information was obtained from the conversation between the storyteller and the researcher).</p>	<p>~ Understanding the social network in a construction project team:</p> <ul style="list-style-type: none"> <li>o A hierarchy exists in the construction project team.</li> <li>o This hierarchy begins from the on-site construction manager (lowest level), the senior construction manager, an unspecified position, the work package manager, another unspecified position, and ends with the director (highest level).</li> <li>o The extent of the authority of these project members depend on their place in the hierarchy.</li> </ul> <p>~ Understanding the social network in a construction project team:</p> <ul style="list-style-type: none"> <li>o The amah can communicate with the managerial project team members even if she is not a core member of the team.</li> <li>o The labourer and the amah may have physical contact with each other.</li> </ul>
<b>Spatial Environment</b>	N/A	~ The storyteller has not specified a spatial existence for this story.	N/A
<b>Temporal Environment</b>	N/A	~ The storyteller has not specified a time frame for this story.	N/A

#### 5.4.1.5. Story 5 – Project Suspension and Termination of Work

**Table 5.6: Literary Context and Implied Conceptual Knowledge – Story 5**

Category of Literary Context	Codes	Content	Implied Conceptual Knowledge
<b>Protagonist / Character</b>	Identity of Character 1; Quality of Character 1	<ul style="list-style-type: none"> <li>~ “Our company” is one of the characters in this story.</li> <li>~ “Our company” refers to the construction company of the storyteller.</li> <li>~ This construction company manages a construction project in parcels 5 and 6 of a resort.</li> <li>~ This construction company is the service provider of the client.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the construction company: <ul style="list-style-type: none"> <li>○ The construction company is one of the stakeholders in the construction industry.</li> <li>○ The primary role of the construction company is to administer the construction of various infrastructure.</li> <li>○ The construction company provides services to clients.</li> </ul> </li> </ul>
	Identity of Character 2; Quality of Character 2	<ul style="list-style-type: none"> <li>~ The client is one of the characters in this story.</li> <li>~ This client is a Las Vegas-based company.</li> <li>~ The client avails of the services of the construction company.</li> <li>~ The client operates resort construction projects in Macau, Singapore, and the US with limited financial resources.</li> <li>~ The client loans its capital from the US.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the role of clients in a construction project: <ul style="list-style-type: none"> <li>○ The client is a stakeholder in a construction project.</li> <li>○ Foreign clients may invest in local construction projects.</li> <li>○ The client may obtain capital from a foreign country.</li> <li>○ The client avails of the services of a construction company.</li> </ul> </li> </ul>
	Identity of Character 3; Quality of Character 3	<ul style="list-style-type: none"> <li>~ The storyteller has mentioned non-resident workers in the story.</li> <li>~ These non-resident workers hail from Hong Kong or Mainland China.</li> <li>~ Approximately 9,000 to 10,000 of these non-resident workers have been dismissed at the time of the story.</li> <li>~ Approximately 400 non-resident workers are left in the project at the time of the story.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the role of workers in a construction site: <ul style="list-style-type: none"> <li>○ The workers in a construction site may be non-resident workers.</li> <li>○ Non-resident workers in Macau include those who come from Hong Kong and Mainland China.</li> <li>○ In 2008, many non-resident workers have begun working in construction sites in Macau.</li> <li>○ Non-resident workers include on-site workers and construction professionals in a project team.</li> </ul> </li> </ul>

**Table 5.6 (Cont. 1): Literary Context and Implied Conceptual Knowledge – Story 5**

Category of Literary Context	Codes	Content	Implied Conceptual Knowledge
<b>Protagonist / Character (Cont)</b>	Identity of Character 4; Quality of Character 4	<ul style="list-style-type: none"> <li>~ Trade contractors are among the characters in this story.</li> <li>~ These contractors follow the requests of client representatives and abide by the terms of contracts in conducting project suspensions and terminations.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the role of contractors in a construction project: <ul style="list-style-type: none"> <li>o The construction project has more than one contractor.</li> <li>o Some of these contractors are working as trade contractors.</li> <li>o A trade contractor follows the requests of the client representative and abides by the terms of contracts in managing construction projects.</li> </ul> </li> </ul>
	Identity of Character 5; Quality of Character 5	<ul style="list-style-type: none"> <li>~ The storyteller is one of the characters in this story.</li> <li>~ The storyteller is a quantity surveyor for a project team that represents the client at the time of the story.</li> <li>~ Approximately 300 of the 400 staff members of the project team have been dismissed after the project is suspended. The storyteller is one of the 100 staff members who have been asked to stay in the project team.</li> <li>~ The quantity surveyor handles the deals between trade contractors after the project has been suspended and terminated.</li> <li>~ The quantity surveyor abides by the terms of the contractor.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the role of the quantity surveyor in a project team that represents the client: <ul style="list-style-type: none"> <li>o Quantity surveyor is one of the positions in a construction project team.</li> <li>o The quantity surveyor of a project team that represents a client must work with trade contractors in handling certain issues.</li> <li>o Quantity surveyors must deal with contract terms.</li> <li>o Quantity surveyors are typically retained in project teams upon the termination of a project.</li> </ul> </li> <li>~ Understanding the role of a construction project team: <ul style="list-style-type: none"> <li>o A construction project team may comprise as many as 400 staff members.</li> </ul> </li> </ul>

**Table 5.6 (Cont. 2): Literary Context and Implied Conceptual Knowledge – Story 5**

Category of Literary Context	Codes	Content	Implied Conceptual Knowledge
<b>Protagonist / Character (Cont.)</b>	Identity of Character 6 Quality of Character 6	<ul style="list-style-type: none"> <li>~ A senior staff member of the construction company has been mentioned in this story.</li> <li>~ The senior staff member has gathered all 400 staff members of the project team and announced the suspension of the project to them.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the role of the senior staff member: <ul style="list-style-type: none"> <li>o A staff member from the top management of a construction company governs the construction projects that are being conducted by the company.</li> <li>o A staff member from the top management of a construction company can strongly influence a project team member, even psychologically.</li> </ul> </li> </ul>
<b>Social Environment</b>	Identity of Social Existence 1; Quality of Social Existence 1	<ul style="list-style-type: none"> <li>~ The project mode work environment serves as the social environment of this story.</li> <li>~ The construction project has been suspended and terminated.</li> <li>~ The construction project is conducted in Macau. (This information was not obtained from the story, but from the conversation between the storyteller and the researcher).</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the project in the construction industry: <ul style="list-style-type: none"> <li>o The project mode work environment is one of the social environments in the construction industry.</li> <li>o A construction project may be suspended and terminated.</li> </ul> </li> </ul>
	Identity of Social Existence 2; Quality of Social Existence 2	<ul style="list-style-type: none"> <li>~ A worldwide banking system has been mentioned in this story.</li> <li>~ The global financial condition is in a critical situation at the time of the story.</li> <li>~ Many US banks were affected by the global financial crisis and refused to provide loans at the time of the story.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the global financial crisis from November 2008 to May 2009: <ul style="list-style-type: none"> <li>o Banks all over the world were affected by the global financial crisis.</li> <li>o Many US banks refused to give loans to their clients.</li> </ul> </li> </ul>

**Table 5.6 (Cont. 3): Literary Context and Implied Conceptual Knowledge – Story 5**

Category of Literary Context	Codes	Content	Implied Conceptual Knowledge
<b>Social Environment (Cont.)</b>	Quality of Character 1; Quality of Character 2; Quality of Character 3; Quality of Character 4; Quality of Character 5; Quality of Character 6	<p>~ A construction company provides services to the client and manages a construction project in parcels 5 and 6 of a resort.</p> <p>~ The client receives services from the construction company (Character 1).</p> <p>~ Approximately 9,000 to 10,000 non-resident workers from Hong Kong and Mainland China have been dismissed from the project at the time of this story.</p> <p>~ Trade contractors follow the requests of client representatives and abide by the terms of contracts in handling project suspension and termination arrangements.</p> <p>~ The storyteller works as a quantity surveyor for a project team that represents the client at the time of the story. The storyteller handles the deals among trade contractors upon the suspension and termination of the project.</p> <p>~ A senior staff member has gathered all 400 staff members of the project team and announced the suspension of the project to them.</p>	<p>~ Understanding the social network of a construction project:</p> <ul style="list-style-type: none"> <li>○ A client avails of the services of a construction company.</li> <li>○ The staff members from the top management of a construction company create a project team to manage the construction project for the client.</li> <li>○ The quantity surveyor is a member of the project team that represents the client. The quantity surveyor works with contractors and the project team in handling certain issues.</li> <li>○ Staff members from the top management govern the construction projects of a company and the activities of the teams.</li> <li>○ The construction project team collaborates with trade contractors in organising the project.</li> <li>○ Some on-site workers are being supervised by the trade contractors and the project team that represents the client.</li> </ul>
<b>Spatial Environment</b>	Identity of Spatial Existence 1; Quality of Spatial Existence 1	<p>~ Parcels 5 and 6 of the resort are identified as the spatial existences in this story.</p> <p>~ These parcels have been allotted for the construction of new buildings managed by the construction company (Character 1).</p>	<p>~ Understanding the building being constructed in the construction project:</p> <ul style="list-style-type: none"> <li>○ A building is being constructed on some parcels of a resort.</li> </ul>

**Table 5.6 (Cont. 4): Literary Context and Implied Conceptual Knowledge – Story 5**

Category of Literary Context	Codes	Content	Implied Conceptual Knowledge
<b>Spatial Environment (Cont.)</b>	Identity of Spatial Existence 2; Quality of Spatial Existence 2	<ul style="list-style-type: none"> <li>~ Contract is a spatial existence in the story.</li> <li>~ The contracts of the project cover the terms and items that pertain to project suspension and termination to manage associated risks.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the role of contacts in a construction project. <ul style="list-style-type: none"> <li>o The contract between the contractors and the project team that represents the client must cover certain terms to manage the associated risks, such as handling project suspensions and terminations.</li> </ul> </li> </ul>
<b>Temporal Environment</b>	Identity of Temporal Existence 1; Quality of Temporal Existence 1	<ul style="list-style-type: none"> <li>~ This story begins on November 12, 2008.</li> <li>~ The project has been suspended around this period.</li> <li>~ The Lehman bankruptcy during that period led to a global financial crisis that significantly affected US banks.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the condition of the construction industry in November 2008: <ul style="list-style-type: none"> <li>o The construction industry was affected by the global financial crisis in November 2008.</li> <li>o The project was suspended during the same month.</li> </ul> </li> </ul>
	Identity of Temporal Existence 2; Quality of Temporal Existence 2	<ul style="list-style-type: none"> <li>~ The project termination arrangements begin in May 2009.</li> <li>~ Project termination occurs six months after the project suspension.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the timeline from the project suspension to the project termination: <ul style="list-style-type: none"> <li>o According to the terms of the contract, a suspended construction project is terminated if such project is not resumed by the client within the succeeding six months.</li> </ul> </li> </ul>
	Identity of Temporal Existence 3; Quality of Temporal Existence 3	<ul style="list-style-type: none"> <li>~ The period of August 2008 to November 2008 is a temporal existence in this story.</li> <li>~ The construction industry was booming in August 2008.</li> <li>~ The Lehman bankruptcy was announced in September 2008.</li> <li>~ The construction project was suspended in November 2008.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the condition of the construction industry from August 2008 to November 2008: <ul style="list-style-type: none"> <li>o The construction industry was booming in August 2008.</li> <li>o The Lehman bankruptcy was announced in September 2008.</li> <li>o The construction industry was affected by the Lehman bankruptcy, thus leading to the suspension of the project in November 2008.</li> </ul> </li> </ul>

#### 5.4.1.6. Story 6 – Scratched Marble Floor

**Table 5.7: Literary Context and Implied Conceptual Knowledge—Story 6**

Category of Literary Context	Codes	Content	Implied Conceptual Knowledge
<b>Protagonist / Character</b>	Identity of Character 1; Quality of Character 1	~ “We” is mentioned by the storyteller as one of the characters in this story. ~ “We” refers to a project team of a contractor that began working in a previously terminated construction project that resumed at the end of 2010. (This information was briefly mentioned in the story. The details of this information were obtained from the conversation between the storyteller and the researcher).	~ Understanding the role of the contractor in a construction project: <ul style="list-style-type: none"> <li>○ A contractor also forms a project team for the construction project.</li> </ul>
	Identity of Character 2; Quality of Character 2	~ The representative of the client is one of the characters in this story. ~ The representative has instructed the contractor to complete the project.	~ Understanding the role of the client representative in a construction project: <ul style="list-style-type: none"> <li>○ The client representative deals directly with contractors on behalf of the client.</li> <li>○ The representative has the power to give orders to contractors.</li> </ul>
	Identity of Character 3; Quality of Character 3	~ “Another contractor” was one of the characters in this story. ~ This contractor has removed the cover boards of the marble.	~ Understanding the role of the contractor in a construction project: <ul style="list-style-type: none"> <li>○ A construction project may have more than one contractor.</li> <li>○ More than one contractor may work simultaneously in a particular component of a building.</li> </ul>
	Identity of Character 4; Quality of Character 4	~ The client is one of the characters in this story. ~ The client does not want to incur additional expenses for the marble floor.	~ Understanding the role of the client in a construction project: <ul style="list-style-type: none"> <li>○ Clients are stakeholders in a construction project.</li> </ul>



			<ul style="list-style-type: none"> <li>○ Clients are typically unwilling to incur additional expenses, and they maximise the value of each cent that they spend.</li> </ul>
<b>Table 5.7 (Cont 1): Literary Context and Implied Conceptual Knowledge – Story 6</b>			
<b>Category of Literary Context</b>	<b>Codes</b>	<b>Content</b>	<b>Implied Conceptual Knowledge</b>
<b>Protagonist / Character (Cont)</b>	Identity of Character 5	<ul style="list-style-type: none"> <li>~ “I” is the storyteller in this story.</li> <li>~ The storyteller is the senior quantity surveyor of the contractor project team. (This information was not obtained from the story, but from the conversation between the storyteller and the researcher).</li> <li>~ The senior surveyor has many black-and-white communications with the client representative.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the role of the senior surveyor in a construction project: <ul style="list-style-type: none"> <li>○ The senior quantity surveyor is one of the positions in a contractor project team.</li> <li>○ The senior quantity surveyor frequently engages in black-and-white communications with the client representative.</li> </ul> </li> </ul>
<b>Social Environment</b>	Identity of Social Existence 1, Quality of Social Existence 1	<ul style="list-style-type: none"> <li>~ The construction project environment serves as the social environment of this story.</li> <li>~ The project has been previously terminated.</li> <li>~ The project team aims to conduct renovation tasks. (This information was obtained from the conversation between the storyteller and the researcher).</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the project in the construction industry: <ul style="list-style-type: none"> <li>○ The construction project environment serves as the social environment in the construction industry.</li> <li>○ Projects in the construction industry can be resumed after termination.</li> </ul> </li> </ul>

**Table 5.7 (Cont. 2): Literary Context and Implied Conceptual Knowledge—Story 6.**

Category of Literary Context	Codes	Content	Implied Conceptual Knowledge
<b>Social Environment (Cont.)</b>	Quality of Character 1, Quality of Character 2, Quality of Character 3, Identity of Character 4, Identity of Character 5, Quality of Character 6	<p>~ “We” refers to a contractor project team that has resumed working for a previously terminated construction project at the end of 2010. (This information was briefly mentioned in the story. The details of this information were obtained from the conversation between the storyteller and the researcher).</p> <p>~ The client representative has instructed the contractor to complete the construction project.</p> <p>~ “Another contractor” has removed the cover boards of the marble.</p> <p>~ The client is one of the characters in this story.</p> <p>~ The senior surveyor has many black-and-white communications with the client representative.</p>	<p>~ Understanding the social network in a construction project:</p> <ul style="list-style-type: none"> <li>○ The client invests in a construction project and employs a representative to work directly with the project managers.</li> <li>○ Contractor project teams perform their tasks based on client instructions that are delivered to them by the client representative.</li> <li>○ The senior quantity surveyor deals directly with the client representative.</li> </ul>
<b>Spatial Environment</b>	Identity of Spatial Existence 1; Quality Spatial Existence 1	<p>~ An incomplete building is among the spatial existences that develop the literary context of this story.</p> <p>~ The bricklaying has been completed at the time of the story.</p> <p>~ A partition wall is constructed inside the incomplete building.</p> <p>~ The floor of the incomplete building is described by the storyteller.</p>	<p>~ Understanding the building being constructed in a construction project:</p> <ul style="list-style-type: none"> <li>○ The building has brick walls.</li> <li>○ A partition wall is installed inside the building.</li> <li>○ The building has floors.</li> </ul>

**Table 5.7 (Cont. 3): Literary Context and Implied Conceptual Knowledge – Story 6**

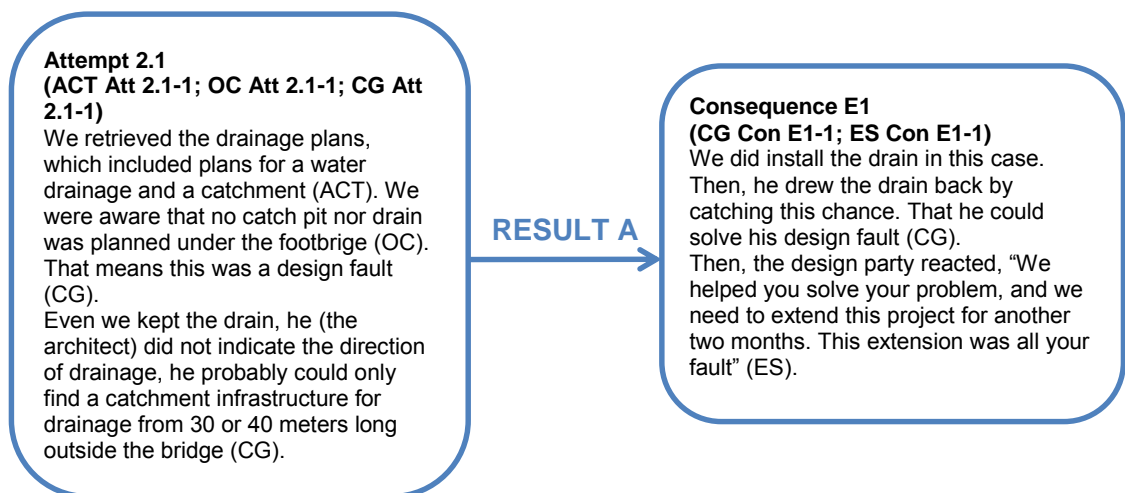
Category of Literary Context	Codes	Content	Implied Conceptual Knowledge
<b>Spatial Environment (Cont.)</b>	Identity of Spatial Existence 2; Quality of Spatial Existence 2	<ul style="list-style-type: none"> <li>~ Marble is among the spatial existences that develop the literary context of this story.</li> <li>~ The marble structures have been completed at the time of the story.</li> <li>~ The marble structures are covered by a layer of foam plastic and a layer of wooden board upon completion.</li> <li>~ These covers are removed after the project is terminated.</li> <li>~ The marble has been scratched after the project is terminated.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the marble structures in a constructed building: <ul style="list-style-type: none"> <li>○ Marble is used in the construction of the building.</li> <li>○ Foam plastic and wooden boards are used to cover and protect the marble structures from any external damage.</li> <li>○ These covers are essential in protecting the marble from scratches.</li> </ul> </li> </ul>
	Identity of Spatial Existence 3; Quality of Spatial Existence 3	<ul style="list-style-type: none"> <li>~ The construction project is conducted in Macau, which is developed as the literary context of this story.</li> <li>~ The climate in Macau is humid during the construction project.</li> <li>~ The humid season in Macau begins in April and ends in May.</li> <li>~ The humid season promotes the growth of mildew.</li> </ul>	<ul style="list-style-type: none"> <li>~ Understanding the climate in Macau: <ul style="list-style-type: none"> <li>○ Macau has a humid climate.</li> <li>○ The humid climate in Macau lasts between April and May. The humid climate promotes the growth of mildew.</li> </ul> </li> </ul>
<b>Temporal Environment</b>	Identity of Temporal Existence 1; Quality of Temporal Existence 1	<ul style="list-style-type: none"> <li>~ This story begins in August 2010.</li> <li>~ The senior quantity surveyor and her project team resume work in this project in August 2010.</li> </ul>	N/A

## 5.4.2. Contextual Knowledge from Employed Stories

This sub-section shows the contextual knowledge identified from the six stories. The findings of each significant causality are divided into two parts. Each significant causality is illustrated by following Step 9 in the story analysis section. The significance of each causality is also justified to provide solid evidence for the determinants.

### 5.4.2.1. Story 1 – Handling Design Fault

#### **Causality – RESULT A**

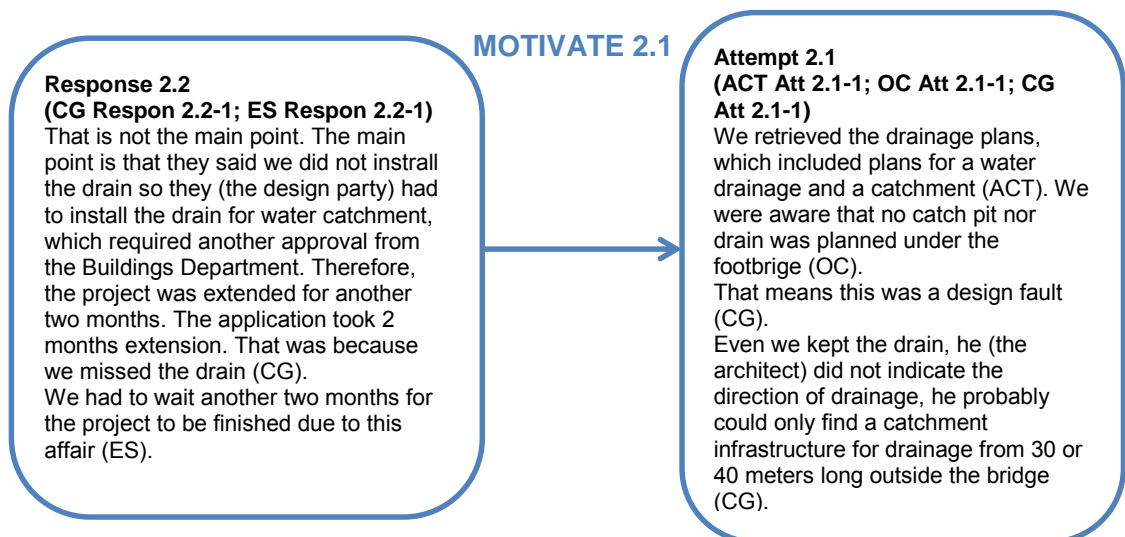


**Figure 5.6: Significant Causality of Story 1 – RESULT A**

**Table 5.8: Justification of the Significant Causality of Story 1 – RESULT A**

Causality	Involved Constituents	Justification
RESULT A	Attempt 2.1; Consequence E1	~ Together with his boss (the senior engineer), the storyteller attempted to retrieve the drainage plans (ACT Att 2.1-1), which indicated the lack of catch-pit or drain under the footbridge (OC Att 2.1-1). These two characters thought that the lack of a drainage system was a fault of the architect (CG Att 2.2-1). Such faults were confirmed after the plans were retrieved. The project was extended for two months (ES CON E1-1), which was believed to be a fault of the engineers rather than the architect. Such result enhances the significance of this lesson. The attempts of the engineers to retrieve the drainage plans were more of a remedy rather than prevention. Listeners can refer to this story in case they encounter a similar situation.

**Causality – MOTIVATE 2.1**

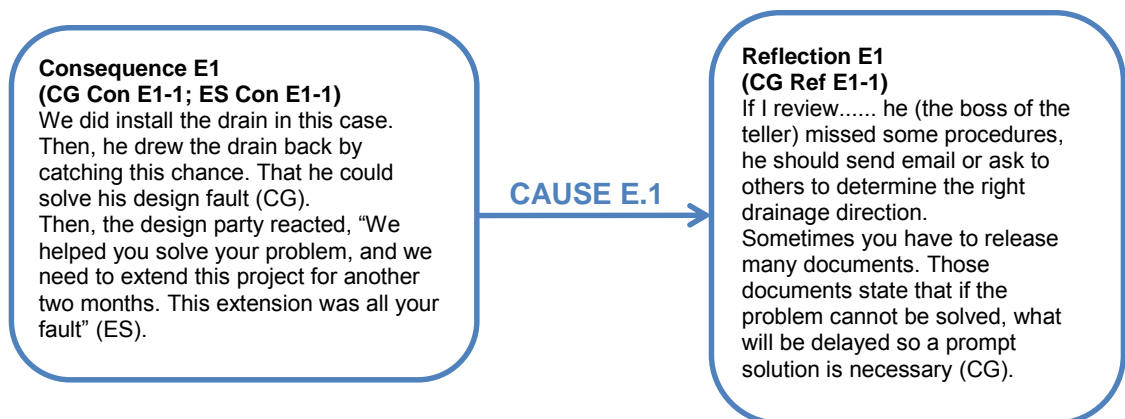


**Figure 5.7: Significant Causality of Story 1 – MOTIVATE 2.1**

**Table 5.9: Justification of the Significant Causality of Story 1 – MOTIVATE 2.1**

Causality	Involved Constituents	Justification
MOTIVATE 2.1	Response 2.2; Attempt 2.1	~ The project was extended for two months (ES Respon 2.2-1), which motivated the characters to retrieve the drainage plans (ACT Att 2.1-1). Although the outcome was unsuccessful, such failure could significantly affect the story receiver. The attempt (ACT Att 2.1-1; OC Att 2.1-1; CG Att 2.1-1) reviewed the outcomes of such incident. The story receivers could refer to this incident when they encounter a similar situation.

**Causality – CAUSE E.1 (A)**

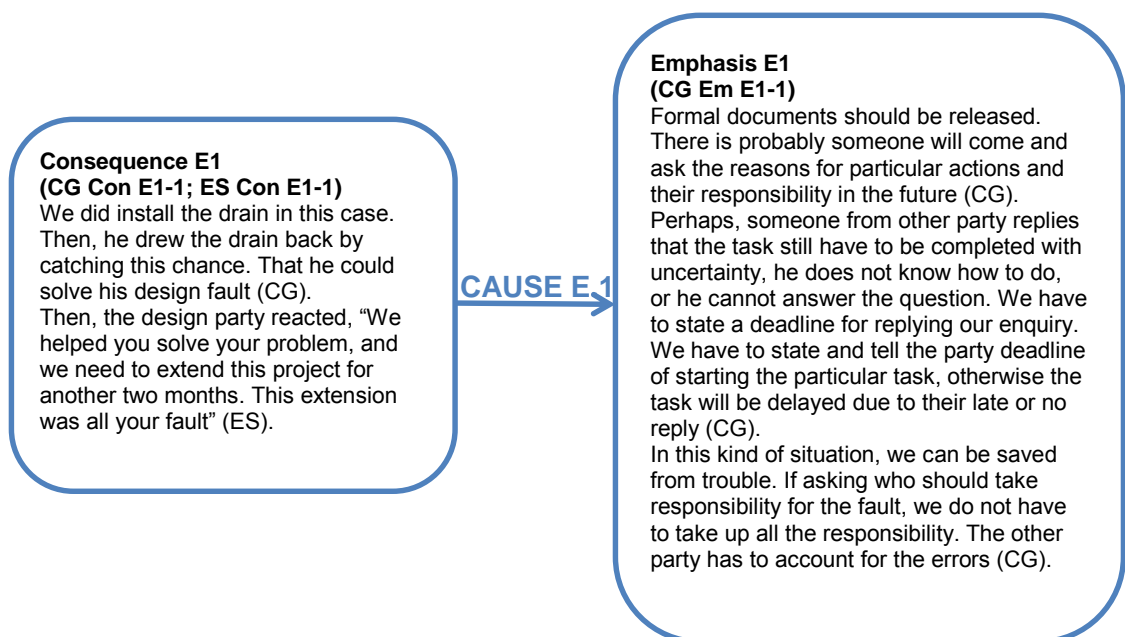


**Figure 5.8: Significant Causality of Story 1 – CAUSE E.1 (A)**

**Table 5.10: Justification of the Significant Causality of Story 1 – CAUSE E.1 (A)**

Causality	Involved Constituents	Justification
CAUSE E.1 (A)	Consequence E1; Reflection E1	~ The two-month project extension (ES CON E1-1) resulted in a negative outcome for the project. The storyteller reflected that the senior engineer failed to fulfill some of the procedures (CG Ref E1-1), such as clarifying the right position, direction, and function of the drainage with the experts on such matter (CG Ref E1-1), and revealing or recording the problem. The knowledge that was obtained by the storyteller was revealed through such reflections. This knowledge could also be used by story receivers in case they encounter a similar problem in the future.

**Causality – CAUSE E.1 (B)**



**Figure 5.9: Significant Causality of Story 1 – CAUSE E.1 (B)**

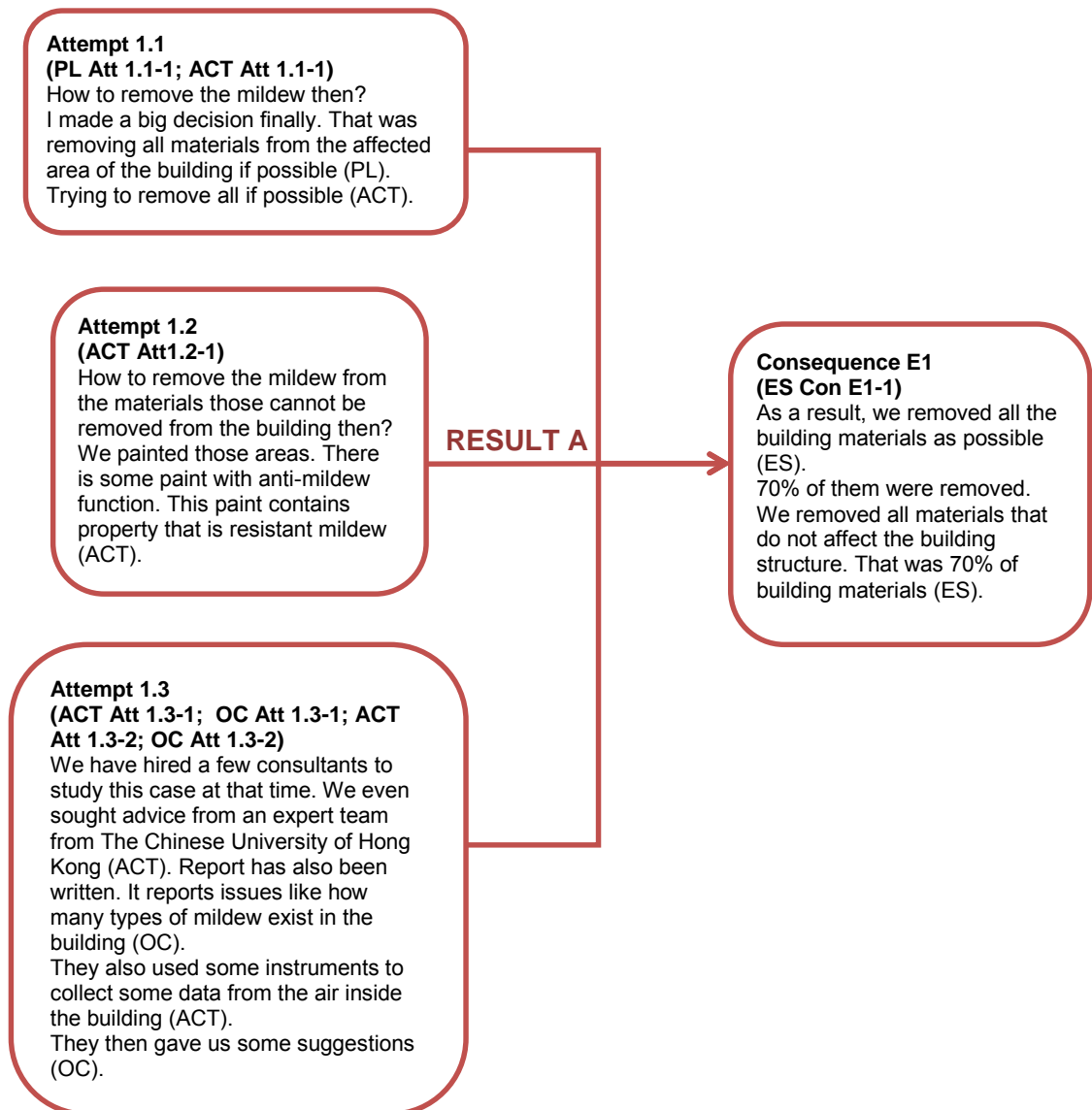
**Table 5.11: Justification of the Significant Causality of Story 1 – CAUSE E.1 (B)**

Causality	Involved Constituents	Justification
CAUSE E.1 (B)	Consequence E1; Emphasis E1	<p>~ The storyteller suggested ways on how to avoid a similar problem in the future (Consequence E1).</p> <p>~ Formal documents should be kept to record all the problems and inquiries that were made by the involved parties. These inquiries should be attended to immediately to avoid any delay in the project. Therefore, a deadline for answering these inquiries should be set. In this manner, both parties could be held liable for any fault that might arise from such situation (CG Em E1-1).</p> <p>~ Those emphasises caused because of the end state of the story. Those are kind of after action review. Those bring knowledge gained by reviewing the story, a framed context. The knowledge obtained from this story could help story receivers in handling similar issues.</p>



### 5.4.2.2. Story 2 – Removal of Mildew from Building Materials

#### **Causality – RESULT A (A)**

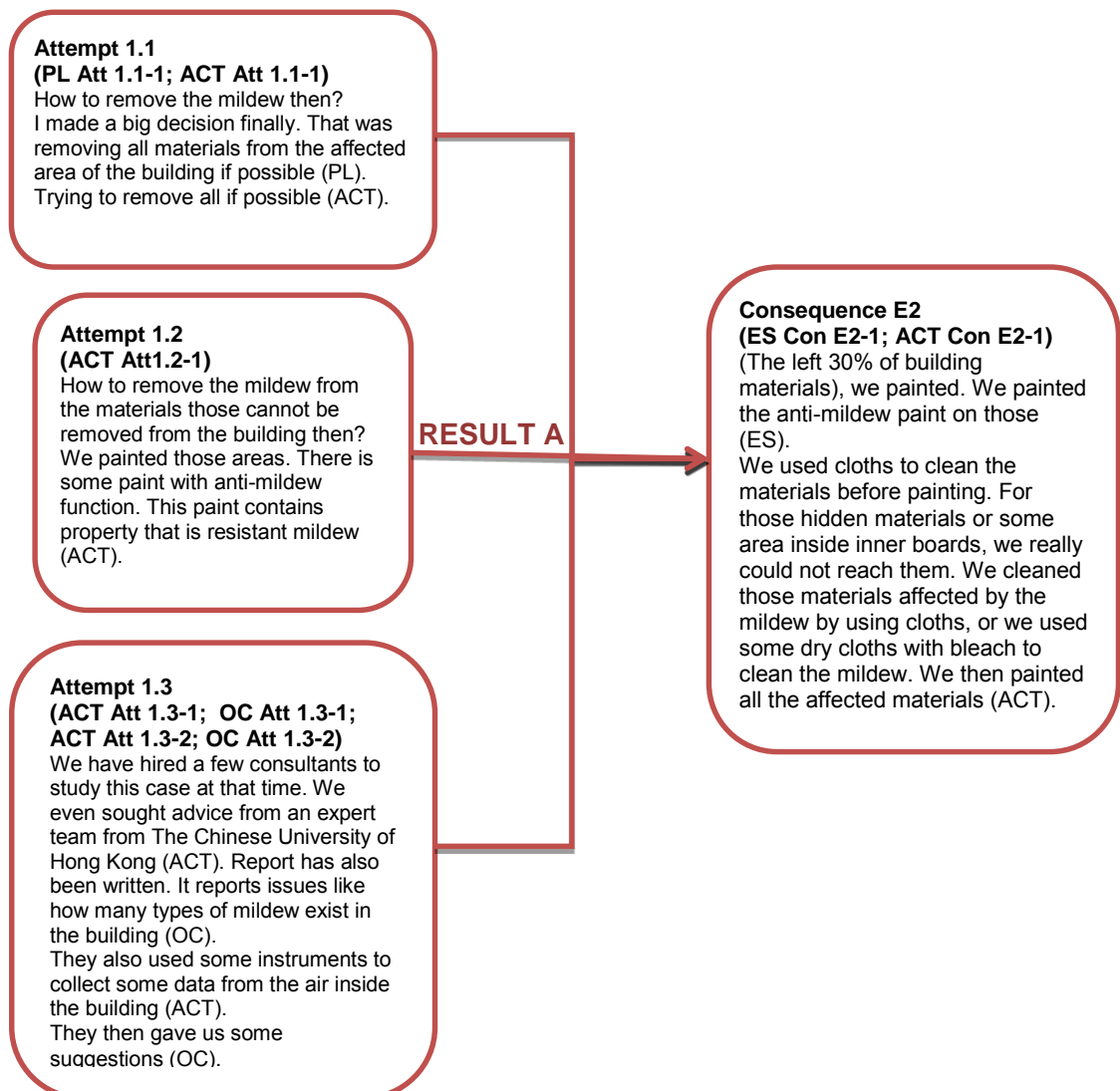


**Figure 5.10: Significant Causality of Story 2 – RESULT A (A)**

**Table 5.12: Justification of the Significant Causality of Story 2 – RESULT A (A)**

Causality	Involved Constituents	Justification
RESULT A (A)	Attempt 1.1; Attempt 1.2; Attempt 1.3; Consequence E1	<p>~ All mildew-affected materials were removed from the building (Attempt 1.1). An anti-mildew paint was used to cover the mildew-affected areas that could not be removed (Attempt 1.2). Some consultants were hired to investigate the building and to provide advice to the project team (Attempt 1.3). Approximately 70% of the affected building materials were eventually removed (ES Con E1-1).</p> <p>~ These three attempts all contributed to such consequence. These attempts also provided valuable knowledge on the removal of mildew from building materials.</p>

***Causality – RESULT A (B)***

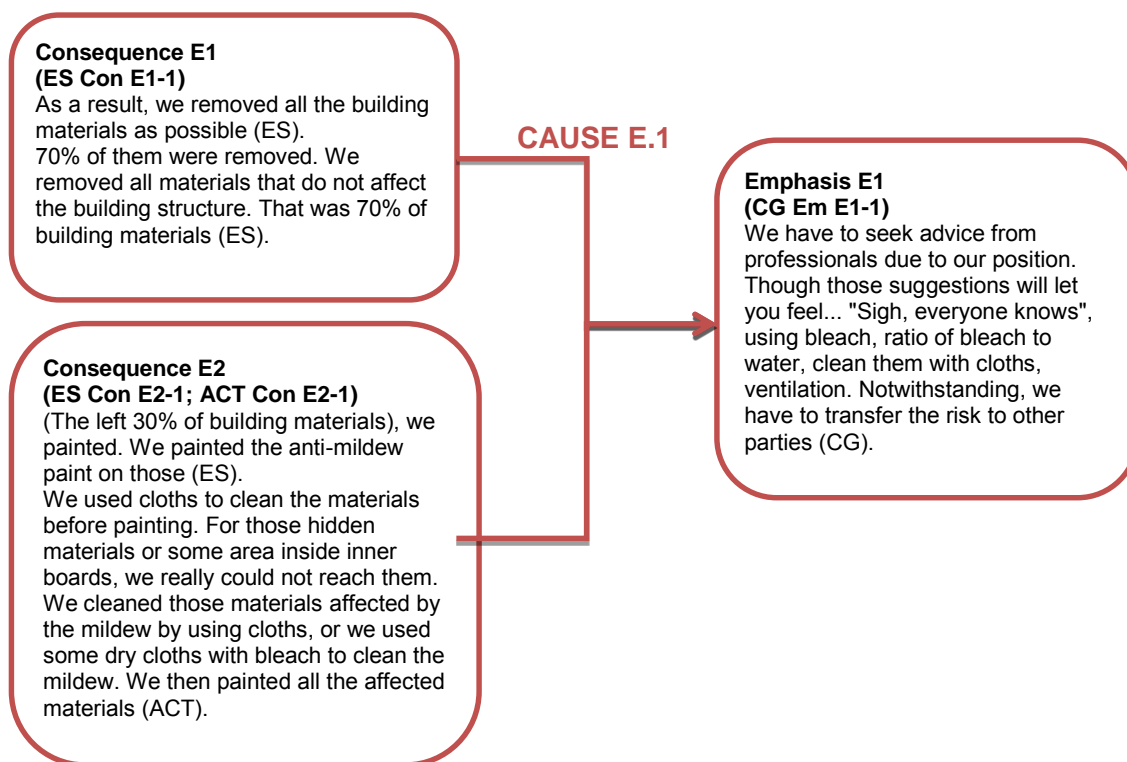


**Figure 5.11: Significant Causality of Story 2 – RESULT A (B)**

**Table 5.13: Justification of the Significant Causality of Story 2 – RESULT A (B)**

Causality	Involved Constituents	Justification
RESULT A (B)	Attempt 1.1; Attempt 1.2; Attempt 1.3; Consequence E2	<p>~ All mildew-affected materials were removed from the building (Attempt 1.1). An anti-mildew paint was used to cover the mildew-affected materials that could not be removed (Attempt 1.2). Some consultants were hired to investigate the building and to provide some advice for the project team (Attempt 1.3). The remaining 30% of the mildew-affected materials were covered with anti-mildew paint (ES Con E2-1). Mildew was bleached and wiped off with dry clothes before the affected areas were painted over (ACT Con E2-1).</p> <p>~ The plan (PL Att 1.1-1) and actions (ACT Att 1.1-1; ACT Att 1.2-1; ACT Att 1.3-1; ACT Att 1.3-2) from Attempts 1.1, 1.2, and 1.3, as well as from Consequence E2, demonstrated how the mildew removal problem was handled. The story receivers could refer to these procedures should they encounter a similar situation.</p>

**Causality – CAUSE E.1**

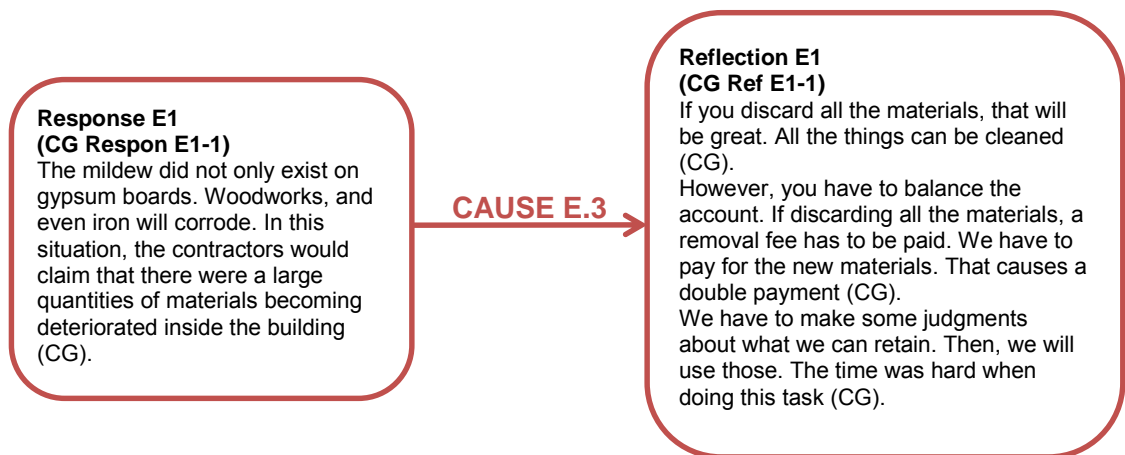


**Figure 5.12: Significant Causality of Story 2 – CAUSE E.1**

**Table 5.14: Justification of the Significant Causality of Story 2 – CAUSE E.1**

Causality	Involved Constituents	Justification
CAUSE E.1	Consequence E1; Consequence E2; Emphasis E1	<p>~ The effects of this causality were emphasised by the content of Emphasis E1. Consequences E1 and E2 summarised how the storyteller solved the problem.</p> <p>~ The storyteller applied a feasible method (CG Em E1-1) that was induced by Consequences E1 and E2 to solve the mildew problem. The advice of the consultants, although not unique, was adopted given that the risks were already transferred to the professionals (CG Em E1-1). These methods (CG Em E1-1) reflected management knowledge that could not be learned from theories, which could be valuable to story receivers.</p>

**Causality – CAUSE E.3**

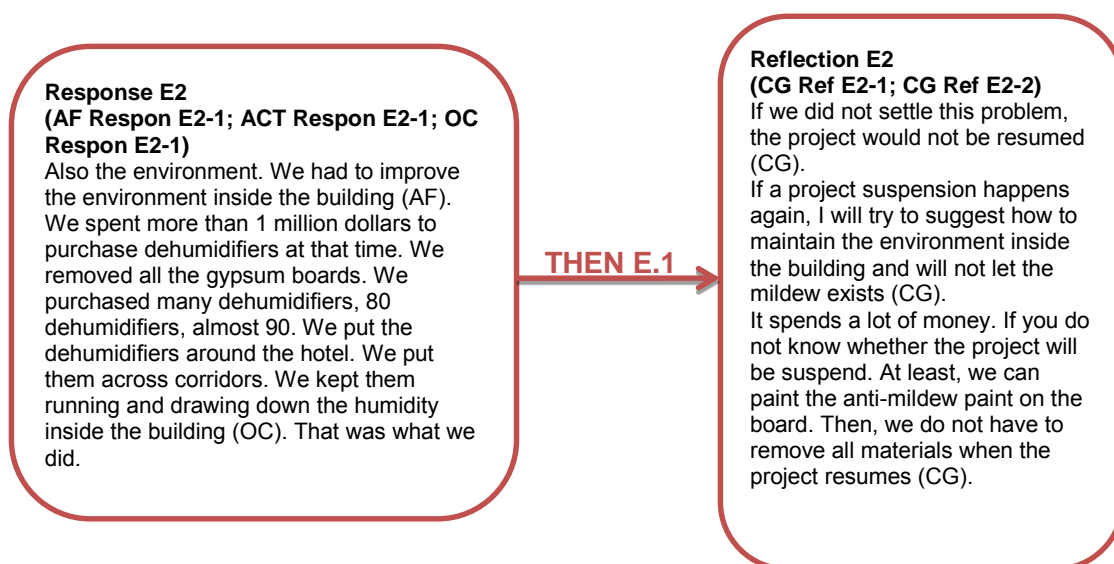


**Figure 5.13: Significant Causality of Story 2 – CAUSE E.3**

**Table 5.15: Justification of the Significant Causality of Story 2 – CAUSE E.3**

Causality	Involved Constituents	Justification
CAUSE E.3	Response E1; Reflection E1	~ Aside from mildew removal, the storyteller highlighted other issues in the story, such as deterioration of other building materials (CG Respon E1-1), dealing with contractors (CG Ref E1-1), determining which of the materials should be retained (CG Ref E1-1), and preventing double payments (CG Ref E1-1). By highlighting the aforementioned issues, this causality illustrated the mindset of the construction project manager.

**Causality – THEN E.1**



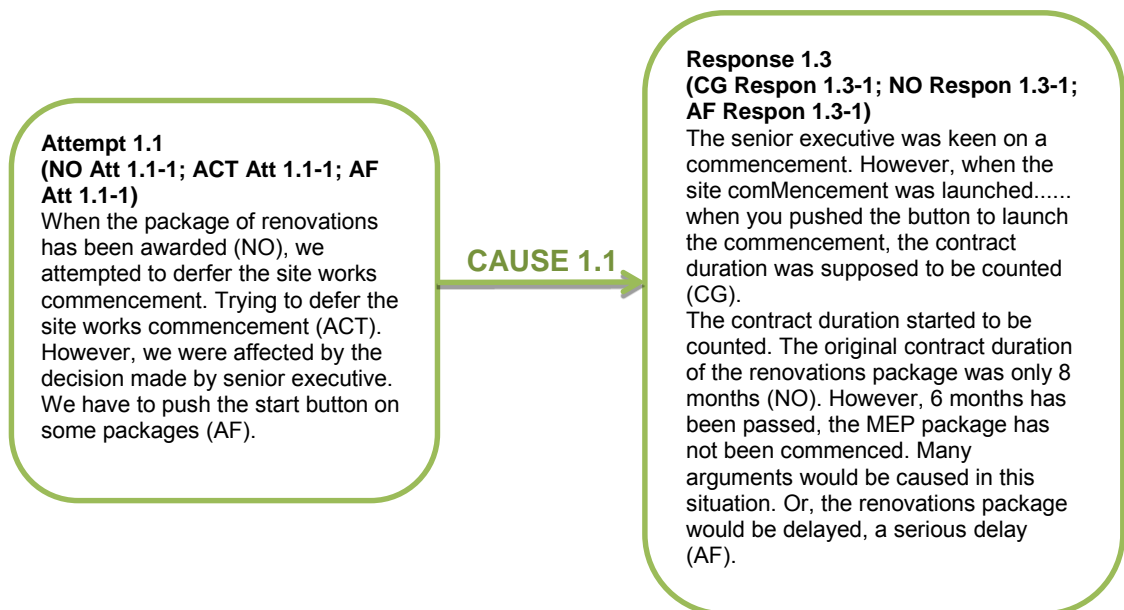
**Figure 5.14: Significant Causality of Story 2 – THEN E.1**

**Table 5.16: Justification of the Significant Causality of Story 2 – THEN E.1**

Causality	Involved Constituents	Justification
THEN E.1	Response E2; Reflection E2	~ This causality highlighted the importance of maintaining the internal condition of a building in case of a project suspension. The storyteller emphasised that the internal condition of the building should still be maintained and the formation of mildew should be prevented even if the project was already suspended (CG Ref E2-1). The prevention measures could save time and money for the removal of mildew-affected materials by the time the project resumes (CG Ref E2-2). Such knowledge highlights the effect of the story.

#### **5.4.2.3. Story 3 – Delay in Package Procurement**

##### **Causality – CAUSE 1.1**

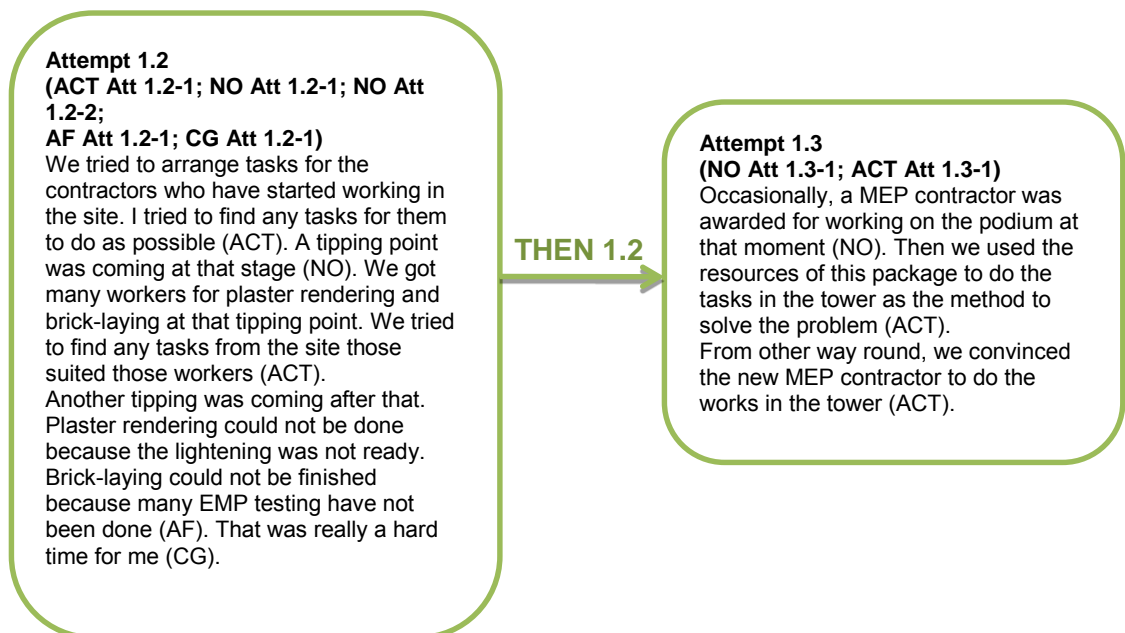


**Figure 5.15: Significant Causality of Story 3 – CAUSE 1.1**

**Table 5.17: Justification of the Significant Causality of Story 3 – CAUSE 1.1**

Causality	Involved Constituents	Justification
CAUSE 1.1	Attempt 1.1; Response 1.3	<p>~ The delay in the procurement of the MEP package drove the storyteller (the project manager) to defer the commencement of the renovation package (ACT Att 1.1-1) after such package was awarded (NO Att 1.1-1). However, the renovation package could not be deferred any longer because the senior executive was very keen on commencing such package (AF Att 1.1-1). The influence of the senior executive on the commencement resulted in numerous arguments and project delays (AF Respon 1.3-1).</p> <p>~ The storyteller emphasised the influence of the senior executive because he was not able to deliver a satisfactory decision. This portion of the story left more room for exploration. The attempt to defer the commencement of the renovation package (ACT Att 1.1-1) reflected the effect of the story on story receivers.</p>

### ***Causality – THEN 1.2***

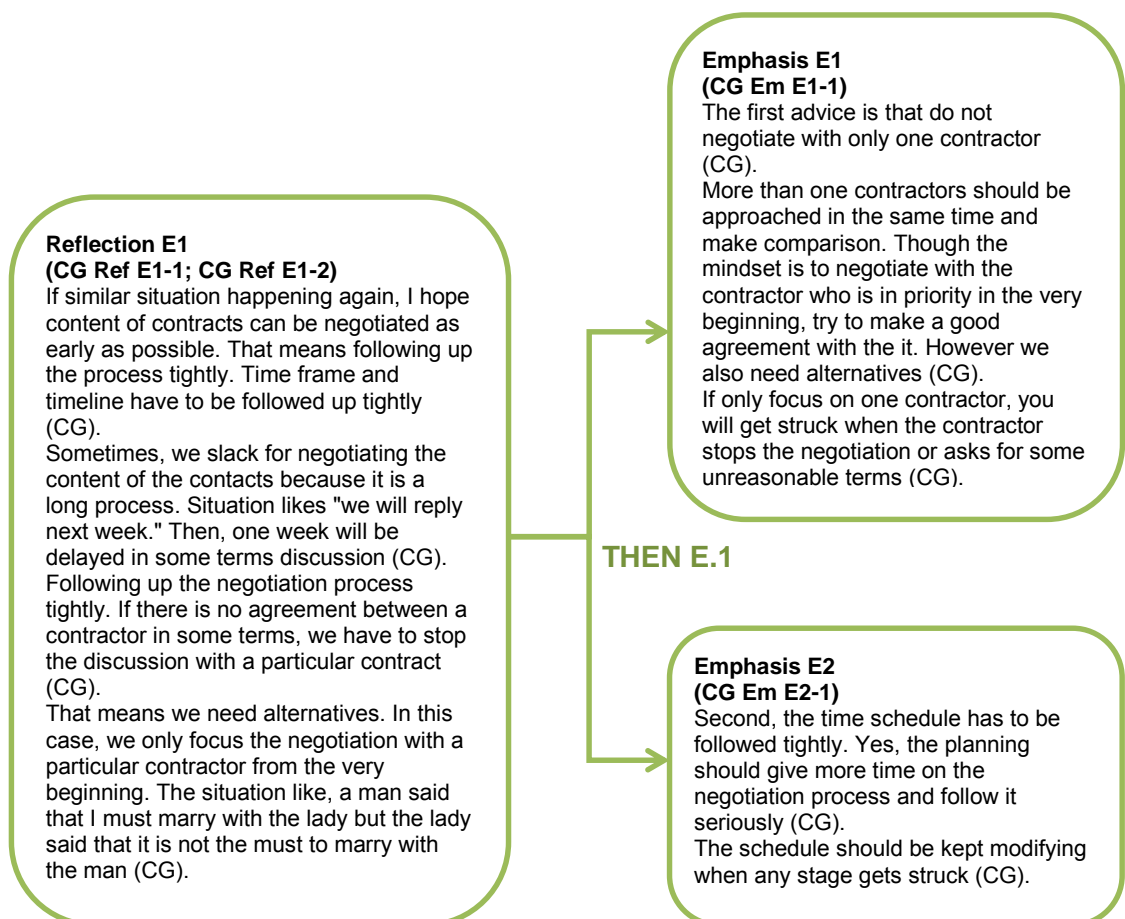


**Figure 5.16: Significant Causality of Story 3 – THEN 1.2**

**Table 5.18: Justification of the Significant Causality of Story 3 – THEN 1.2**

Causality	Involved Constituents	Justification
THEN 1.2	Attempt 1.2; Attempt 1.3	<p>~ This causality showed how to take advantage of a situation in which the procurement of a MEP package was delayed, whereas other packages had already commenced. The workers were assigned with as many tasks as the storyteller could find on the site (ACG Att 1.2-1), and a recently awarded MEP contractor from the podium was convinced to work on the construction of the building (ACT Att 1.3-1).</p> <p>~ Story receivers could refer to this story when handling a similar situation. These methods reflected the need for a flexible mindset in managing construction projects. This knowledge could not be easily transferred through other medias.</p>

**Causality – THEN E.1**



**Figure 5.17: Significant Causality of Story 3 – THEN E.1**

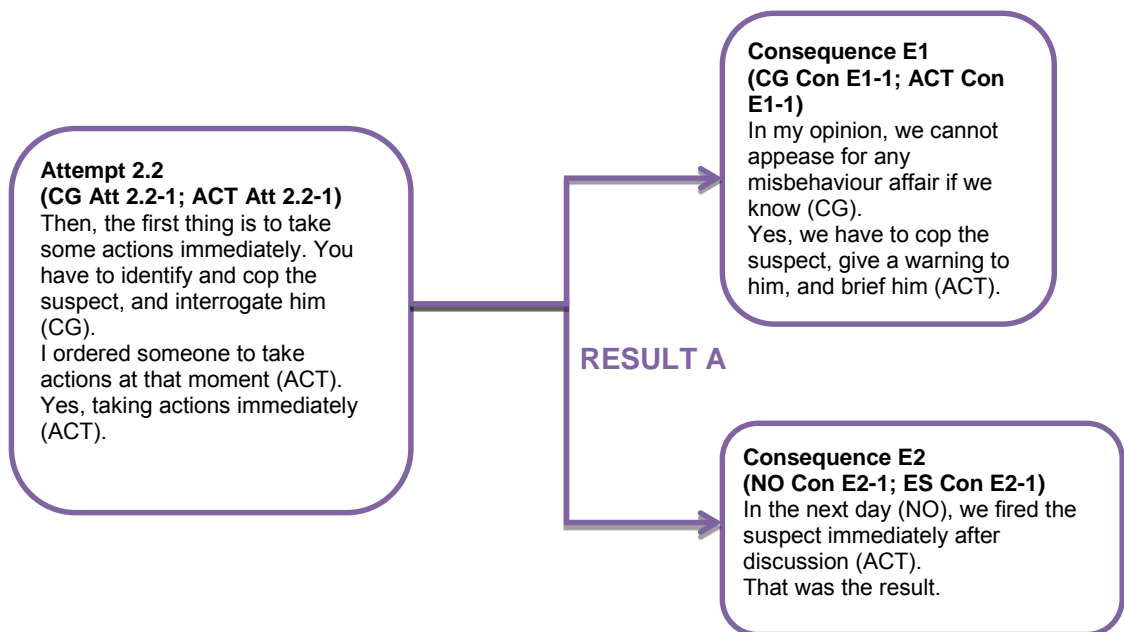


**Table 5.19: Justification of the Significant Causality of Story 3 – THEN E.1**

Causality	Involved Constituents	Justification
THEN E.1	Reflection E1; Emphasis E1; Emphasis E2	~ The storyteller (the project manager) suggested some techniques on how to prevent delays in package procurement. The time frame management (CG Ref E1-1; CG Em E2-1) and the negotiation process with contactors (CG Ref E1-2; CG Em E1-1) should be emphasised. These suggestions could be applied by story receivers in case they encounter similar situations.

#### 5.4.2.4. Story 4 – Handling Misbehaviour on Site

##### **Causality – RESULT A**

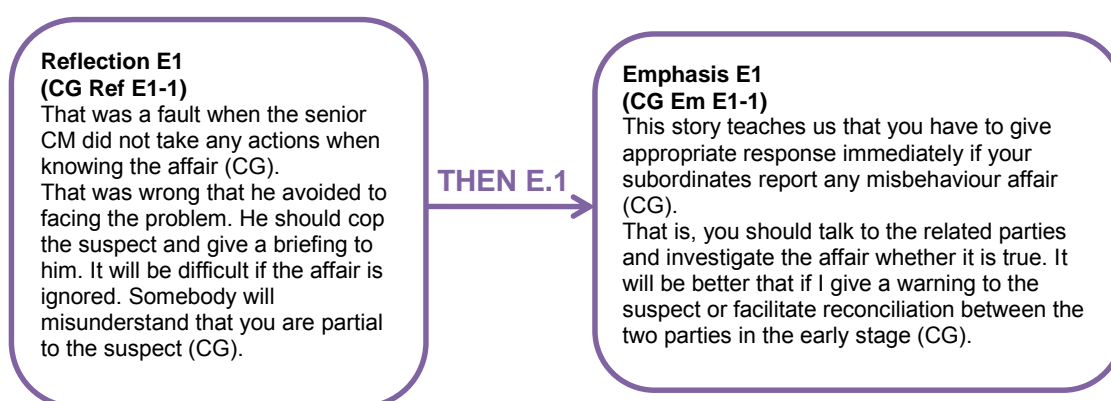


**Figure 5.18: Significant Causality of Story 4 – RESULT A**

**Table 5.20: Justification of the Significant Causality of Story 4 – RESULT A**

Causality	Involved Constituents	Justification
RESULT A	Attempt 2.2; Consequence E1; Consequence E2	<p>~ This causality showed the attitude and actions of the storyteller (the project manager) after he was informed of an act of misbehavior on the site. The perpetrator was immediately identified, interrogated (ACT Att 2.2-1), warned, and briefed (ACT Con E1-1). The perpetrator was fired immediately in the following day (ES Con E2-1).</p> <p>~ Any act of misbehavior should not be tolerated (CG Con E1-1) and should be acted upon immediately (ACT Att 2.2-1). This knowledge is valuable because it could not be learned from classroom education, particularly the attitude that should be adopted when handling such matter.</p>

**Causality – THEN E.1**



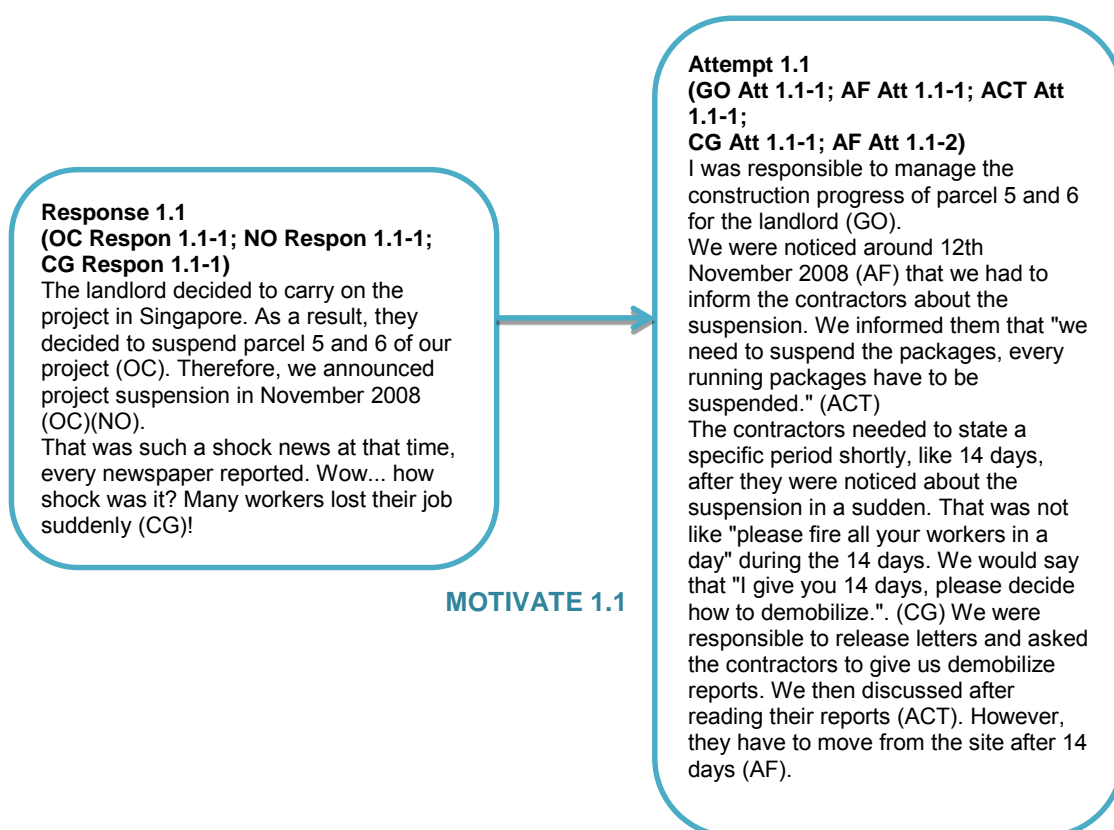
**Figure 5.19: Significant Causality of Story 4 – THEN E.1**

**Table 5.21: Justification of the Significant Causality of Story 4 – THEN E.1**

Causality	Involved Constituents	Justification
THEN E.1	Reflection E1; Emphasis E1	~ The storyteller (the project manager) pointed out that the senior construction manager did not take any action and completely avoided the issue upon receiving the report (CG Ref E1-1). Therefore, the senior construction manager was suspected of being partial to the perpetrator (CG Ref E1-1). The project manager identified the appropriate actions and attitudes that should be adopted when handling acts of misbehavior (CG Em E1-1). This knowledge clearly described the context of the story to story receivers.

#### 5.4.2.5. Story 5 – Project Suspension and Termination of Works

##### **Causality – MOTIVATE 1.1**

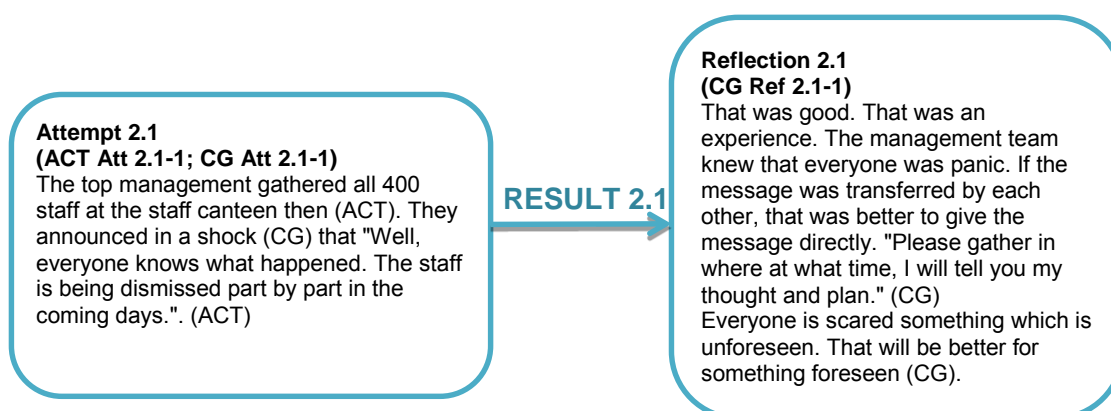


**Figure 5.20: Significant Causality of Story 5 – MOTIVATE 1.1**

**Table 5.22: Justification of the Significant Causality of Story 5 – MOTIVATE 1.1**

Causality	Involved Constituents	Justification
MOTIVATE 1.1	Response 1.1; Attempt 1.1	<p>~ Project suspensions are uncommon in the construction industry. The storyteller (the senior quantity surveyor that represented the client) explained the responsibilities and events (ACT Att 1.1-1; CG Att 1.1-1; AF Att 1.1-2) that arose when handling the project suspension in November 2008 (NO Respon 1.1-1). The uniqueness of such experience highlighted specific knowledge on handling project suspensions in the construction industry.</p> <p>~ This causality also had an emotional effect because many contractors were shocked by the news (CG Respon 1.1-1), which had a significant effect on story receivers as well.</p>

### **Causality—RESULTS 2.1**

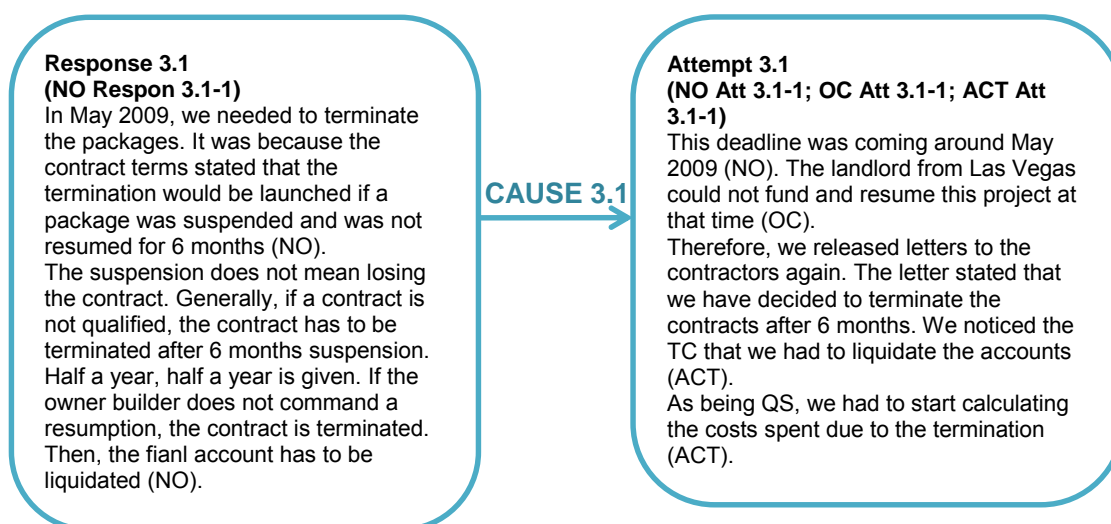


**Figure 5.21: Significant Causality of Story 5—RESULT 2.1**

**Table 5.23: Justification of the Significant Causality of Story 5 – RESULT 2.1**

Causality	Involved Constituents	Justification
RESULT 2.1	Attempt 2.1; Reflection 2.1	<p>~ The storyteller (the senior quantity surveyor) praised the actions of the top management (ACT Att 2.1-1). The top management directly announced the shocking news of the project suspension and the staff dismissal to the staff members (ACT Att 2.1-1).</p> <p>~ The senior quantity surveyor praised the capability of the top management to handle the issue amid widespread panic among the workforce. The top management explained all the procedures and the events that would follow (ACT Att 2.1-1) to ease the panic of the staff members to a certain extent. Such action showed knowledge in controlling the staff in the middle of a shock. The capability to practice such theory reflected the knowledge that the storyteller had gained from the project suspension and termination.</p>

### **Causality – CAUSE 3.1**

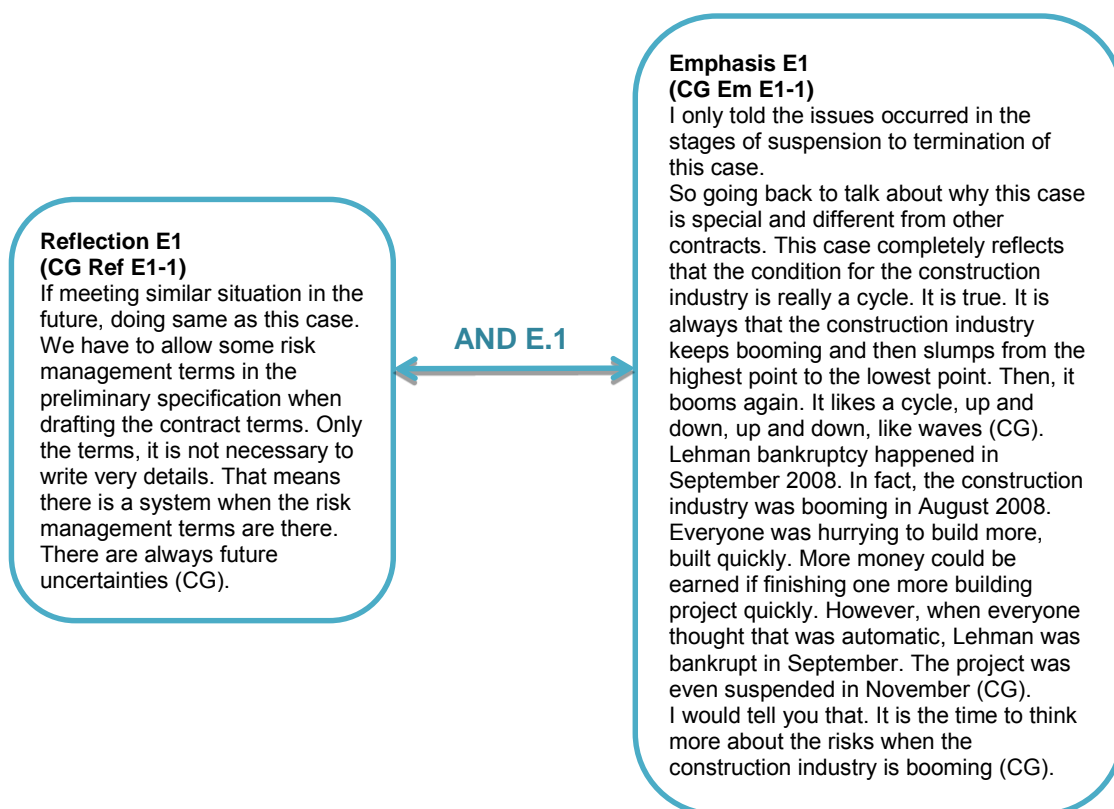


**Figure 5.22: Significant Causality of Story 5 – CAUSE 3.1**

**Table 5.24: Justification of the Significant Causality of Story 5 – CAUSE 3.1**

Causality	Involved Constituents	Justification
CAUSE 3.1	Response 3.1; Attempt 3.1	~ Project termination is uncommon in the construction industry. The storyteller (the senior quantity surveyor that represented the client) explained her actions (NO Respon 3.1-1; NO Att 3.1-1; OC Att 3.1-1; ACT Att 3.1-1) during the termination of the project. The uniqueness of this experience highlighted specific knowledge for handling project terminations in the construction industry.

**Causality – AND E.1**



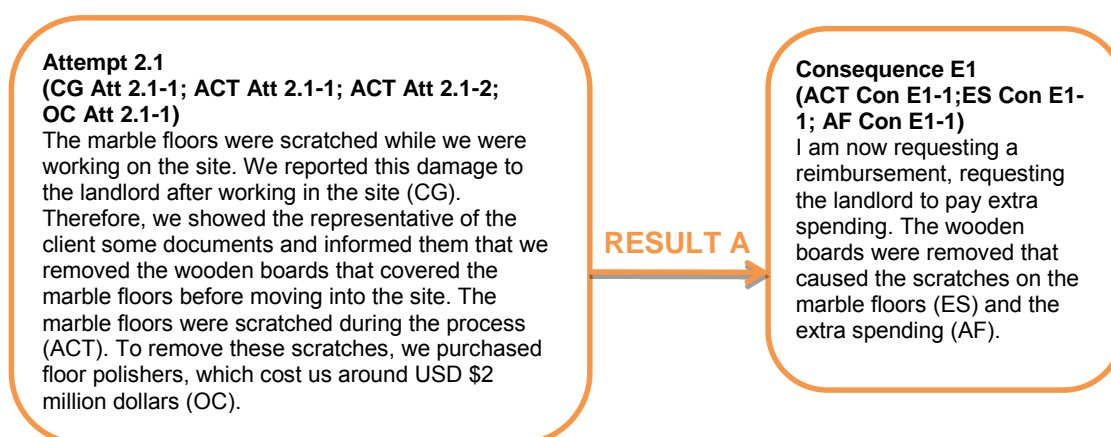
**Figure 5.23: Significant Causality of Story 5 – AND E.1**

**Table 5.25: Justification of the Significant Causality of Story 5 – AND E.1**

Causality	Involved Constituents	Justification
AND E.1	Reflection E1; Emphasis E1	<p>~ The storyteller suggested the inclusion of some risk management terms in contracts to optimise the system (CG Ref E1-1). This reflection reminds story receivers to focus on risk management when drafting contracts.</p> <p>~ The storyteller implied that effective risk management terms were included in the contract. Therefore, the actions that the storyteller had taken in handling project suspension and termination imparted valuable knowledge.</p> <p>~ The storyteller emphasised the cyclic nature of the construction industry (CG Em E1-1). Therefore, the workers in this industry should keep such risks in mind, even when the industry is booming (CG Em E1-1).</p>

#### 5.4.2.6. Story 6 – Scratched Marble Floor

##### **Causality – RESULT A**

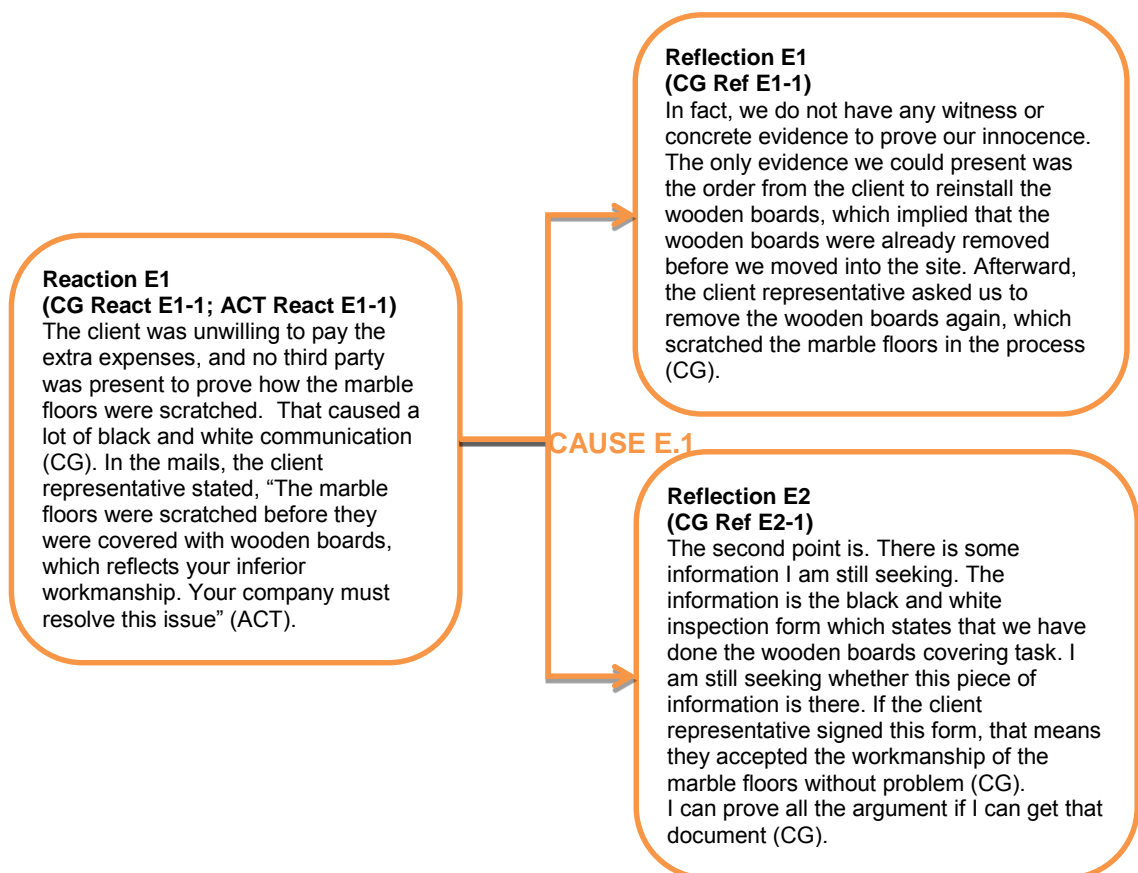


**Figure 5.24: Significant Causality of Story 6 – RESULT A**

**Table 5.26: Justification of the Significant Causality of Story 6 – RESULT A**

Causality	Involved Constituents	Justification
RESULT A	Attempt 2.1; Consequence E1	~ The storyteller (the senior quantity surveyor from a contractor) found some scratches on the marble floors, which had to be reported to the client (CG Att 2.2-1). The storyteller claimed that they had to remove the wooden boards that protected the marble floors before moving into the site, thus scratching the marble floors during the process (ACT Att 2.1-2). The storyteller claimed that the scratches were not the fault of the contractor. The removal of these scratches cost approximately USD \$2 million dollars (OC Att 2.1-1). The storyteller requested for a reimbursement from the client (ACT Con E1-1) given that the wooden boards were already removed before they moved into the site. This causality demonstrates the mindset of a quantity surveyor when dealing with a client.

**Causality – CAUSE E.1**



**Figure 5.25: Significant Causality of Story 6 – CAUSE E.1**



**Table 5.27: Justification of the Significant Causality of Story 6 – CAUSE E.1**

Causality	Involved Constituents	Justification
CAUSE E.1	Reaction E1; Reflection E1; Reflection E2	<p>~ This causality emphasised two points to prove that the contractor was not at fault in this situation. These two points described the mindset of the quantity surveyor and how the arguments between the contractor and the client representative were settled.</p> <p>~ The first point stated that the client representative asked the team to reinstall the wooden boards, which implied that the wooden boards were already removed before the construction team moved into the site. The second point emphasised that the reinstallment of the wooden boards required a signed authorisation from the client representative, thus implying that the client permitted the removal and reinstallment of the wooden boards (CG Ref E2-1).</p> <p>~ The causality also demonstrated the attitude of the client in terms of managing finances. This knowledge is significant because it could only be learned from experience. This kind of knowledge could be transferred to story receivers through a contextual story.</p>

## 5.5. Summary

This chapter explains the story analysis procedure. Literary context and significant causalities have been identified in the analysis, which adopts story structure theories such as narratology and story grammar. The literary contexts of the six stories reveal the conceptual knowledge of each story, whereas their significant causalities reveal their contextual knowledge. Therefore, each story carries both conceptual and contextual knowledge in its content, thus satisfying the objective of this research. Such knowledge can be revealed systematically and can be stored. The underlying knowledge can also be transferred to story receivers. The findings of this analysis will be discussed from a theoretical perspective in a later chapter of this thesis.

## **Chapter 6**

# **Cognitive Mapping Approach to Understanding a Story**

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## **6. Cognitive Mapping Approach to Understanding a Story**

### **6.1. Introduction**

Cognitive mapping is regarded as a means of visually representing the cognitive structure of individuals given a particular problem or issue (Eden, 1988, 2004; Siau & Tan, 2008). Cognitive mapping attempts to elicit an interpretation or a response to a situation experienced by an individual (Jenkins, 2002). Interpretation of certain concepts or ideas related to a particular situation can indicate that a learning process has occurred. Hence, applying cognitive mapping enables this study to investigate how and what story receivers understand and learn from a story. Understanding the cognitive structure of individuals through cognitive maps can be achieved in two directions: (1) the structure of the maps in terms of constructs and interrelationships, and (2) the content of these constructs and interrelationships found in the maps. This chapter presents the cognitive maps collected during Phase 2 of this study in an organised manner. These maps aim to respond to the following research sub-questions: “how do individuals understand a story?” and “what knowledge do individuals gain through storytelling?” This chapter attempts to analyse the collected cognitive maps to address these two sub-questions. This chapter is divided into two major sections. The first section focuses on the structure of the collected maps to answer the first research sub-question. The second section is concerned with the content of the collected cognitive maps to address the second research sub-question.

### **6.2. Structure of the Collected Maps**

The structure of cognitive mapping does not have a definite model because it varies with the knowledge of an individual. However, the cognitive mapping technique does follow a number of common rules. Investigating the structure of cognitive maps in terms of constructs and their causal relationships provides an understanding of how individuals make sense of a particular issue (Eden, 1988; Jenkins & Johnson, 1997; Jenkins, 2002). Understanding the structure of cognitive maps organised by story

receivers reveals how individuals understand stories. The chapter on research methodology states that the participants in Phase 2 (that is, the story listening-workshop) were not restricted to a particular formal manner when developing their cognition of stories, although several guidelines were provided by the researcher during the workshop to make the mapping process easier. This flexibility allows the participants to organise cognitive maps that more closely articulate their thoughts. The collected cognitive maps are thus more effective in reflecting the cognition of the participants based on the stories. As a result of this flexibility, the 13 collected cognitive maps (Appendix H) vary significantly in terms of structure.

Causal mapping, semantic mapping (or mind mapping), and concept mapping are considered as the three most commonly used cognitive mapping techniques (Siau & Tan, 2008). A map constructed via causal mapping is linear. That is, the sequence of the constructs stated in a causal map can be precisely observed. By contrast, a semantic map exhibits a radial structure (Davies, 2011) with a central topic (Eppler, 2006). Meanwhile, the concept mapping technique results in a map with a top-down structure (Eppler, 2006) that emphasises the relationships among the constructs in the map.

The features of these commonly used cognitive mapping techniques are exhibited in the 13 cognitive maps collected in this study. An analysis of these maps in terms of the three aforementioned techniques is presented in Table 6.1, which includes five concept maps, five causal maps, and three semantic maps. These maps reflect the cognitive construction of the stories in the mental models of the participants. In the following sub-sections, the discussion is divided into two parts. The first part focuses on the schematic structure of the maps. The second part is concerned with the characterised structures of the maps. These classified structures provide evidence for the manner in which story receivers understand a story.

### **6.2.1. Schematic Structure**

The majority of the collected maps, Maps 3 to 8 and Maps 10 to 13, are classified as causal and concept maps. These maps represent the temporal and causal relationships (Siau & Tan, 2008) in the stories, thus implying the schematic structure

**Table 6.1: Classification of Collected Cognitive Maps**

Participant	Allocated Story	ID of Corresponding Collected Cognitive Map	Type of Map
H (Pilot)	Story 4	Map 1	Semantic
I	Story 3 Story 2	Map 2 Map 3	Semantic Concept
J	Story 1 Story 5	Map 4 Map 5	Causal Causal
K	Story 6 Story 4	Map 6 Map 7	Causal Causal
L	Story 4 Story 6	Map 8 Map 9	Concept Semantic
M	Story 5 Story 1	Map 10 Map 11	Causal Concept
N	Story 2 Story 3	Map 12 Map 13	Concept Concept

of these maps. This result indicates that the participants in Phase 2 have understood and processed the constructs of the stories through the relationships in the stories because they can interpret such relationships among the constructs of the stories. Second, the result also indicates that the majority of the participants have understood and organised story information into temporal and causal structures in terms of constructs, thus implying that they have a concept of the cause–effect relationships in the constructs of the stories. For example, Map 10 indicates that the number of the project team staff members decreased from 400 to 100, whereas 9,000 to 10,000 labourers became unemployed because of the termination of their contracts. In addition, some of the participants have applied the concept mapping technique, which indicates a more specific recognition of the relationships among constructs, and consequently, a deeper understanding and processing power of the participants who used this technique. Third, the temporal and causal structures exhibited by these maps are aligned with the plots of the stories, thus implying that the participants who developed concept and causal maps organised the information of the stories in a schematic structure when they processed the stories.

### 6.2.2. Characterised Structure

Studying the clusters in a cognitive map is one techniques used in cognitive map analysis (Eden, Ackermann & Cropper, 1992; Eden, 2004). This process allows identification of the core concepts or themes in the cognition of an individual cognition based on a cognitive map. The 10 collected concept and causal maps do not exhibit any obvious clusters, thus implying a low degree of cognition complexity on the part

of the participants, which, in turn, reflects on the stories. By contrast, Maps 1, 2, and 9 are semantic maps that exhibit clusters in terms of the information of the stories. Map 9 has two observable clusters. On the right side of the map, the cluster head represents the theme “雲石” (marble), which is one of the existences in Story 6. The associate nodes of this cluster head describe the qualities and characteristics of the marble during the different time frames of Story 6. On the left side of Map 9, the cluster head represents the theme “承建商” (building contractor), who is one of the characters in Story 6. The associate nodes of this cluster head describe the actions of the contractor in Story 6. These two core concepts exhibit the characterised structure of a cognitive map. Such structure aims to describe the concepts of particular phenomenon (Hyerle, 2009). Moreover, these concepts (defined by Participant E) are linked by the associate nodes of both cluster heads. Therefore, these two main concepts exhibit an indirect relationship between them, thus indicating a non-fragmented model of cognition in Story 6, as interpreted by the Participant E.

Map 1 also applies semantic mapping. The structure of Map 1 does not directly exhibit a temporal or causal structure, but rather, another clustered structure in terms of concepts. Two clusters are found in Map 1, which represent the two main concepts in Story 4. The first cluster head represents “CM” (construction manager) and the second cluster head denotes “雜工頭” (head labourer). These core concepts are the main characters in Story 4. Their associate nodes describe the actions, attitudes, and qualities of these two characters. These two core concepts, defined by Participant A, are relevant to each other. Their relationship is illustrated by the actions and attitudes presented in their associate nodes. This cluster structure also indicates a non-fragmented model of cognition in Story 4, as interpreted by Participant A.

Map 2 represents the cognition of the understanding of Participant B of Story 3. This map exhibits the classic model of a semantic map, with only one domain with the head “time management.” The associate nodes express that time-management issues are involved in the context of Story 3, which indicates that Participant B identified time management as the core concept represented by Story 3. In addition, issues concerning time management that are mentioned in the story are also interpreted on the map by the participant. The relationships among the constructs identified by Participant B are concerned with dealing with these time-management

issues. These descriptions of the relationships are not based on the plot of Story 3, but rather, they reflect the organisation of the story information of Participant B.

The preceding discussions indicate that the process of understanding a story of individuals is not restricted to a particular pattern. Instead, the present study finds that individuals analyse and understand a story in terms of temporal, causal, and characterised structures. First, the three semantic maps present a characterised structure in terms of clusters. However, only a few clusters exist on each map, thus indicating low-complexity cognition of the stories processed by the participants. Second, the characterised structures of the three maps do not align with the structures of the story plots of the stories. By contrast, the main clusters of Maps 1 and 9 are related to the existences of the stories. Meanwhile, the main concept of Map 2 is an underlying concept (time management) arising from the story content of Story 3 rather than from a story existence. This result indicates that story receivers understand story information in a characterised structure. Another interesting point is observed from the maps submitted by Participants B and E. One map of each participant presented a causal structure, and another map of each participant presented a characterised structure. This result indicates that a participant may process stories in various ways depending on what he/she concentrates on. In summary, the aforementioned analysis answers the research sub-question: “how do individuals understand a story?”

### **6.3. Contents of Constructs and Relationships**

A cognitive map consists of constructs and their relationships, which together represent a cognition set of an individual when abstracted words are used (Samsonovich & Ascoli, 2006). Thus, two properties—the content of the identified constructs and the content of the relationships among these constructs—are investigated to reveal the meaning of the cognitive maps. The findings provide evidence for the form of knowledge that individuals absorb from stories.

#### **6.3.1. Interpreting Story Content**

As mentioned earlier, the collected maps classified as semantic, concept, or causal demonstrate the schematic structure of the cognition of an individual of a story. The

researcher has read through these maps repeatedly and has found that the content and structure of these maps are aligned with the delivered stories, thus indicating that the interpretations of the maps made by the participants provide the abstracts of the stories. No general principle is followed for the types of content of the constructs and relationships of these maps. Hence, a construct or a relationship can describe various items, such as an action, an issue, or a problem. This result is attributed to the flexibility provided to the participants during the cognitive map development process in Phase 2. By summarising the content of all the constructs that reflect the plot of the stories, seven types of content are identified: problem issue, consideration issue, fact, action, character, story setting, and the reflection of the storyteller. These construct contents can be classified into three types of interpretation. First, the constructs that present problem issues, considerations, facts, and actions can be regarded as interpretations of the experiences gained by the story characters or the storyteller. Second, the constructs that present characters and story settings interpret the literary context of a story. This type of classification provides evidence that story receivers absorb the interpreted part of the story context, which reflects the context that can be applied in real life. Third, the constructs that present the reflections of story receivers are regarded as the interpretation of the cognition of the storyteller, thus indicating that story receivers absorb the interpreted cognition of storytellers regarding certain story issues.

### **6.3.2. Reflections on Stories**

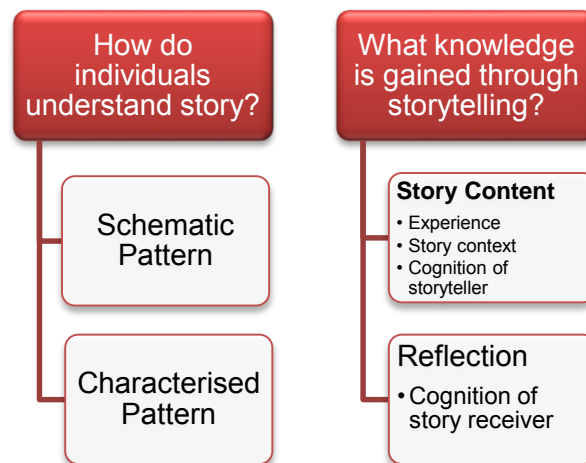
Aside from abstracting the content of the stories, Map 11 (with a schematic structure) and Maps 1, 2, and 9 (with a characterised structure) provide the reflections on the stories of the story receivers. These reflections are presented both as interpretations of constructs and descriptions of relationships. Map 11 includes three constructs that interpret the reflections of Participant F on Story 1. These constructs are connected with the constructs that present certain issues in Story 1. For example, “lack of coordination and communication,” which is not stated in the original content of Story 1. This result can be regarded as a reflection of Participant F on the issue of “omission of the pipe” in Story 1. For Maps 1, 2, and 9, most of their constructs are abstracted from the content of the stories. However, the structure and organisation of these maps do not interpret the plot of the stories, which indicates that the participants apply their own organisation of the received story information, rather than simply remembering information. This personal organisation of story information indicates that the participants have their own reflections on the stories. One example



is the construct of “time management” in Map 2 of Story 3, which was discussed earlier. Another example is found in Map 1 of Story 4. Two concepts—“管理態度” (management attitude) and “助理歪風” (encouraging evil trends), and their relationship “影響” (influence) – are identified by Participant A. These descriptions do not appear in the original content of Story 4. This interrelationship represents the reflection of Participant A on the issue of management attitude, which is one of the problems underlying Story 4 that is raised in the plot. This finding indicates that an individual can absorb the underlying meaning of a story through his/her personal analysis of story information.

## 6.4. Summary

This chapter examines the knowledge obtained by individuals from stories and the structure of the absorbed knowledge in the mental models of individuals. The sub-sections present the organisation and analysis of the 13 collected cognitive maps from Phase 2 of this research. Figure 6.1 summarises the findings of the analysis according to the two research sub-questions of the study. These findings are discussed in the next chapter.



**Figure 6.1: Summary of Findings in Chapter 6**

## **Chapter 7**

# **Discussions and Implications**

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## **7. Discussions and Implications**

### **7.1. Introduction**

The literature review of this study supports that storytelling has a major role in knowledge transfer that facilitates knowledge creation. The findings generated from the data processes of the empirical section of this thesis have been presented in the last few chapters. This chapter aims to discuss the findings by explaining them through theories. The objectives and research questions of this study are addressed through this discussion, which also provides theoretical and methodological implications of this study.

### **7.2. New Dimensions and New Methods in**

#### **Investigating Story Knowledge – Contextual**

#### **Knowledge, Conceptual Knowledge, and Modified Story Analysis**

The reviews of the relevant literature on story and knowledge in Chapter 2 have mentioned that tacit and explicit knowledge dimensions are the main descriptions of knowledge from stories. The present study also indicates that gaps are presented in using tacit and explicit knowledge dimensions to investigate knowledge from stories because of the uniqueness of tacit knowledge, explicit knowledge, and stories themselves. Therefore, this study proposes the use of contextual and conceptual knowledge dimensions to examine knowledge carried by stories to fill in these gaps. In particular, the designated story analysis is established to reveal contextual and conceptual knowledge. Story analysis has been successfully implemented to determine contextual and conceptual knowledge. This accomplishment has theoretical implications to the literature relevant to the fields of narrative theory, storytelling, knowledge management, and general management. More applications of using contextual and conceptual knowledge in organisational settings are

recommended, particularly for the field of knowledge management, in the next chapter. The accomplishment also has methodological implications to knowledge management, storytelling, and narrative research. The precise coding system and the story analysis technique designated in this study have also been justified and delineated thoroughly. These clarifications soundly demonstrate a promising model for a research method that can be used for storytelling research in future studies. The demonstration and the model are clear and sufficiently detailed to provide directions to later researchers who will adopt such analytical method.

### **7.3. Holistic Study of Storytelling as a Knowledge Transfer Approach**

In Chapter 2, the literature on the application of storytelling in organisational management and its associated practical issues were reviewed. One gap in the empirical studies on storytelling is an investigation on the dynamic flow of storytelling (storyteller, story content, and receivers). Such investigation should encompass both the deliverer side, which includes the story content that reflects the plot of the story and the insights of the storyteller, as well as the receiver side, which is the outcome and knowledge gained from listening to a particular story. Another research gap of storytelling is a holistic examination of knowledge carried by stories. This research study has successfully filled these two gaps empirically. The empirical findings also give impacts to the theories of storytelling as a knowledge transfer approach. Regarding the holistic storytelling process, the empirical findings give impacts to each stage of the linear storytelling process contributing knowledge transfer and creation. First, the newly developed story analysis functioned on the examination of story content. More details are being discussed accompanying with holistic examination of knowledge carried by stories below. Second, impacts of storytellers into story content were also addressed through applied story analysis. The standpoints, cognition, emotions, and reflections of storytellers were successfully revealed from each of the stories employed in this study. The tacit knowledge revealed by this study embodies the function of storytelling and the identity of the storytellers (Denning, 2004, 2006). Such tacit knowledge is also capable of mirroring the ideology present during the delivery of a particular story within the “telling” (Mishler, 1995) layer of storytelling. Third, through the use of cognitive mapping, this study designed an empirical phase to investigate the understanding of story receivers obtained from listening to stories. By analysing collected cognitive maps, this study revealed the knowledge structure

patterns of the stories to which receivers listened to and the categories of knowledge gained after listening to these stories. These findings are the cognitive interpretations of story receivers, which indicate the learning outcome after listening to stories based on the cognitive view of learning (Crossan et al., 1995). These topics were reviewed in the previous chapter. The learning outcome indicates that transferring knowledge by storytelling successfully creates knowledge. In addition, the cognitive view of learning assumes that changes in cognition will ultimately be reflected in behaviours (Argyris & Schön, 1996). Therefore, the transfer of knowledge through storytelling will ultimately affect organisations. These three areas of findings embody a holistic study of storytelling in terms of the linear storytelling process. Such findings illustrate the theoretical implications of each stage of the storytelling process.

Regarding the lack of a holistic examination of storytelling in terms of knowledge from stories, the empirical findings generated from the story analysis addressed the kind of knowledge from stories, a generic but significant question. The knowledge revealed from stories was not based on a particular designated theme, as determined in prior studies. Instead, the knowledge revealed from stories is organic, which “sticks” with the real situation or a particular organisation and field for the transfer of knowledge, such as facts, objects, and norms. These kinds of knowledge should be stored in organisational repositories and applied in situations similar to those in the stories. More suggestions regarding this issue will be discussed later. Hence, the newly developed story analysis helps provide a holistic picture of the knowledge carried by stories without any filter that processes them into specific themes.

## **7.4. Stories and Storytelling as Knowledge Creation**

### **Contexts**

Theories on knowledge creation that are positioned at the final stage of knowledge transfer through storytelling have been reviewed in Chapter 3 (Figure 3.4). Previous studies have emphasised that knowledge creation requires a place (Nonaka & Konno, 1998; Nonaka, Toyama & Konno, 2000; von Krogh, Nonaka & Rechsteiner, 2012). Such emphasis implies that a context for knowledge transfer through storytelling is required for knowledge creation. The present study has positioned in the literature review section that storytelling can function as a knowledge creation

context (Section 3.4.3). The empirical findings of this study validate this claim. As mentioned earlier, the knowledge creation elements of interpretation, interaction, space, and time can explain the nature of story and storytelling as a knowledge creation context.

First, the literature review confirms that storytelling is a mode of communication that transfers the interpretation made by a storyteller. The content of each story is the interpretation of the experience gained by the protagonist/narrator of the story. More precisely, reflections and emphases are revealed by the stories employed in this study, as exemplified by the direct interpretations of the storytellers. For example, causality THEN E.1 (Section 5.4.2.4) concluded that the project manager in Story 4 mentioned that the handling of misbehaviour was faulty because of various reasons. Subsequently, he provided some recommendations. The direct interpretations of the cognition of the project manager are available, and denote the outcome of what the project manager has learned from his experience in Story 4. This type of knowledge is unique compared with knowledge obtained from other knowledge transfer approaches because the cause–effect relationship is clear and provides a context for further application of the knowledge. In addition, the empirical analysis of the stories in this study concentrates on the words used in the story content. Such analysis indicates that the content itself carries a high degree of knowledge through language. Thus, the process used to tell the story content establishes a place to transfer knowledge from stories, and this process can inspire the creation of knowledge when individuals process the story content.

Second, the story analysis method applied in this study has elicited spatial and temporal environments for the stories. Each spatial and temporal existence and the quality of the stories have each been identified. For example, hotel building, elevator, bricklaying, podium, tower of the hotel building, and plaster rendering have been identified in Story 3: Delay in Package Procurement. The literary context of Story 3 constitutes these elements. This literary context elicits vivid imagery (Cole, 2009; Levit, 2009) in the mind of story receivers. Such vivid imagery entails a knowledge creation context in a story in the mind of an individual for transferring implied conceptual knowledge from the story. The empirical findings from the cognitive maps imply that knowledge from stories is easily understood by members of a certain community (Brown & Duguid, 1998; Geiger, 2005) because, on one hand, the

participants in Phase 2 did not experience any difficulty in understanding the stories. On the other hand, all the constructed cognitive maps do not highlight the setting of each story, thus indicating that a self-legitimation context of the story is present in the mind of the story receiver.

Third, storytelling encompasses three levels of interaction: communication level, story level, and across story content and story receivers. This study does not investigate the communication level of interaction in depth because according to the objective of this study, a set of research methods and techniques is selected to examine storytelling in fragments. The communication level of interaction was regarded as indirect communication because of the selected research methods and techniques. Therefore, the findings do not have significant implications for the communication level of interaction between the supply-side and demand-side. Regarding story level interaction, the social environment has been successfully revealed from the analysis of the stories in this study (Section 5.4.1). The revealed social environment from the stories includes social interactions and networks that existed at the story level. These interactions and networks provide a context in which knowledge creation can be facilitated within a story. In particular, this knowledge is the new experience gained by the protagonist/storyteller that has been affected by the social interactions and networks at the story level. Regarding interactions across story content and story receivers, the cognitive maps generated in Phase 2 of the empirical section indicate that the story content and story receivers interact with one another in the mind of an individual. This process facilitates learning for knowledge creation. In summary, the preceding discussions establish theoretical implications within the context of knowledge creation theory, in which the empirical processes of this study indicate that stories and storytelling function as contexts for knowledge creation that involve interaction, interpretation, time, and space for knowledge creation.

## **7.5. An Answer to the Stickiness of Narrative**

### **Knowledge**

One of the problems of narrative knowledge is its “stickiness” (Brown & Duguid, 1991, 2001; Geiger, 2005). In this study, narrative knowledge simply refers to knowledge embedded in a story format. Its value is determined by self-legitimation. In particular,

narrative knowledge does not develop in a generalised manner, thus leading to a claim that narrative knowledge can only be understood and interpreted within a specific context (Geiger, 2005). The present study aims to indicate that knowledge from stories can be transferred across contexts. The notion of narrative knowledge always emphasises knowledge in the dimension of know-how, such as making-how and living-how (Lyotard, 1984). The contextual knowledge revealed by the empirical story analysis conducted in this study corresponds to knowledge from the know-how perspective. In addition to contextual knowledge, the story analysis uncovered conceptual knowledge from the stories. All the cases in this study are stories about management issues in the Hong Kong construction industry. The implied conceptual knowledge revealed by the story analysis (Section 5.4.1) provides knowledge to understand the project-based working environment of the construction industry. This study uses the analysis of Story 6 – Scratched Marble (Section 5.4.1.6) as an example. The implied conceptual knowledge elicited from Story 6 includes understandings about the contractor, the representative of the client in a construction project, and the social network in the project of the story world. These understandings can be regarded as know-who knowledge in the knowledge application process. Several features of the constructed building in Story 6 were also elicited. Brick walls, partition walls, and floors are the components of a constructed building, and marble is one of the materials for a building. The project team needs to deal with these features during construction. These elicited features of the constructed building in Story 6 are applied as know-what knowledge in knowledge application for a new situation. The elicited know-what and know-who knowledge from the story analysis are the conceptual knowledge transferred to story receivers. Story receivers can easily understand the transferred conceptual knowledge, even those who do not share the same context of the construction work environment. Furthermore, conceptual knowledge helps story receivers to develop a new context about the construction work environment in their minds. In summary, conceptual knowledge from stories can be transferred across contexts. Given that it has more value, conceptual knowledge can create new contexts for individuals. These two standpoints have implications for both theory and management development. In terms of theoretical implication, a portion of the stickiness problem of narrative knowledge is addressed by the successful elicitation of conceptual knowledge. The managerial implication is discussed in the Chapter 8.



## **7.6. Summary**

This chapter successfully bridges theoretical literature and empirical circumstances in terms of storytelling in knowledge management. This chapter indicates that stories and storytelling have significant roles in the creation and transfer of knowledge. The discussions have addressed gaps in knowledge management literature in terms of theories and methodology. These answers provide new insights into knowledge carried by stories, scope of study of stories and storytelling in the arena of knowledge, the role of stories and storytelling in knowledge transfer, and the importance of story context in knowledge transfer processes. Recommendations would be discussed in the next chapter based on the discussions of this chapter.

## **Chapter 8**

# **Recommendations and Conclusions**

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## **8. Recommendations and Conclusions**

### **8.1. Introduction**

This chapter discusses the managerial and practical implications of this research study. These managerial and practical implications are found from the theoretical and methodological implications presented in the last chapter. That is, the proposed managerial and practical recommendations would like to utilise the theories and research methods determined by this study. Those recommendations of this chapter would add value to existing theories, research methods, and this study itself by applying them into practices in organisational settings. Limitations of this study, recommendations for further studies, and conclusions of the whole study would be presented after the recommendations.

### **8.2. Enriching Literary Context of Stories for Better Knowledge Transfer to Novices**

The previous section indicated that narrative knowledge can be transferred across contexts and can create new contexts. These standpoints provide evidence that storytelling and using stories are potential approaches for transferring know-what, know-who, know-how, and know-why knowledge to novice staff members of organisations. This study attempts to apply this managerial implication of stories and storytelling for discussions and suggestions, with an emphasis on the importance of the know-who and know-what features of narrative knowledge. Storytelling is a classical approach to delivering knowledge from teachers to students in the education sector. Studies, such as those by Haigh and Hardy (2011); Levit (2009); Sochacki (2010); and Swap, Leonard, Shields, and Abrams (2001), advocate using stories and applying storytelling in occupational training by adopting practices from the education sector. The present study attempts to consolidate the application of storytelling to training novices in organisations. Knowledge from stories can be transferred and can inspire the creation of new contexts because stories carry conceptual knowledge.

Conceptual knowledge with practical know-who and know-what aspects has been determined in Chapter 3 and in the last section along with empirical pieces evidence. These findings support that a story with a rich literary context is better for facilitating the transfer of knowledge to novices. In particular, telling stories with a rich literary context leads to cognition changes in the minds of novices, and thus, new contexts are created. Given the importance of the literary context in transferring knowledge, the present study attempts to recommend several managerial points to enrich the literary context of stories while using storytelling to train novices in various disciplines.

### **Recommendation 1:**

#### **Develop a Place for Knowledge Creation**

This recommendation is particularly for narrators who verbally share their own stories about their experiences in an organisation to novices by using the first-person point of view. In this study, this group of storytellers is called “natural storytellers.” Given that the story is told in the first-person point of view, natural storytellers always make the mistake of neglecting to explain the setting of a story. This omission results from two reasons. First, natural storytellers, who tell their own stories about the organisation to colleagues, including novices, always presume that the audience knows the background and details of each element in the story setting. Second, this group of storytellers focus too much on telling the plot of the story because the essence of a story is the experiences contained in the plot. However, this practice leads to a loose structure in the literary context of the story. Context is a special mental model for everyday experience, and it represent the relevant properties of communicative situations in episodic memory (van Dijk, 2008). Thus, poor knowledge creation context influences knowledge transfer effectiveness. Therefore, natural storytellers should spend more time explaining the background of stories. Such procedure helps create a better structure for the development of a literary context in the minds of novices. For example, when a natural storyteller tells his/her stories, he/she should provide more information about the nature of his/her job, the tasks for which he/she is responsible for, and the environment that are related to the stories to strengthen the story setting and the knowledge creation context. In particular, storytellers should establish a perception for novices through which they can decode the stories. Such understanding helps create a new knowledge creation context and transfer knowledge across contexts.

## **Recommendation 2:**

### **Enriching Elements and Providing Detailed Descriptions of the Story Setting**

This recommendation is for knowledge management practitioners who strategically use the storytelling approach in their knowledge management projects as well as for natural storytellers. This recommendation aims to develop a systematic plan to enrich elements and descriptions of a story setting based on a story structure adopted from narrative theory. The present study suggests that a well-constructed story literary context can achieve better knowledge transfer based on the effectiveness of the knowledge creation context. According to narrative theory, at least one character, a spatial environment, a temporal environment, and a social environment constitute a story setting. The empirical analysis of this study also successfully found elements of these story constituents from sample stories. To enrich the elements and to provide detailed descriptions of the story setting, the literary context construction should be prepared by both strategic knowledge practitioners and natural storytellers before storytelling is conducted to transfer knowledge. When the literary context is well constructed, better knowledge creation context for knowledge transfer of both conceptual and contextual knowledge is facilitated. To develop a good literary context for a story, storytellers who narrate organisational stories should consider the following points.

- *Prepare more about “who”:* Recall the characters of the story, including their identity in the story and their identity in the field related to the story. Add more details to describe each character. Recall and evaluate the role and importance of each character.
- *Prepare more about “what” to develop the story space better:* Recall the physical and social elements of the story scene(s) and think about how to interpret them. For example, explain that “the story happened at the management level of the company” to introduce the social environment of the story, and explain that “the event happened in our office” to introduce the physical setting of the event. The complete story space cannot be conveyed by using words. However, one of the knowledge structures, namely, the schematic structure, is organised according to a part–whole configuration (Polkinghorne, 1988). If more details of the elements of the story setting are described, then more details are prompted from the literary context in the minds of the story receivers.
- *Indicate changing scene:* A story typically has more than one scene. If a scene changes in the plot, this change should be indicated. Moreover, the physical and social elements of the new scene should be indicated as well.

- *Use simple metaphors:* When telling stories to novices, lack of basic understanding of the organisational context related to the story is one of the barriers in the transfer of contextual knowledge. The preceding points emphasises the development of the literary context through details. Sometimes, however, a gap remains during the development of the literary context in the minds of story receivers. Such gap is attributed to uncertainties about the real organisational context. Using simple metaphors in storytelling enhances the development of the literary context in the minds of story receivers. For example, if the story literary context is an office in a construction site, the storyteller can indicate that the physical and social environments are similar to those of an ordinary office even though the location is a construction site. This kind of metaphor can reduce uncertainties regarding contexts in the minds of novices. Thus, knowledge transfer through storytelling can function more smoothly.

### **Recommendation 3:**

#### **Use Visual Aids to Develop the Story Setting**

This recommendation is offered to knowledge management practitioners and to management staff. The setting of a story is not easily made clear through verbal or literary storytelling (Chatman, 1978). Using verbal interpretations has limitations because the literary context in a story shows that the objects in our world are complex. Hence, using words to develop a literary context with rich detail is difficult. Imagery is a form of foundational memory in the human brain that makes it easier to recall memories and helps increase verbal recall and other tasks (Paivio & te Linde, 1982). Therefore, using visual aids in storytelling is effective for knowledge transfer. Visual aids can solve the problem of high complexity in literary contexts. They provide vivid images to story receivers, thus allowing them to build literary contexts for a story. A visual aid can be as simple as a picture to represent and enrich the physical environment of a scene. In addition, technology can provide advanced tools to enhance story settings. For example, scenario-building software can construct scenes for stories (Liew et al., 2009, 2012). Such tools provide benefits to large-scale storytelling applications in knowledge management approaches because they support learning, knowledge harnessing, and sharing (Liew et al., 2009).

### **8.3. Contextual and Conceptual Knowledge as Knowledge Assets in Organisations**

The literature review and empirical findings of this study show that contextual and conceptual knowledge are rooted in story content. This study aims to suggest several methods of applying the contextual and conceptual knowledge elicited from the story analysis section to organisations. The contextual and conceptual knowledge elicited from the sample stories are organic. Therefore, the scope of these stories is flat rather than having a central theme. These types of knowledge have more applications because they are not constrained by a particular theme. The following recommendations capture knowledge assets by applying the story analysis developed in this study.

Capturing knowledge through storytelling is not a new idea. Nonetheless, the present study still recommends this valuable application and provides further suggestions because the story analysis shows that story content is rich in knowledge. Similar to the “story-telling method” proposed by Kleiner and Roth (1996, 1997), this method aims to produce a set of learning history documents through interviews to indicate and collect important events, as well as to transfer and record experiences (Thier & Erlach, 2005). The presentation of learning history documents has the advantage of saving experiences. However, the “story-telling method” does not involve systematic story analysis similar to the one proposed by this study. Such analysis provides solid knowledge assets to organisations. The contextual and conceptual knowledge revealed by story analysis encompasses a wide range of knowledge in terms of facts, objects, norms, consequential implications, reflections, insights, and emotions related to a particular organisational setting. Nonaka, Toyama, and Konno (2000) proposed that contextual knowledge, in particular, implies organisational knowledge in terms of experiential and routine knowledge assets. Routine knowledge assets are practical (Nonaka, Toyama & Konno, 2000). Therefore, using storytelling as an approach to capture knowledge through the story analysis method proposed by this study can sustain the knowledge assets of organisations and provide an understanding of particular organisational contexts in terms of social and spatial environments. Corresponding to these values, regular storytelling sessions and platforms, as well as encouragement to use storytelling for any occasion that requires knowledge sharing, are recommended. Through such activities, organisational knowledge assets can be recorded, captured, and sustained for future applications.

## 8.4. Skills in Storytelling Implementation

This section intends to demonstrate the managerial implications of storytelling implementation by adopting the findings generated from Phase 2, that is, the empirical implementation. The collected cognitive maps show the knowledge gained by story receivers after listening to the stories. Therefore, using the analysis and findings of the collected maps is significant in implementing storytelling, as shown by the following suggestions.

- *Importance of the cause–effect element:* The analysis of the collected maps showed that story information understood by story receivers comprises a majority of the schematic structure. This finding demonstrates a cause–effect sequence of story events. When telling an organisational story, an obvious cause and an obvious consequence should be included in each event of a story. This rule makes effective knowledge transfer possible through storytelling.
- *Theme of a story:* Another structure found from the analysis of the collected cognitive maps is characterised structure. This evidence indicates that the core of a story effectively helps story receivers recall the story. Thus, individuals who narrate organisational stories should pay attention to story theme. Organisational storytelling should always tell “purposeful stories” (Snowden, 2005). A core theme and important elements or events are effective to make an organisational story purposeful. Therefore, when using storytelling to transfer knowledge, a core theme, as well as important story elements or events, should be identified beforehand. The story content should present these constituents clearly and with sufficient details. Moreover, the story content should always encompass these constituents.
- *Story content:* Collected cognitive maps that reflect the knowledge gained by story receivers illustrate experiences, the story context, and the cognitions of the storytellers. These three kinds of story information are easier to remember and organised. Thus, these kinds of story information should be transferred through storytelling in implementation.

## 8.5. Limitations of the Study

This study has some limitations due to keeping the study within a manageable scope. The first limitation is way of telling. There are different types of storytelling, like digital storytelling, informal storytelling during daily conversation, and formal storytelling in



prearranged events. They give different impacts to the effects of telling stories. However, this research does not touch on the way of telling a story. This is because this study would like to investigate what knowledge carried by stories. The key factor of this issue is the content of a story. In order to have an in-depth analysis of the knowledge carried by stories, this study decided to focus on the written form of stories. They are collected in verbal form with aims of sharing work experiences in construction projects. The second limitation is different roles between story author and storyteller. Story author and storyteller have different roles in a typical storytelling process (Jahn, 2005) even though they can be the same person. In the case of this study, the interviewees were asked of their own working experiences. The core foci of this research study are knowledge source, knowledge content, and knowledge receiver during the storytelling process. Therefore, the author and storyteller are regarded as knowledge source. The roles of them were not explored in this study. The third limitation is the explicit format of the gained knowledge of story receivers. Investigating gained knowledge of the knowledge receivers is the core in the second phase of this study. The collected gained knowledge is externalised into explicit form only. The applications of the gained knowledge by the receivers were not studied as such knowledge can be applied long after the stories were heard. The fourth limitation is the investigation of learning outcomes after listening stories. It has been reviewed in Chapter 3 that learning outcome can be determined by cognitive or behavioural changes (Ertmer and Newby, 1993). The present study only found out the cognitive changes of the knowledge receivers after listening stories in Phase 2 due to time limitation.

## **8.6. Recommendations for Further Studies**

Several directions for further studies on storytelling as a knowledge transfer approach is recommended. First, this study has suggested that storytelling is effective for transferring knowledge across contexts. Therefore, this method can be applied to novice training. In addition, this method can deliver particular contexts or fields to outsiders through stories and can investigate the obtained knowledge. Second, this study found the knowledge patterns and types of story information gained by story receivers. These are the changes in interpretation that occur after listening to the stories. However, more in-depth studies can investigate the knowledge gained from the receiver side of storytelling. In terms of the research method, the critical incident technique (Hettlage & Steinlin, 2006) can be used to investigate behavioural changes

after listening to stories. Aforementioned, learning outcome can be determined by cognitive or behavioural changes (Ertmer and Newby, 1993). Two of the limitations of the present study are investigation into behavioural changes and the limited form of knowledge after received knowledge through storytelling. Such study can also provide more concrete implications on the effectiveness of storytelling in long term influence. The evolution of the knowledge carried by a particular story can also be elicited by applying critical incident technique. Third, this study established a systematic analytical method for revealing knowledge from stories. This method significantly affects organisational assets. Newly developed methods should be used as the foundation for developing a corresponding IT system. This system can reveal and store knowledge from stories more efficiently. This proposed system can also provide more opportunities to use organisational knowledge assets revealed from stories. Fourth, one form of conceptual knowledge revealed from the story analysis in this study is the social network. A social network is regarded as an organisational knowledge asset (Kogut, 2000). Based on these findings, stories should be used as the source for collecting social networks for analysis. The typical method used to identify social networks is questionnaires. This method can provide social networks to organisational members. The sources of social networks from stories are not found on purpose. These sources can help find underlying social networks that are not realised by individuals.

## **8.7. Conclusions**

The research study proposes to discover the effective use of storytelling which contributes to organisations by understanding the story process in terms of knowledge transfer. The recommendations proposed by this chapter fulfil the purpose statement of this study. This chapter has provided promising suggestions to both practical and managerial aspects of organisations. Such suggestions exhibit the values and contributions of this research in the field of knowledge management. The first aim of this study is to develop a paradigm to reveal knowledge carried by stories in terms of their contents through a systematic analysis. This study has successfully developed a systematic story analysis and is demonstrated in Chapter 5. Two significant findings, namely conceptual and contextual knowledge, were found in investigating the knowledge carried by stories. Stories and storytelling as knowledge creation and an answer to stickiness of narrative knowledge was determined as the theoretical implications and value added issues of this study. The second aim of this

study is to examine the holistic flow of storytelling, including the deliverer and receiver sides, to discover means of using storytelling as a knowledge transfer approach in organisations. A framework of storytelling as knowledge transfer approach was developed by reviewing literature in Chapter 3. The Phase 1 study of this research concentrated on the deliverer side, and the Phase 2 study focused on the receiver side of storytelling processes. These implications rounded the second aim of this study. In sum, this study has achieved the purpose statement and the two aims presented in the first chapter. Recommendations for further studies have also been offered. These recommendations affect the development of storytelling as a knowledge transfer approach in the knowledge management arena.

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# Appendices

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## Appendix A – Research Project Introduction Letter

Dear Mr [REDACTED],

I am a PhD candidate studying at the Department of Building and Real Estate of the Hong Kong Polytechnic University. I am under the supervision of Dr Patrick S.W. Fong who is from the same department. I am conducting a research project which aims to uncover the effective use of storytelling in organisations through understanding the process of storytelling in term of knowledge transfer. I would like to invite you as my informant. I found the quality control practices in [REDACTED] align with knowledge management practices in a certain extent. I believe my research is potential to enhance the quality control practices of [REDACTED] by collecting, analysing and sharing the quality control experiences gained. Please spare a while to read the brief introduction of my research below.

The first stage of my project aims to develop a method to reveal knowledge from experience gained by staff in a systematic way. This stage of my project will capture knowledge gained by staff and workers from the daily experiences of their quality control practices. The content of their experiences is the centre in this stage of the research. This newly developed method can provide managerial impacts on identifying and recording of knowledge from quality control experiences.

The second stage of my project is to investigate the impacts of the capture knowledge in story format from the knowledge recipients. The concerns of this stage are the learning process and learners. This stage proposes to employ cognitive map to expose the learning process, cognitive and behaviour change of knowledge recipients after processing selected organisational stories. This investigation is potential to provide managerial impacts on determining what knowledge successfully delivered through sharing knowledge in story format and what knowledge is missed by staff.

I would like to invite you as informant of my research. I am available anytime at your convenience. Please do not hesitate to contact me if you have any question about this project.

Yours Sincerely,  
Jodith Leung

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# Appendix B – Research Proposal Written for Seeking Organisations for Data Collection (Chinese Version Only)

## 說故事對建築業管理的知識傳承成效 - ██████████ 合作研究企劃簡報

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### 研究概要

本研究目的是探討故事及說故事於組織內的知識承傳有效方法、運用和成效。本研究分為兩個階段來探討這題目。第一階段的目標是了解故事包含的經驗和知識，及擷取和儲存之。為達到這目標，本研究已建立一個新的分析方法，這分析方法是針對故事本身的特性從而有系統及全面地擷取故事裏包含的知識。第二階段的目標是了解說組織故事如何影響個別員工的知識承傳，及其成效。為達到這研究目標，本研究會運用認知圖技術測試各故事聆聽者對已聽取的故事內容的學習結果。

### 研究貢獻

#### 組織層面:

- 新建立的故事分析方法可幫助公司從各經驗擷取和儲存有價值的知識。
- 從各項目故事中分析出其包括的成功或失敗經驗之原因。此結果可作為公司的內部正面工序指引或工序改善之參考。
- 蒐集所得之各項目故事，可傳播和分享到其他項目和新設項目，使故事裏的知識得以承傳。
- 本研究的結果可為公司提供更有效使用說故事對傳播及承傳知識的可行方案。

#### 個人層面

- 提供機會給員工運用自然的模式去更有效地傳遞和吸收知識。
- 提供機會給員工學習其他項目的經驗和知識。
- 參與的員工可在訪問中，重新思考已分享經驗的重點
- 參與的員工可透過認知圖工作坊中，仔細思考及有效學習其他項目的經驗和知識。

## 資料蒐集內容

### 時間

- 分兩階段，約共 6 星期。

### 工程類別

- 興建中的代表性屋宇建築項目。

### 蒐集方法

- 第一階段：以個人訪問形式收集各項目的個人經驗及故事。
- 第二階段：以工作坊形式收集各故事聆聽者對分享故事的認知圖。

### 研究對象

- 項目 1 至 2 個。
- 每項目約 5 至 6 位團隊成員。

### 其他

- 列席參與公司質量技術部或其他部門之交流會，從而對公司的知識傳播及承傳狀況有進一步了解。



## **Appendix C**

### **Proposed Interview Questions for Collecting Stories from Case Organisations/Projects**

#### **Initiating the Interview:**

(Asking in the very beginning of the interview in order to have a warm-up session for both interviewer and interviewees)

- Can you tell me some background information about the project you work recently?
  - What are you responsible for this project?
  - Which parties you have to deal with in this project?
  - Who you have to work with in this project?

#### **Eliciting Events – Creating Space for Story:**

(Asking after initiating session of the interview or in beginning of eliciting each event)

- Can you share with me a / some memorable event(s) related to your work?
- Can you share with me a / some critical event(s) when you work in this project?
- Can you share with me a / some critical event(s) when you worked in past project(s)?
- Can you share with me a / some interesting event(s) when you work in this project?
- Can you share with me a / some interesting event(s) when you worked in past project(s)?
- Can you share with me a / some impressive event(s) when you work in this project?
- Can you share with me a / some impressive event(s) when you worked in past project(s)?
- Can you tell me a / some impressive event(s) / experience(s) about this project that you would like to share with your colleague?
- Can you tell me a / some impressive event(s) / experience(s) about past projects you involved in that you would like to share with your colleague?

#### **Eliciting Experiences and Practices:**

(Asking during eliciting a particular event)

- What happened in the event?
- What situation did you meet in this event?
- What did you do in this situation?

- What is the consequence of this event?
- What is the consequence of this action?

### **Eliciting Feelings and Emotions:**

(Asking during eliciting a particular event)

- How do/did you feel about this at that moment?

### **Eliciting Background and Rationale of Events:**

(Asking during eliciting a particular event)

- Can you tell me more about the background of this event?
- Where did this event happen?
- Who was involved in this event?
  - What did s/he do in this situation?
- Why did this event happen?
- Why did this situation occur?

### **Eliciting Comments, Emphases, Reflections and Lesson Learned:**

(Asking at the end of eliciting a particular event)

- How do you comment on this event?
- What did you learn from this event/experience?
- How do you do differently when you meet similar situation in the future.

### **Eliciting Background and Rationale of Sharing a Particular Event / Experience:**

(Asking at the end of eliciting a particular event)

- Why do you choose this event to share with your colleague?
- Have you shared this event with others in the past?
  - In what situation did you share this event?

## **Appendix D - Brief of the Phase 1 Interview and Sample Questions Sent to Participants**

### **Collecting Experience from Venetian Project through Storytelling**

*Proposed by  
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#### **Brief of the Interview**

This interview is one of the data collection processes of a research project on knowledge transfer. This project aims to discover the effective use of storytelling in the construction industry in terms of knowledge transfer. This interview is intended to collect stories / events from the construction industry. All interviews are informal and Cantonese will be used as the language medium. The interviews will be sound-recorded with the permission by each interviewee. All participants will remain anonymous in any publication related to this research project. Below are the proposed questions for the interviews. Please note that the questions are only for reference and those may be changed according to the situation. Please do not hesitate to contact Jodith Leung if you have any questions about the research project or the interviews. Thank you very much for your attention.

#### **Sample Questions**

- Can you tell me some background information about this project?
- What are your responsibilities on this project?
- Can you share with me some memorable events related to your work?
- Can you tell me some impressive events or experiences related to your work that you would like to share with your colleague?
- Will you do differently if you meet similar situation in the future? And how?
- Why do you choose those events and experiences to share with your colleague?

## **Appendix E – Brief of the Phase 2 Data Collection Workshop for the Participants**

### **Story-Listening Workshop: What Do We Receive from Stories?**

*Proposed by  
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#### **Brief of the Workshop**

This workshop is one of the data collection processes of a research project on knowledge transfer. This project aims to discover the effective use of storytelling in the construction industry in terms of knowledge transfer. This workshop is intended to explore the story-listeners' understanding of delivered stories. Cantonese will be used as the language medium. The workshop contains tasks that will lead participants to put down what they learn about selected stories after listening. Each participant will be requested to listen to two stories and construct two maps accordingly. Some examples of cognitive maps can be provided for reference. The last task of the workshop is an open discussion session. This discussion session will be sound-recorded with the permission of each participant. Please note that all participants will remain anonymous in any publications related to this research project. Please do not hesitate to contact Jodith Leung if you have any questions about this research project or the workshop. Thank you very much for your attention.

#### **Guidance to Mapping Tasks**

**Step 1 – Listening to a Story**

- Please listen to a selected story carefully.

**Step 2 – Identifying Concepts / Keywords**

- Please recall the story carefully.
- Then write down any keywords, concepts, objects, diagrams or phrases that come to your mind when you think about the story.
- Please note that not only words appeared in the story can be used. You may use any words to interpret your thought on the story.

**Step 3 – Linking Concepts / Keywords and Describing Relationships**

- Please link the keywords, concepts, objects, diagrams or phrases you have identified with lines and write down the nature of relationships.
- Please note that you may use any words to describe the links.
- For any keywords, concepts, objects, diagrams or phrases that do not have linkage, you can just leave them where they are on your map.

**Step 4 – Explaining Concepts / Keywords and their Relationships**

- An open discussion session with the researcher to explain meanings and rationales of each elements of your map.

## Appendix F – Demonstration of Story Analysis

### (Story 4 – Misbehaviour Affair Handling)

#### Step 1 –

- Allocate Story information into lines to improve their manageability
- Identify the lowest-level constituents of story setting

	Timespan	Content
1	45:54.3 – 46:02.5	最近呢有一單呢 D misbehaviour 嘅事件㗎。
2	46:02.4 – 46:08.0	即係呢有個雜工阿頭，
3	46:07.9 – 46:11.3	就非禮阿姐㗎。
4	46:39.5 – 46:41.5	咁呢我哋(consultant)嘅雜工頭，
5	46:51.6 – 46:53.3	就非禮咗 contractor 個阿姐，
6	47:09.8 – 47:11.6	條喇，仲口出狂言。
7	47:13.4 – 47:26.9	咁樣呢，咁個阿姐呢就同咗我哋地盤嗰 D CM 呀就已經投訴咗咖喇。
8	47:26.8 – 47:29.6	投訴咗一次，投訴兩次。
9	47:29.5 – 47:33.3	咁我哋呢 CM 嗰邊嗰 D 同事呢，
10	47:33.3 – 47:36.6	開頭個反應唔大。
11	47:36.5 – 47:42.5	咁呢就個阿姐呢就越嚟越唔開心。
12	47:42.4 – 47:44.8	咁呢就再反映。
13	47:44.8 – 47:46.5	好喇，再反映喇，
14	47:49.4 – 47:52.0	跟住就立案調查啦吓。
15	47:53.4 – 47:56.1	由我哋立案調查啦。
16	47:56.1 – 48:01.4	由有個較為高級少少嘅 CM 呢就去調查。
17	48:01.3 – 48:02.7	問咗阿姐：
18	48:02.7 – 48:13.2	「佢有無咁樣？佢有無撞到係邊到？你覺得佢點樣非禮你？點樣騷擾你？」

19	48:13.1 – 48:15.6	係喇，咁阿姐講講講咗喇。
20	48:15.5 – 48:18.6	好喇，咁個 CM 呢就再同佢嘅上級反映喇吓。
21	48:26.6 – 48:34.4	咁嗰個上級呢就採取咗一個較為迴避嘅態度，迴避嘅態度。
22	48:34.4 – 48:36.0	「咁樣無證無據。」
23	48:36.0 – 48:40.3	好喇，咁事件又擺咗一排喇。
24	48:40.2 – 48:46.0	跟住呢個阿姐就向我哋其中一個呢鬼佬投訴。
25	48:45.9 – 48:48.6	好喇，鬼佬聽到呢，
26	48:48.6 – 48:50.7	係喇，就再搞大 D，
27	48:50.7 – 48:55.3	一去就去到我哋 director 到。
28	49:01.3 – 49:04.2	佢搵個 director 嘅同時呢我已經知咖喇。
29	49:04.1 – 49:12.7	跟住呢，第一件事就即刻做嘢先啦吓，
30	49:12.6 – 49:15.2	你要搵個嫌疑犯出嚟，
31	49:15.1 – 49:16.7	再盤問下佢。
32	49:19.3 – 49:21.3	我叫人 take actions 啦。
33	49:21.3 – 49:23.2	係喇，即刻搞啦！
34	49:23.1 – 49:25.3	即係第一次，第一次，
35	49:25.2 – 49:31.2	第一次嗰個，我哋嗰個較為高級嘅 CM 呢，
36	49:31.1 – 49:34.0	唔 take action 呢就已經錯咗喇。
37	49:33.9 – 49:38.0	佢採取個迴避嘅態度呢係唔啱嘅，係喇。
38	49:37.9 – 49:40.0	咁佢聽到呢 D 咁嘅事呢，
39	49:39.9 – 49:42.8	喂唔好理，即刻捉嗰個友過嚟 briefing 吓佢，
40	49:42.8 – 49:45.3	再搞到上去呢唔得掂咖喇。
41	49:45.3 – 49:48.4	「即係以為：嘩吓，你係咪幫佢吓話。」
42	49:48.3 – 49:50.2	其實嗰個雜工頭呢，
43	49:50.2 – 49:54.9	唔淨只衰非禮同埋口出狂言嘅。

44	49:54.8 – 49:58.4	仲衰嘅呢，就係手腳唔乾淨。
45	49:58.4 – 50:01.1	就問 contractor 嗰邊嘅人，
46	50:01.0 – 50:02.6	運嘢攞錢。
47	50:02.5 – 50:06.1	咁樣呢我話：
48	50:06.0 – 50:08.8	哎，聽到呢 D 嘢呢唔可以姑息。
49	50:08.8 – 50:10.0	即刻捉佢嚟，
50	50:09.9 – 50:13.7	warning 佢，briefing 佢，係喇。
51	50:13.6 – 50:15.1	再跟住第二日呢，
52	50:15.0 – 50:17.3	商討之後呢，即刻炒囉。
53	50:17.2 – 50:19.0	係喇，就係咁咯。
54	50:19.4 – 50:21.9	咁，即係呢個故事呢，
55	50:21.8 – 50:24.1	就教訓我哋呢，
56	50:24.0 – 50:31.3	例如有下屬同你反映有 D 咁樣嘅事，
57	50:31.3 – 50:35.0	你就要作出即係即時嘅反應。
58	50:35.0 – 50:37.3	即係你點都要秤 D 人上嚟，
59	50:37.3 – 50:38.9	你問清楚件事實，
60	50:38.9 – 50:40.1	有定無。
61	50:40.0 – 50:41.8	係喇，你 misbehaviour，
62	50:41.7 – 50:43.7	我 warning 又好，
63	50:43.7 – 50:47.0	你兩個坐低傾和頭酒又好。



## Step 2 –

- Code the story information that is induced from the last step into a particular story context
- Identify which of the setting information is related to the literacy context

[<Internals\\Interview Story 4 Misbehaviour Affair Handling>](#) - § 16 references coded [1.86% Coverage]

Reference 1 - 0.16% Coverage

雜工阿頭

Reference 2 - 0.10% Coverage

阿姐

Reference 3 - 0.06% Coverage

consultant)嘅雜工頭

Reference 4 - 0.05% Coverage

contractor個阿姐

Reference 5 - 0.39% Coverage

阿姐呢就同咗我哋地盤個D CM呀就已經投訴咗

Reference 6 - 0.15% Coverage

高級少少嘅CM

Reference 7 - 0.15% Coverage

去調查

Reference 8 - 0.09% Coverage

個CM呢就再同佢嘅上級

Reference 9 - 0.22% Coverage

迴避嘅態度

Reference 10 - 0.17% Coverage

阿姐就向我哋其中一個呢鬼佬投訴

Reference 11 - 0.06% Coverage

就再搞大D

Reference 12 - 0.13% Coverage

一去就去到我哋 director 到

Reference 13 - 0.08% Coverage

我

Reference 14 - 0.07% Coverage

嫌疑犯

Reference 15 - 0.06% Coverage

叫人 take actions 啦

Reference 16 - 0.07% Coverage

即刻炒

### Step 3 –

- Organise the literacy context information
- Transform these information into conceptual knowledge

Literary Context and Implied Conceptual Knowledge – Story 4			
Category of Literary Context	Codes	Content	Implied Conceptual Knowledge
Protagonist / Character	N/A	~ No protagonist is identified in this story.	N/A
	Identity of Character 1; Quality of Character 1	~ The head labourer is one of the main characters in this story. ~ The head labourer is employed by the consultant project team that represents the client. ~ The head labourer is suspected to be the perpetrator of an act of misbehaviour, namely, an indecent assault, in this story. ~ The head labourer is advised by the work package manager.	~ Understanding the role of head labourer in a construction project: <ul style="list-style-type: none"> <li>○ The head labourer is one of the main positions in a construction project.</li> <li>○ Some subordinates are assigned under the head labourer.</li> </ul>
	Identity of Character 2; Quality of Character 2	~ The amah is another main character in this story. ~ The amah is employed by a contractor of the project. ~ The amah claims that she is a victim of the act of misbehaviour.	~ Understanding the role of the amah in a construction project: <ul style="list-style-type: none"> <li>○ The amah is one of the positions in a construction project.</li> </ul>
	Identity of Character 3; Quality of Character 3	~ The on-site construction manager is another character in this story. ~ The on-site construction manager is the first to receive the complaint of the amah.	~ Understanding the role of the on-site construction manager in a construction project: <ul style="list-style-type: none"> <li>○ The on-site construction manager is a member of the project team.</li> <li>○ The on-site construction manager handles affairs that are irrelevant to the progress of a project, such as acts of misbehaviour.</li> </ul>

Literary Context and Implied Conceptual Knowledge- Story 4			
Category of Literary Context	Codes	Content	Implied Conceptual Knowledge
<b>Protagonist / Character (Cont.)</b>	Identity of Character 4; Quality of Character 4	~ The senior construction manager is another character in this story. ~ The senior construction manager is the second to receive the complaint of the amah. ~ The senior construction manager is the first to investigate the act of misbehaviour.	~ Understanding the role of the senior construction manager in a construction project: <ul style="list-style-type: none"> <li>○ The senior construction manager holds a higher position in a construction project.</li> <li>○ The senior construction manager handles affairs that do not contribute to the progress of a project, such as acts of misbehaviour.</li> </ul>
	Identity of Character 5; Quality of Character 5	~ The storyteller has mentioned a member of the project team who ranks higher than the senior construction manager, but has failed to specify the title of this project member. ~ This team member has been mentioned in the complaint. ~ This team member has not responded to the complaint.	~ Understanding the nature of the construction project team: <ul style="list-style-type: none"> <li>○ The senior construction manager is not the highest position in a construction project team.</li> </ul>
	Identity of Character 6; Quality of Character 6	~ The storyteller has mentioned a foreigner from the project team in the story. ~ The foreigner has been directly addressed in the complaint. ~ The foreigner has forwarded the complaint to the director of the mother company of the project team. ~ The foreigner is assumed to be of higher rank because he was able to report directly to the director.	~ Understanding the nature of a construction project team: <ul style="list-style-type: none"> <li>○ A foreigner can be assigned to a team in a construction project.</li> </ul>

Literary Context and Implied Conceptual Knowledge – Story 4			
Category of Literary Context	Codes	Content	Implied Conceptual Knowledge
Protagonist / Character (Cont.)	Identity of Character 7; Quality of Character 7	<p>~ The director of the mother company of the project team is another character in the story.</p> <p>~ The foreigner has redirected the complaint of the amah to this director.</p>	<p>~ Understanding the role of the director in a construction project:</p> <ul style="list-style-type: none"> <li>○ The director takes part in the progress of a construction project.</li> <li>○ The director must handle serious affairs that do not contribute to the progress of a project, such as acts of misbehaviour.</li> </ul>
	Identity of Character 8; Quality of Character 8	<p>~ The storyteller is one of the characters in this story.</p> <p>~ The storyteller is a work package manager in the story. (This information was not obtained from the story, but from the conversation between the storyteller and the researcher).</p> <p>~ The work package manager is a member of the project team that represents the client. (This information was not obtained from the story, but from the conversation between the storyteller and the researcher).</p> <p>~ The work package manager has ordered his subordinate to respond to the complaint.</p> <p>~ The work package manager is one of the project members who decided to fire the perpetrator.</p>	<p>~ Understanding the role of the work package manager in a construction project:</p> <ul style="list-style-type: none"> <li>○ The work package manager collaborates with a team in a construction project.</li> <li>○ The work package manager collaborates with a team that represents the client.</li> <li>○ The work package manager may give orders to his/her subordinates.</li> <li>○ The work package manager can make decisions on certain aspects of the project.</li> </ul>

**Table 5.5 (Cont. 3): Literary Context and Implied Conceptual Knowledge – Story 4**

Category of Literary Context	Codes	Content	Implied Conceptual Knowledge
<b>Social Environment</b>	Quality of Character 1; Quality of Character 2; Quality of Character 3; Quality of Character 4; Quality of Character 5; Quality of Character 6; Quality of Character 7; Quality of Character 8;	<p>~ The head labourer, who is employed by the consultant project team that represents the client, is identified as the perpetrator of an act of misbehaviour.</p> <p>~ The amah, who is employed by a contractor, claims that she is a victim of an act of misbehaviour.</p> <p>~ The on-site construction manager is the first to receive the complaint of the amah.</p> <p>~ The senior construction manager is the first to investigate the complaint.</p> <p>~ A project member who ranks higher than the senior construction manager does not respond to both the complaint and the act of misbehaviour.</p> <p>~ The foreigner in the project team redirects the complaint to the director of the mother company of the project team. Therefore, the foreigner is assumed to be of higher rank.</p> <p>~ The director of the mother company of the project team receives the complaint from the foreigner.</p> <p>~ The storyteller is a work package manager of the project team that represents the client. (This information was obtained from the conversation between the storyteller and the researcher).</p>	<p>~ Understanding the social network in a construction project team:</p> <ul style="list-style-type: none"> <li>○ A hierarchy exists in the construction project team.</li> <li>○ This hierarchy begins from the on-site construction manager (lowest level), the senior construction manager, an unspecified position, the work package manager, another unspecified position, and ends with the director (highest level).</li> <li>○ The extent of the authority of these project members depend on their place in the hierarchy.</li> </ul> <p>~ Understanding the social network in a construction project team:</p> <ul style="list-style-type: none"> <li>○ The amah can communicate with the managerial project team members even if she is not a core member of the team.</li> <li>○ The labourer and the amah may have physical contact with each other.</li> </ul>
<b>Spatial Environment</b>	N/A	~ The storyteller has not specified a spatial existence for this story.	N/A
<b>Temporal Environment</b>	N/A	~ The storyteller has not specified a time frame for this story.	N/A

#### **Steps 4 to 6 –**

- Identify the lowest-level constituents of story episode
- Code the story information that is induced from the last step into a particular story-time feature, and to determine the change of state
- Identify episode information which is related to the event/end section, and to determine the episode structure

[<Internals\\Interview Story 4 Misbehaviour Affair Handling>](#) - § 63 references coded [6.20% Coverage]

Reference 1 - 0.24% Coverage

最近呢有一單呢D misbehaviour 嘅事件喎。

Reference 2 - 0.16% Coverage

即係呢有個雜工阿頭，

Reference 3 - 0.10% Coverage

就非禮阿姐喎。

Reference 4 - 0.06% Coverage

咁呢我哋(consultant)嘅雜工頭，

Reference 5 - 0.05% Coverage

就非禮咗contractor個阿姐，

Reference 6 - 0.05% Coverage

係喇，仲口出狂言。

Reference 7 - 0.39% Coverage

咁樣呢，咁個阿姐呢就同咗我哋地盤嗰D CM呀就已經投訴咗咖喇。

Reference 8 - 0.08% Coverage

投訴咗一次，投訴兩次。

Reference 9 - 0.11% Coverage

咁我哋呢CM嗰邊嗰D同事呢，

Reference 10 - 0.10% Coverage

開頭個反應唔大。

Reference 11 - 0.17% Coverage

咁呢就個阿姐呢就越嚟越唔開心。

Reference 12 - 0.07% Coverage

咁呢就再反映。

Reference 13 - 0.05% Coverage

好喇，再反映喇，

Reference 14 - 0.07% Coverage

跟住就立案調查啦吓。

Reference 15 - 0.08% Coverage

由我哋立案調查啦。

Reference 16 - 0.15% Coverage

由有個較為高級少少嘅CM呢就去調查。

Reference 17 - 0.04% Coverage

問咗阿姐：

Reference 18 - 0.30% Coverage

「佢有無咁樣？佢有無撞到係邊到？你覺得佢點樣非禮你？點樣騷擾你？」

Reference 19 - 0.07% Coverage

係喇，咁阿姐講講講講咗喇。

Reference 20 - 0.09% Coverage

好喇，咁個CM呢就再同佢嘅上級反映喇吓。

Reference 21 - 0.22% Coverage

咁個上級呢就採取咗一個較為迴避嘅態度，迴避嘅態度。

Reference 22 - 0.05% Coverage

「咁樣無證無據。」

Reference 23 - 0.12% Coverage

好喇，咁事件又擺咗一排喇。

Reference 24 - 0.17% Coverage

跟住呢個阿姐就向我哋其中一個呢鬼佬投訴。

Reference 25 - 0.08% Coverage



好喇，鬼佬聽到呢，

Reference 26 - 0.06% Coverage

係喇，就再搞大D，

Reference 27 - 0.13% Coverage

一去就去到我哋 director 到。

Reference 28 - 0.08% Coverage

佢搵個 director 嘅同時呢我已經知咖喇。

Reference 29 - 0.25% Coverage

跟住呢，第一件事就即刻做嘢先啦吓，

Reference 30 - 0.07% Coverage

你要搵個嫌疑犯出嚟，

Reference 31 - 0.05% Coverage

再盤問下佢。

Reference 32 - 0.06% Coverage

我叫人 take actions 啦。

Reference 33 - 0.06% Coverage

係喇，即刻搞啦！

Reference 34 - 0.06% Coverage

即係第一次，第一次，

Reference 35 - 0.17% Coverage

第一次嗰個，我哋嗰個較為高級嘅CM呢，

Reference 36 - 0.08% Coverage

唔 take action 呢就已經錯咗喇。

Reference 37 - 0.12% Coverage

佢採取個迴避嘅態度呢係唔啱嘅，係喇。

Reference 38 - 0.06% Coverage

咁佢聽到呢D咁嘅事呢，

Reference 39 - 0.08% Coverage

喂唔好理，即刻捉個友過嚟 briefing 吓佢，

Reference 40 - 0.07% Coverage

再搞到上去呢唔得掂咖喇。

Reference 41 - 0.09% Coverage

「即係以為：嘩吓，你係咪幫佢吓話。」

Reference 42 - 0.05% Coverage

其實個個雜工頭呢，

Reference 43 - 0.14% Coverage

唔淨只衰非禮同埋口出狂言嘅。

Reference 44 - 0.10% Coverage

仲衰嘅呢，就係手腳唔乾淨。

Reference 45 - 0.08% Coverage

就問 contractor 個邊嘅人，

Reference 46 - 0.05% Coverage

運嘢攞錢。

Reference 47 - 0.10% Coverage

咁樣呢我話：

Reference 48 - 0.08% Coverage

哎，聽到呢D嘢呢唔可以姑息。

Reference 49 - 0.03% Coverage

即刻捉佢嚟，

Reference 50 - 0.11% Coverage

warning 佢，briefing 佢，係喇。

Reference 51 - 0.04% Coverage

再跟住第二日呢，

Reference 52 - 0.07% Coverage

商討之後呢，即刻炒囉。

Reference 53 - 0.05% Coverage

係喇，就係咁咯。

Reference 54 - 0.07% Coverage

咁，即係呢個故事呢，

Reference 55 - 0.07% Coverage

就教訓我哋呢，

Reference 56 - 0.21% Coverage

例如有下屬同你反映有D咁樣嘅事，

Reference 57 - 0.11% Coverage

你就要作出即係即時嘅反應。

Reference 58 - 0.07% Coverage

即係你點都要秤D人上嚟，

Reference 59 - 0.05% Coverage

你問清楚件事實，

Reference 60 - 0.03% Coverage

有定無。

Reference 61 - 0.05% Coverage

係喇，你 misbehaviour，

Reference 62 - 0.06% Coverage

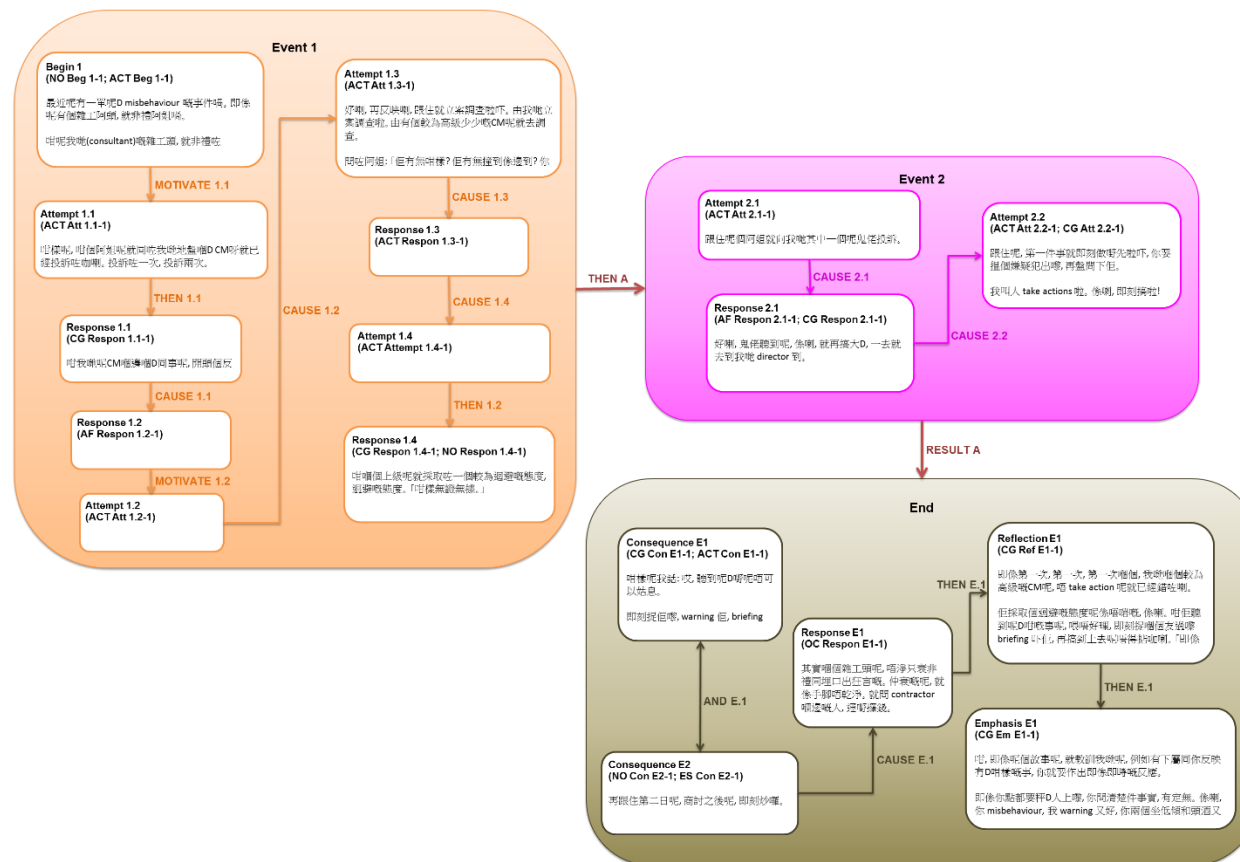
我 warning 又好，

Reference 63 - 0.10% Coverage

你兩個坐低傾和頭酒又好。

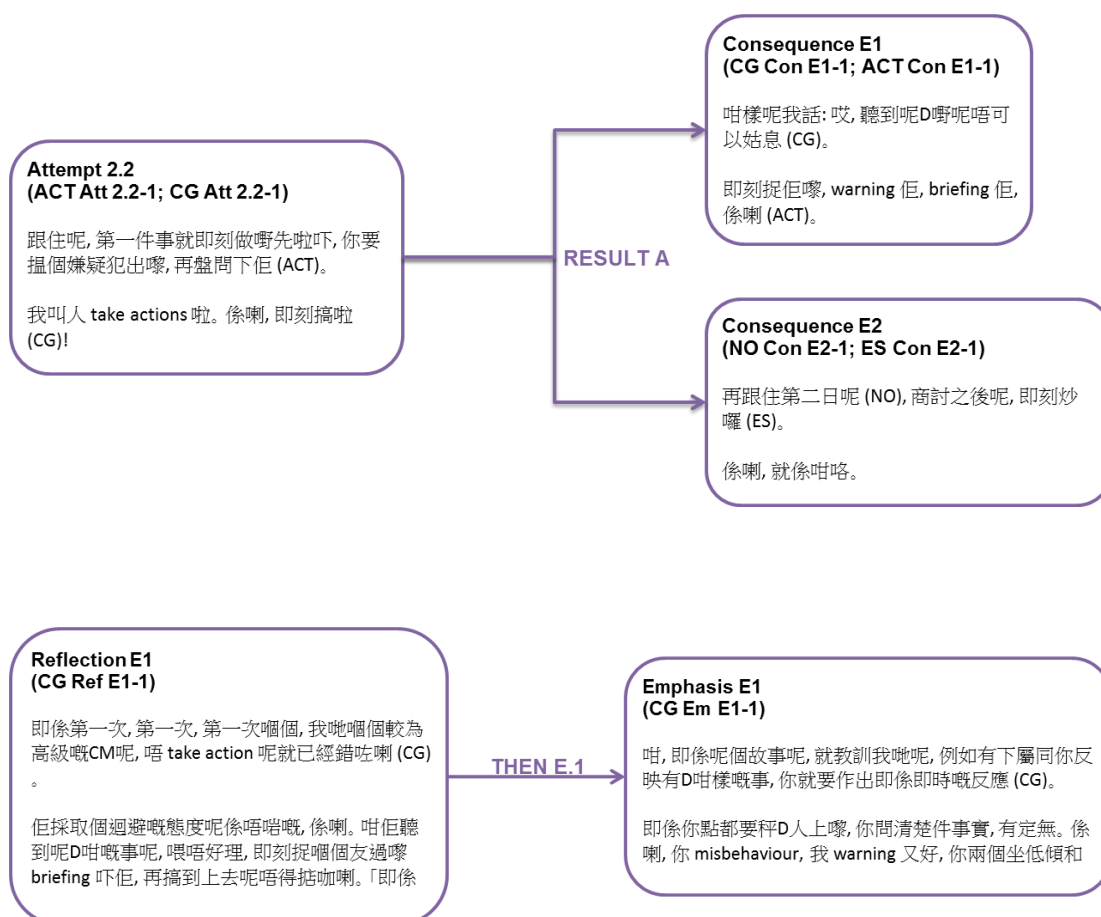
### Steps 7 to 8 –

- Develop a story map for visualising the coded story information, and to provide a visualised platform for determining and classifying the causalities
- Determine the causalities into types



## Step 9 –

- Identify significant causalities
- Determine which of these significant causalities contain causative story information and end state
- Provide evidence for revealing contextual knowledge



**Step 10 –**

- Provide justification to the significance of each causal relationship in order to lay a foundation for discussing the revealed contextual knowledge

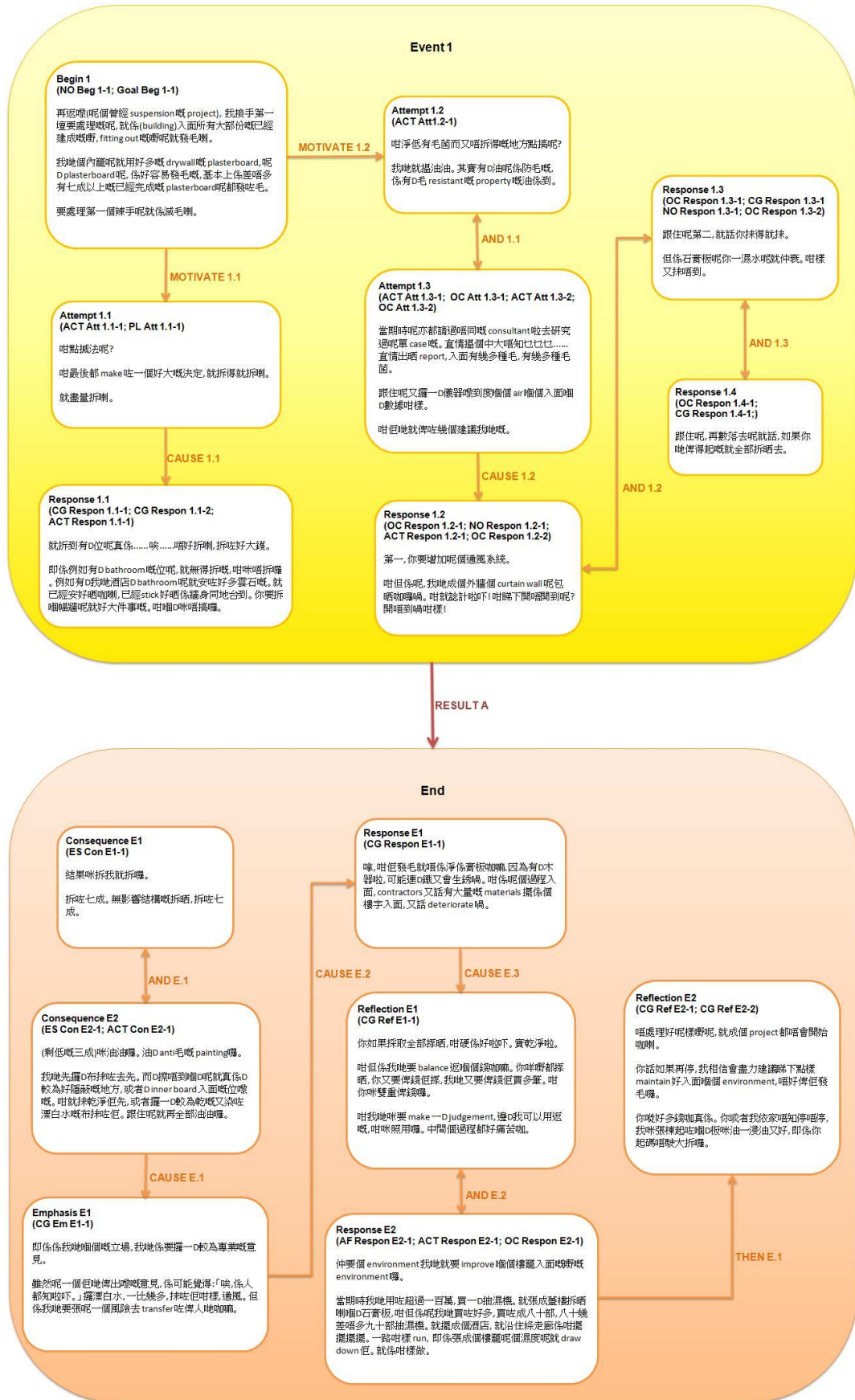
Causality	Involved Constituents	Justification
RESULT A	Attempt 2.2; Consequence E1; Consequence E2	<p>~ This causality showed the attitude and actions of the storyteller (the project manager) after he was informed of an act of misbehavior on the site. The perpetrator was immediately identified, interrogated (ACT Att 2.2-1), warned, and briefed (ACT Con E1-1). The perpetrator was fired immediately in the following day (ES Con E2-1).</p> <p>~ Any act of misbehavior should not be tolerated (CG Con E1-1) and should be acted upon immediately (ACT Att 2.2-1). This knowledge is valuable because it could not be learned from classroom education, particularly the attitude that should be adopted when handling such matter.</p>

Causality	Involved Constituents	Justification
THEN E.1	Reflection E1; Emphasis E1	<p>~ The storyteller (the project manager) pointed out that the senior construction manager did not take any action and completely avoided the issue upon receiving the report (CG Ref E1-1). Therefore, the senior construction manager was suspected of being partial to the perpetrator (CG Ref E1-1). The project manager identified the appropriate actions and attitudes that should be adopted when handling acts of misbehavior (CG Em E1-1). This knowledge clearly described the context of the story to story receivers.</p>

## Story 1 – Handling Design Fault

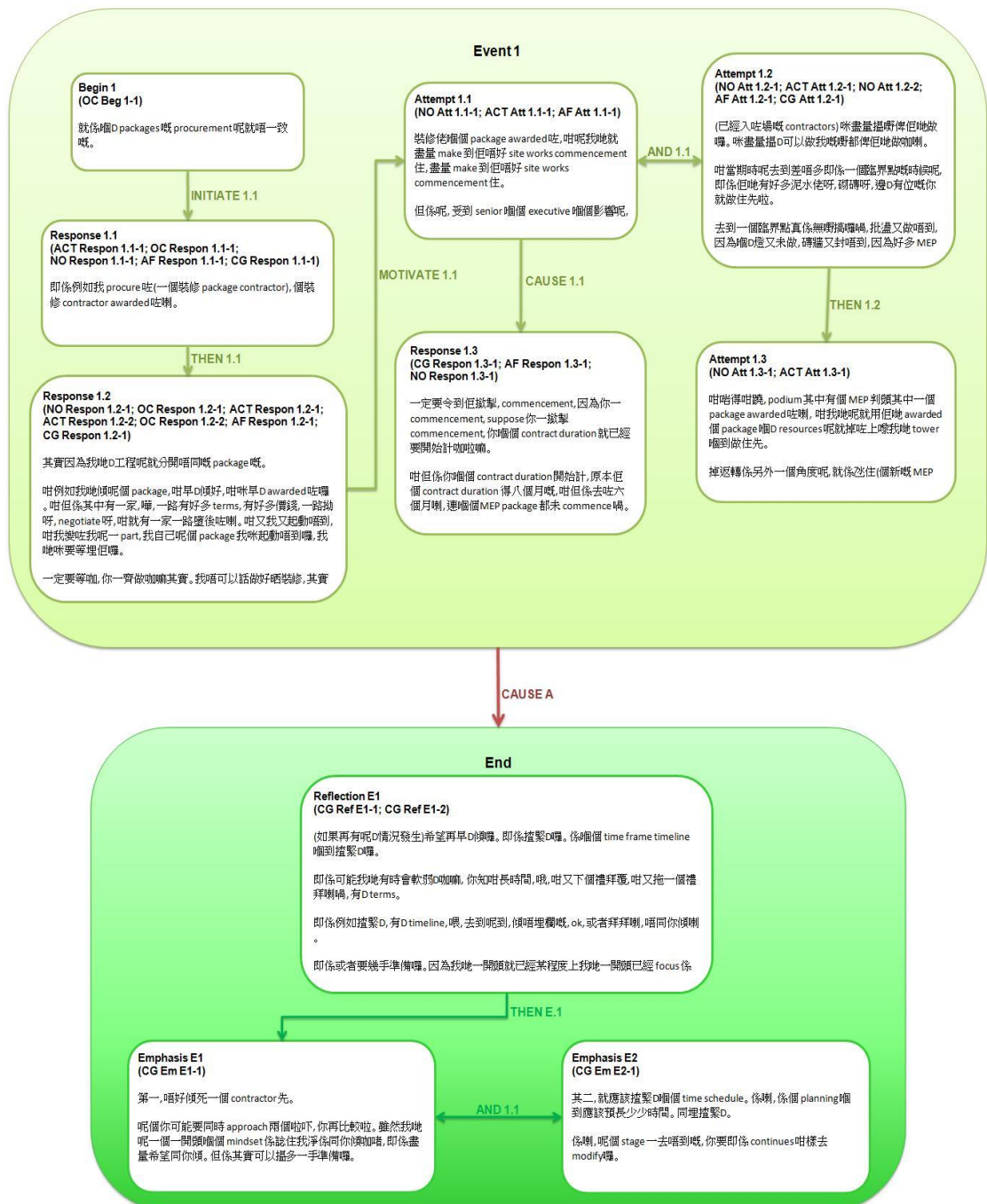


## Story 2 - Removal of Mildew from Building Materials

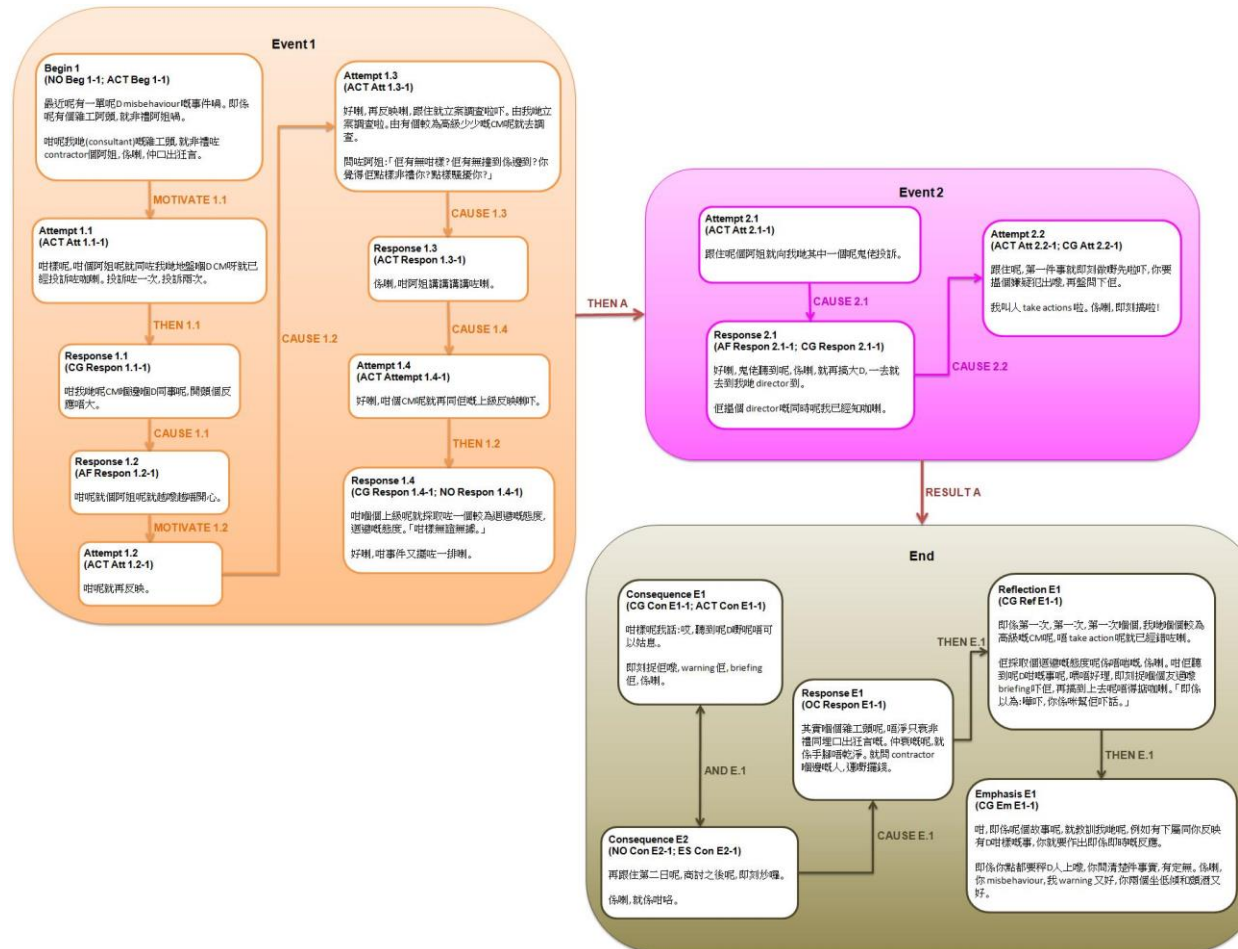




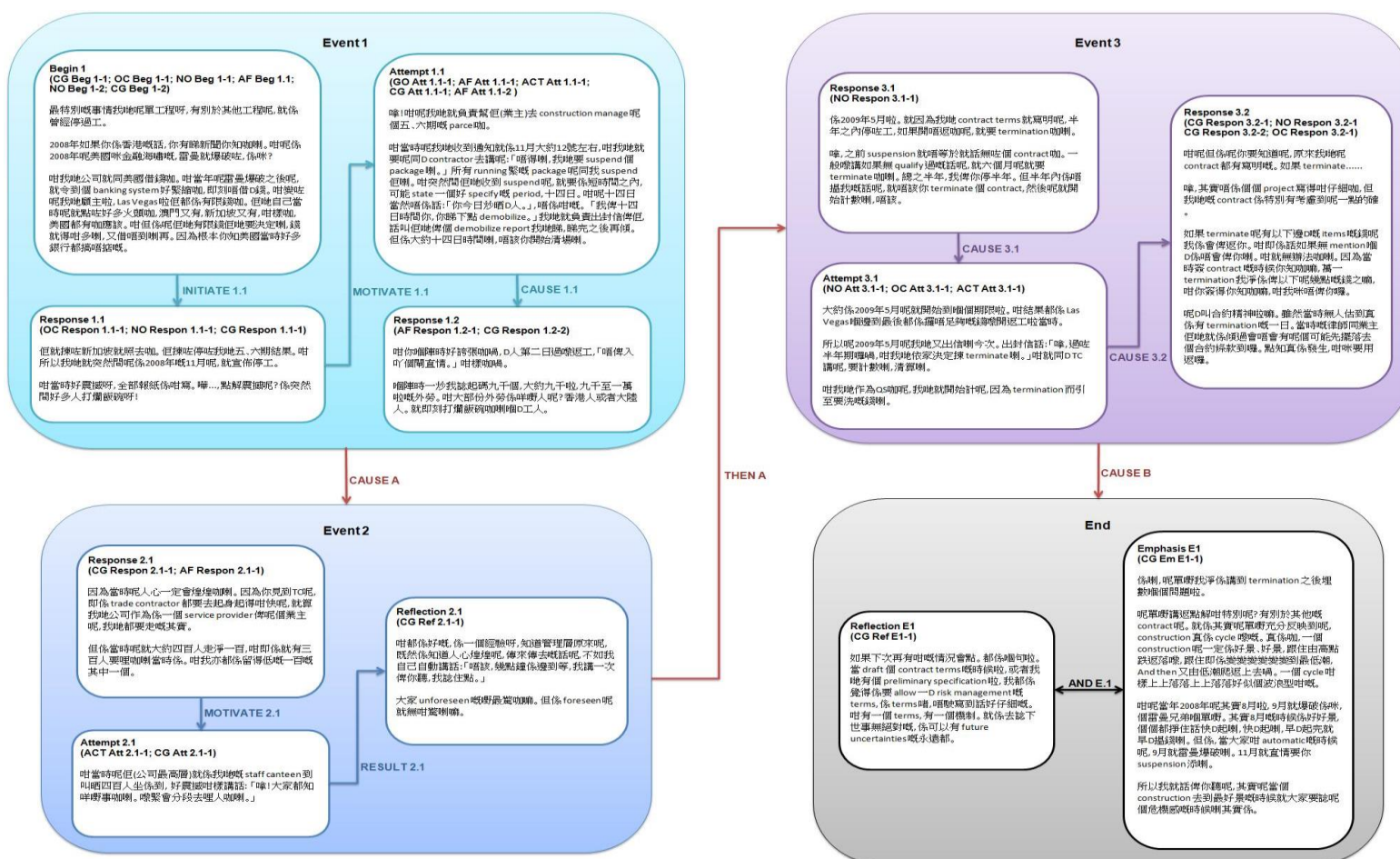
## Story 3 - Delay in Package Procurement



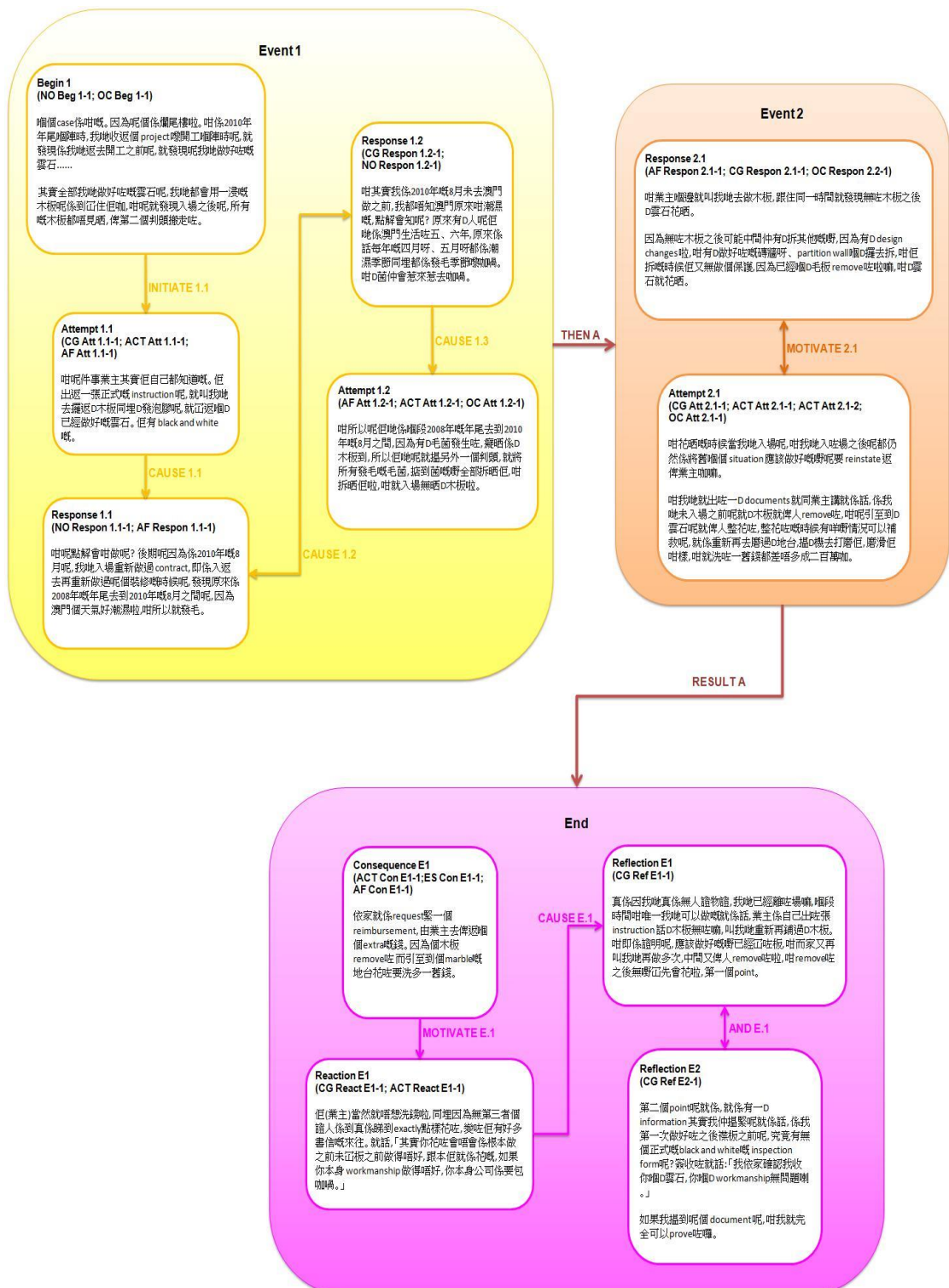
## Story 4 - Handling Misbehaviour on Site



## Story 5 – Story 5 – Project Suspension and Termination of Work

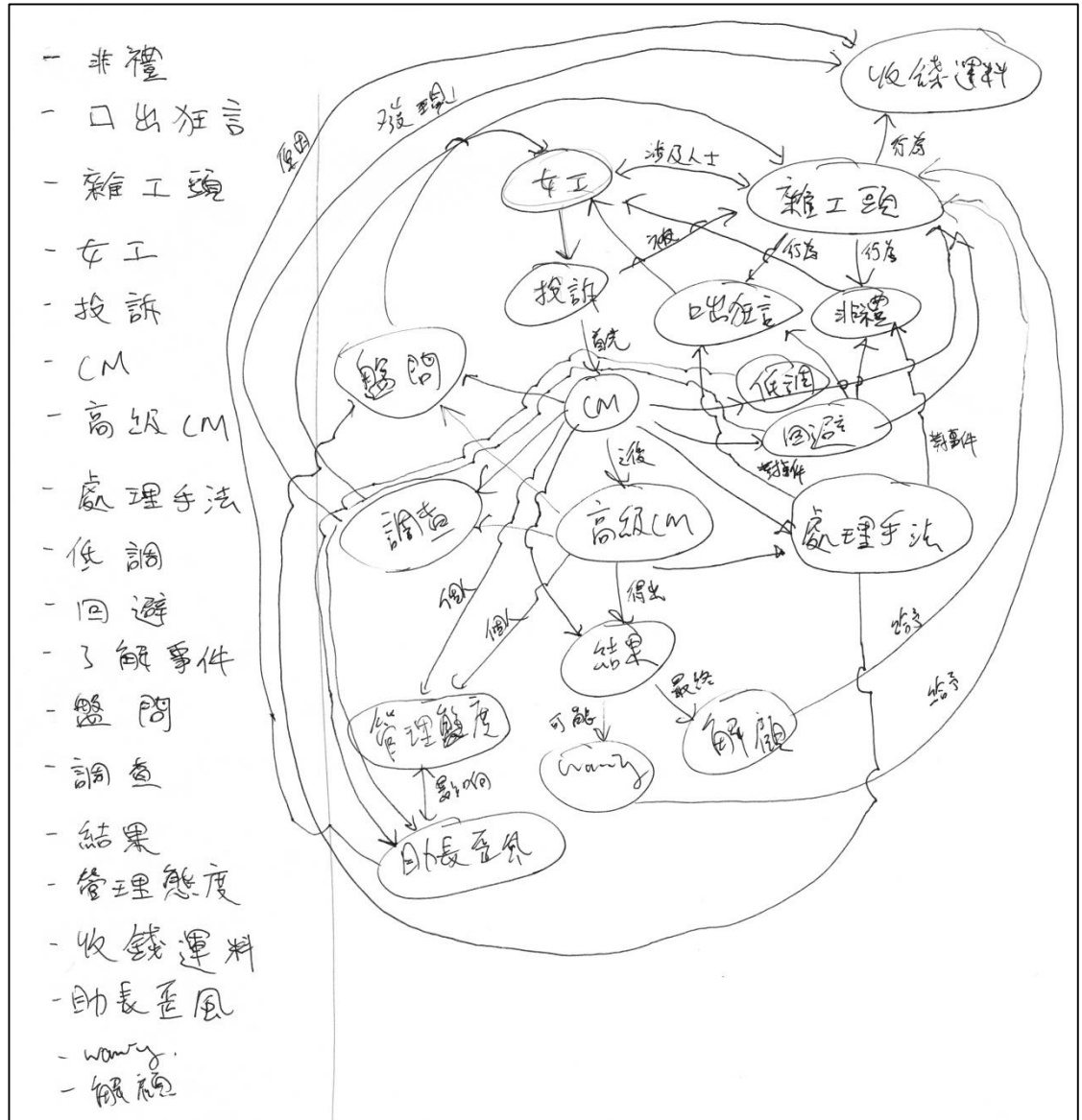


## Story 6 – Scratched Marble Floor



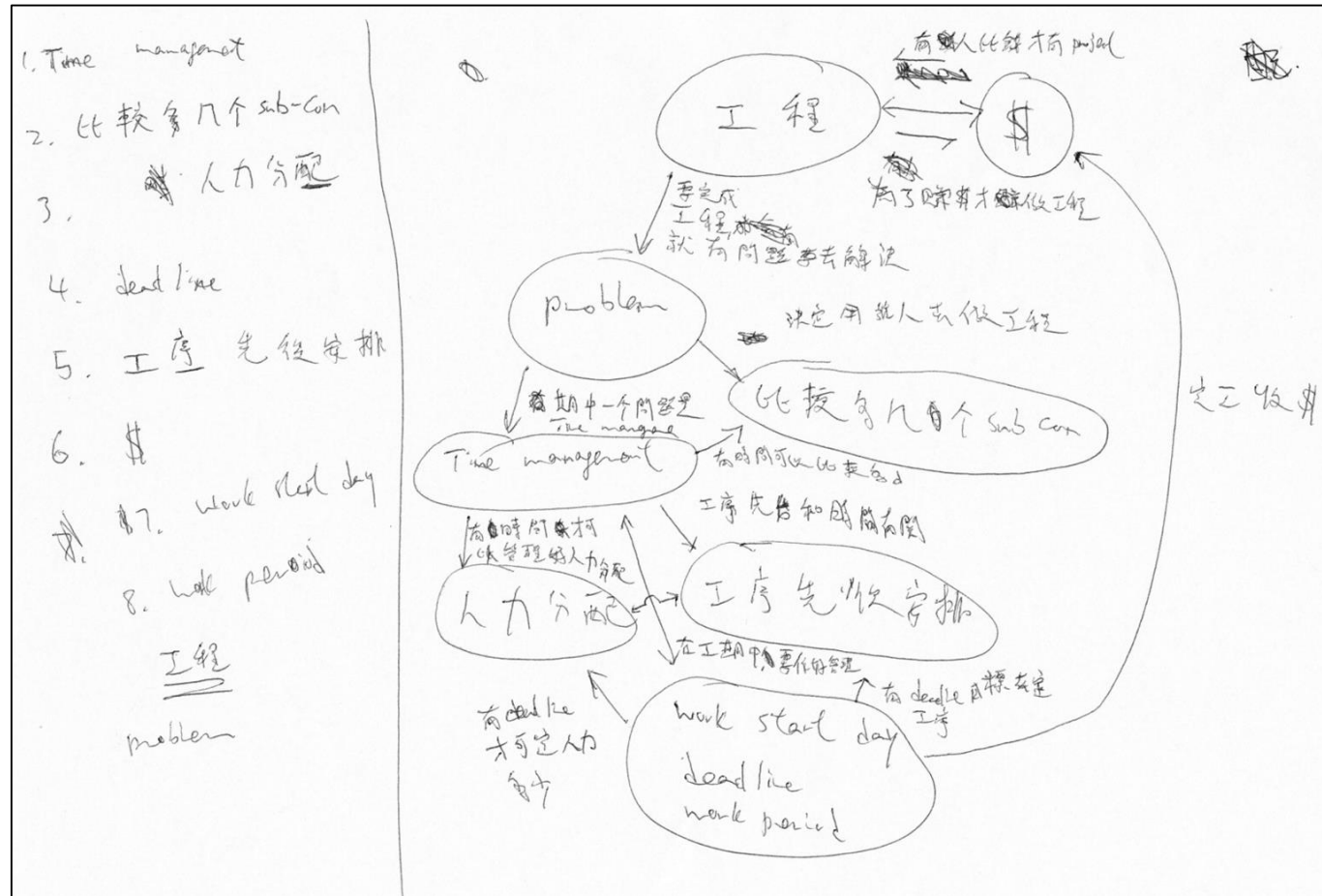
## Appendix H – Collected Cognitive Maps in the Phase 2 Data Collection

**Map 1 (Corresponding to Story 4)**

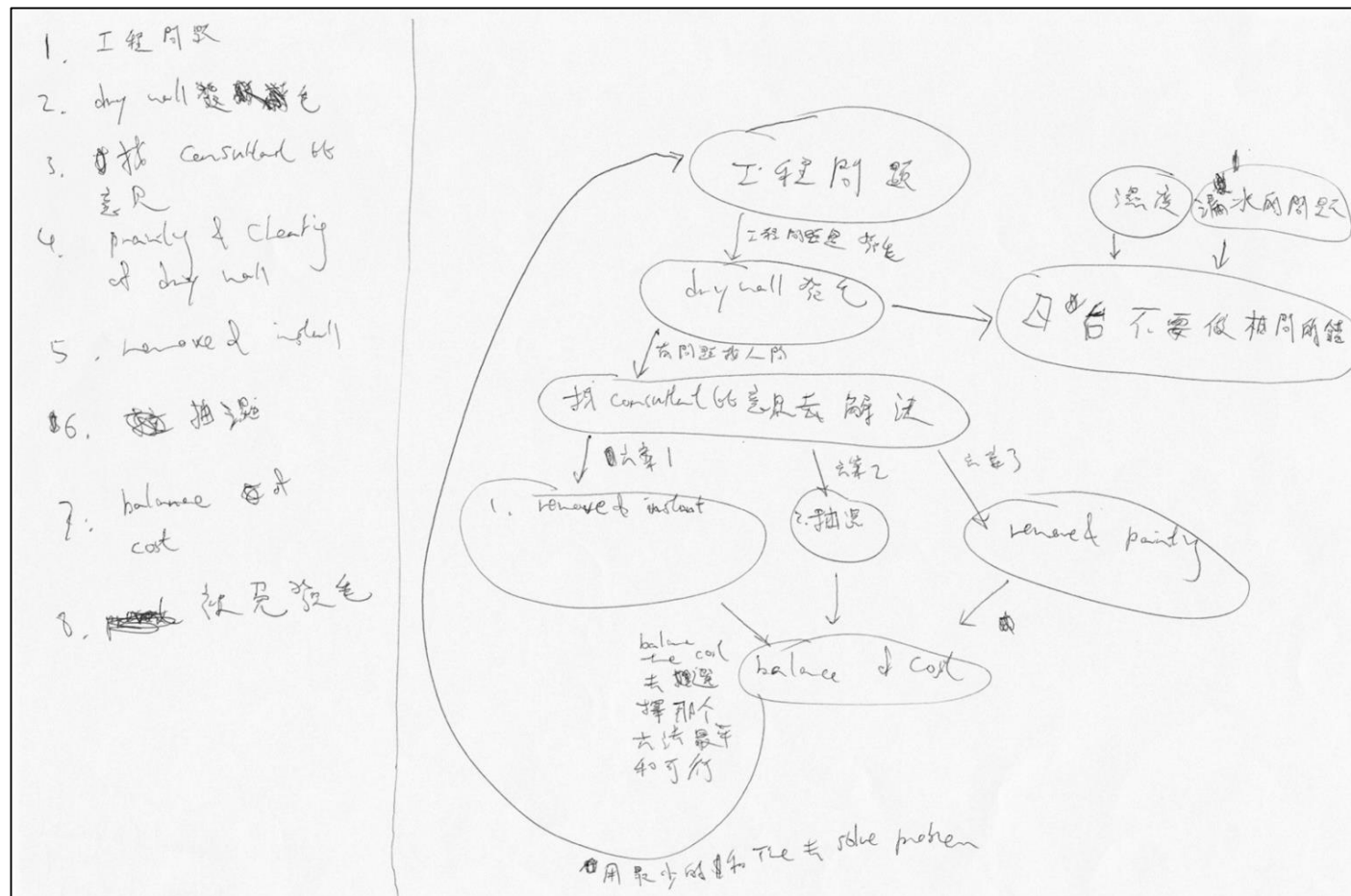




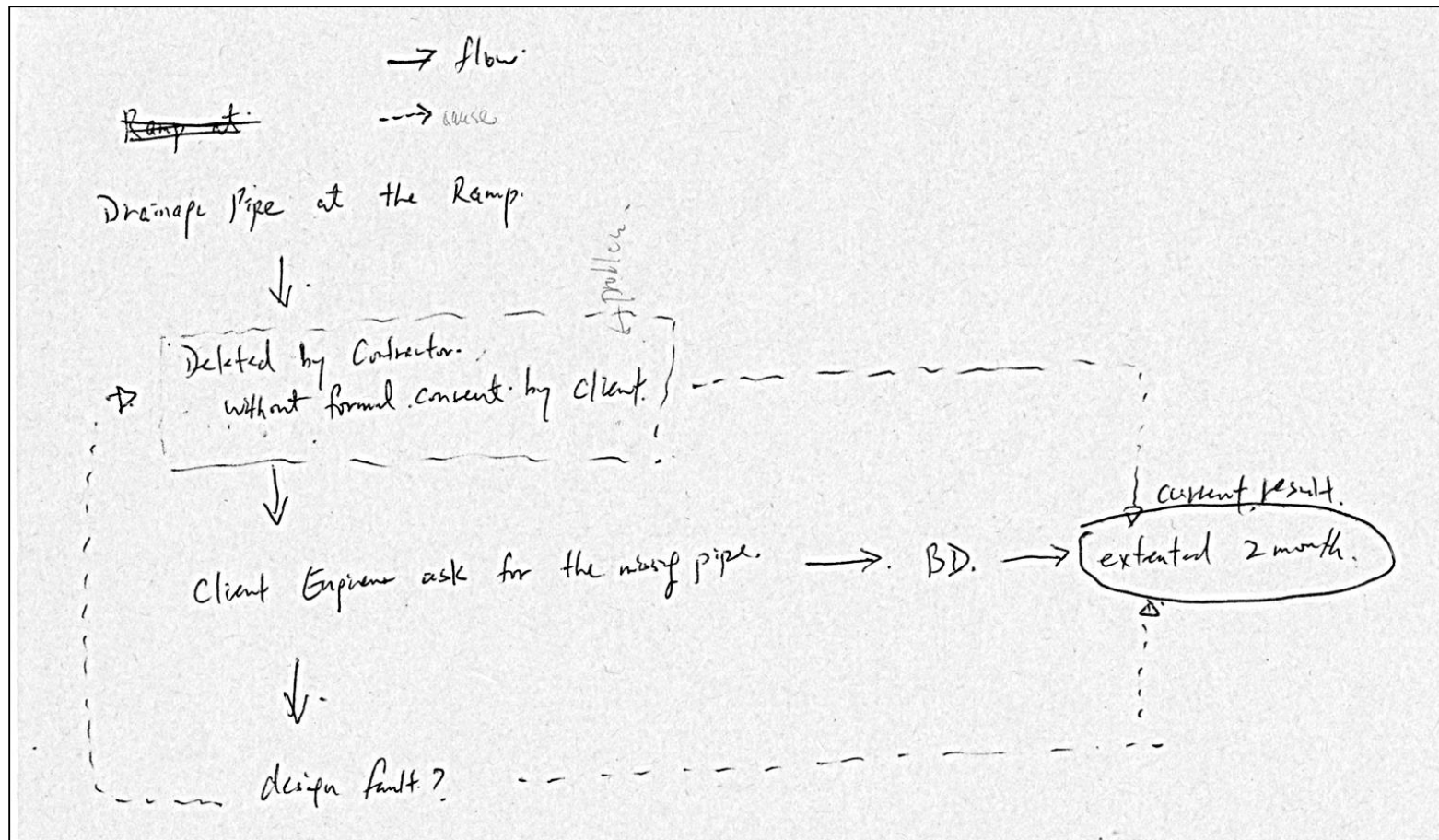
## Map 2 (Corresponding to Story 3)



### Map 3 (Corresponding to Story 2)

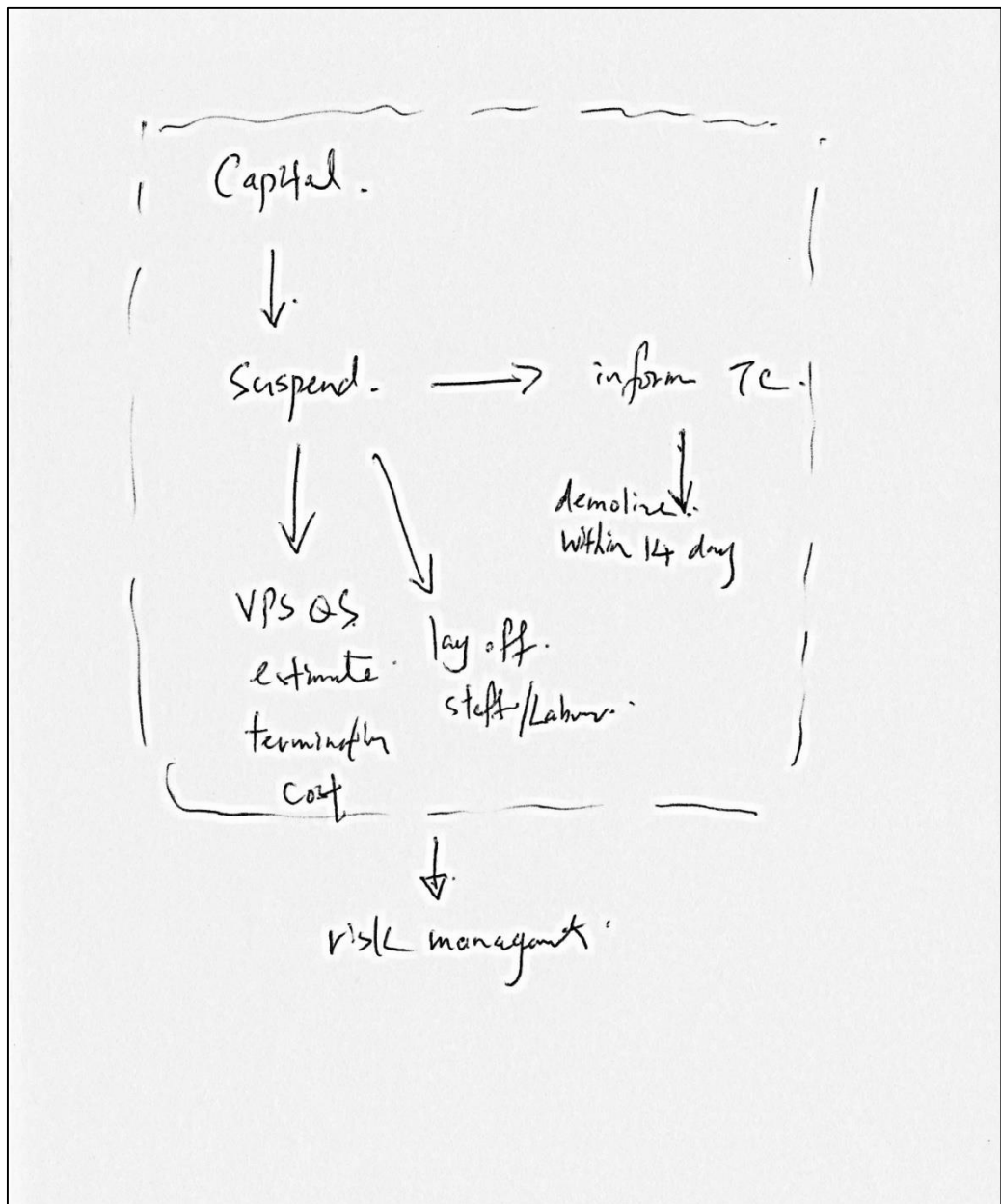


#### Map 4 (Corresponding to Story 1)

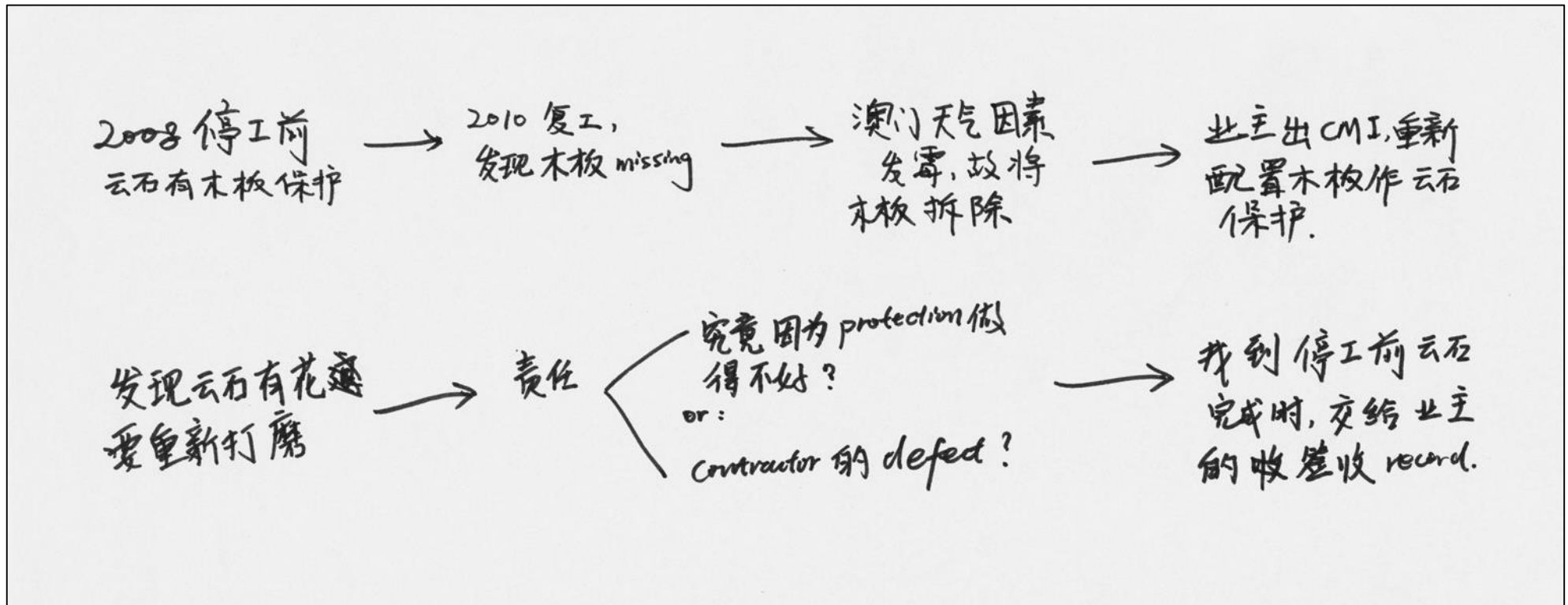




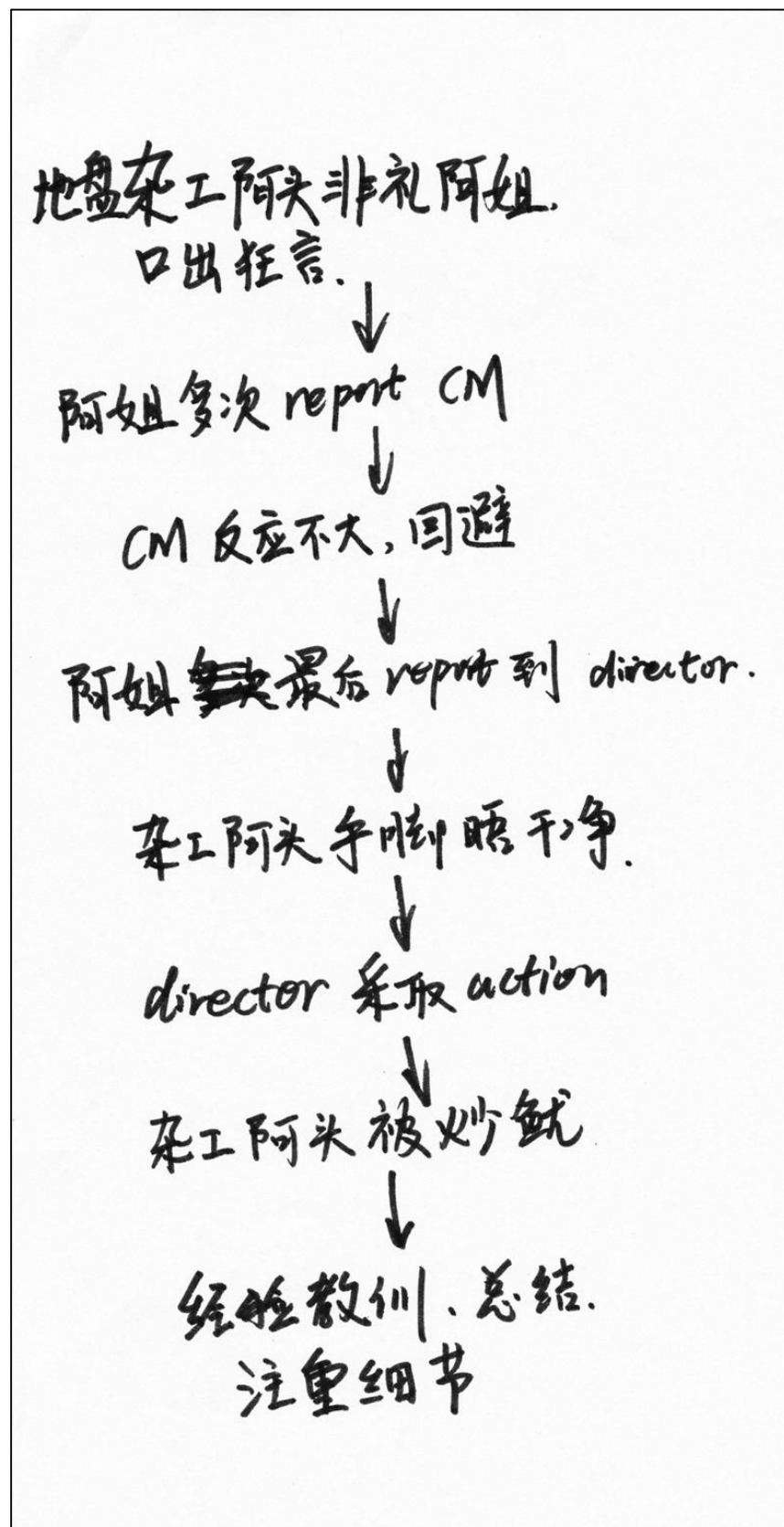
## Map 5 (Corresponding to Story 5)



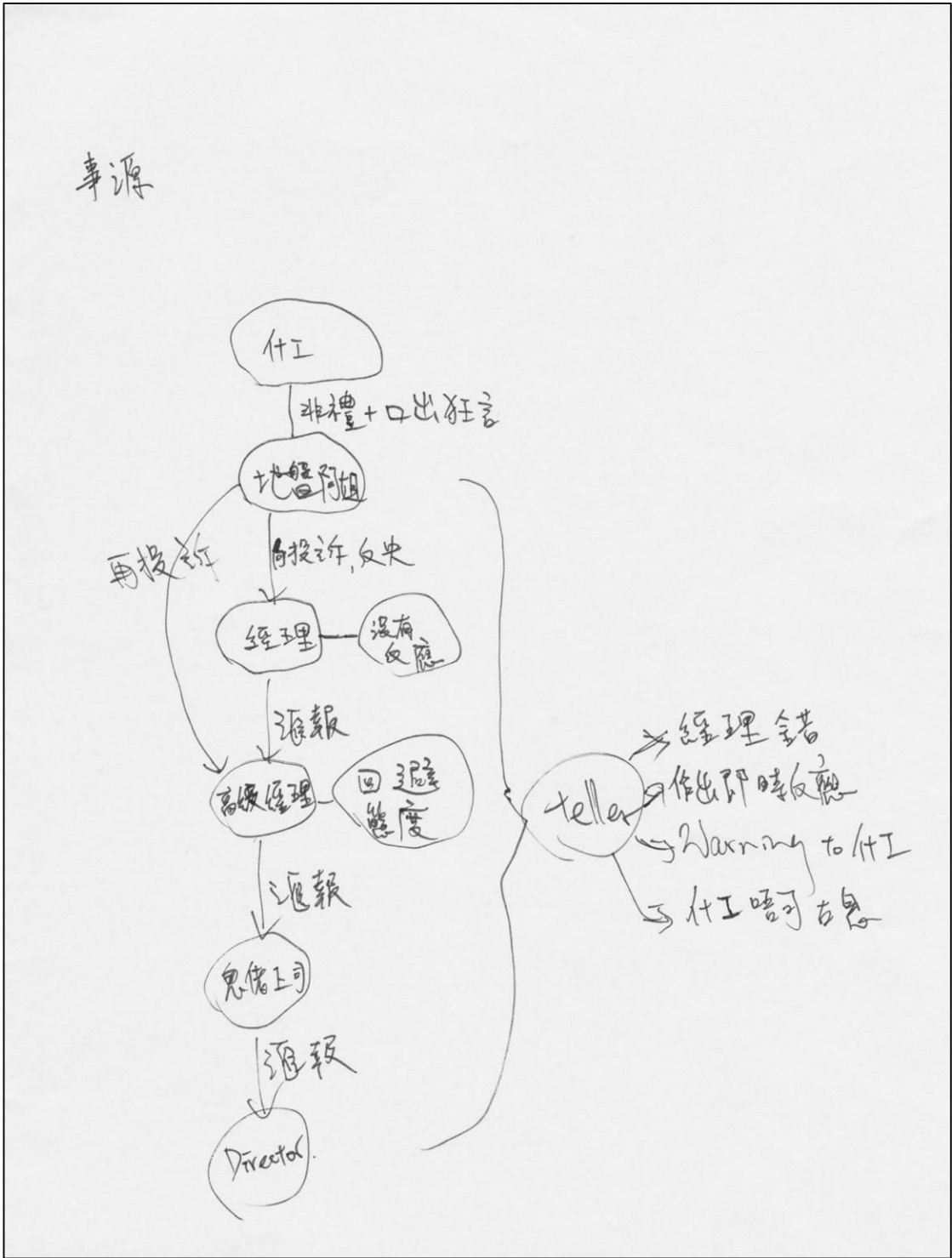
## Map 6 (Corresponding to Story 6)



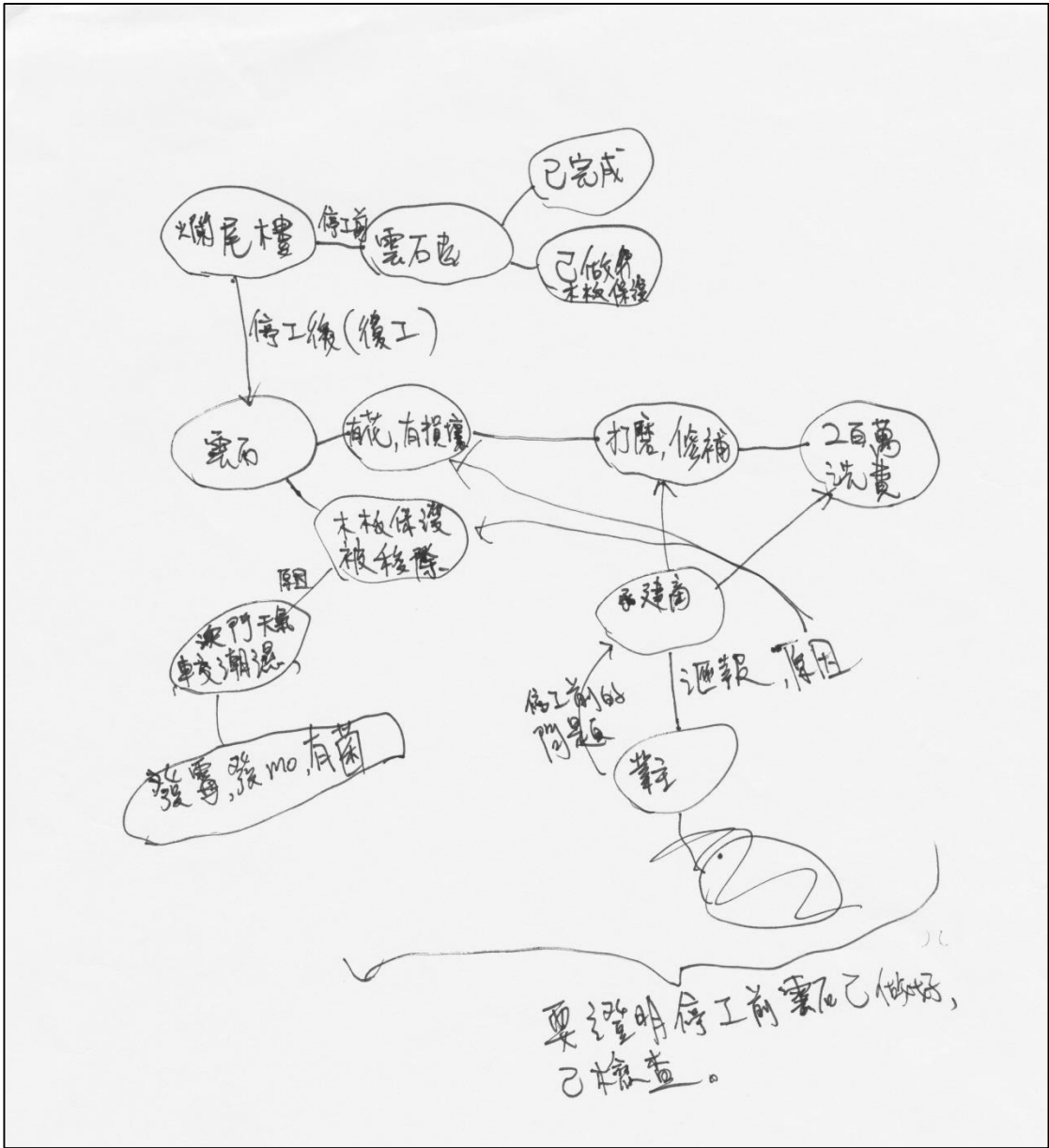
## Map 7 (Corresponding to Story 4)



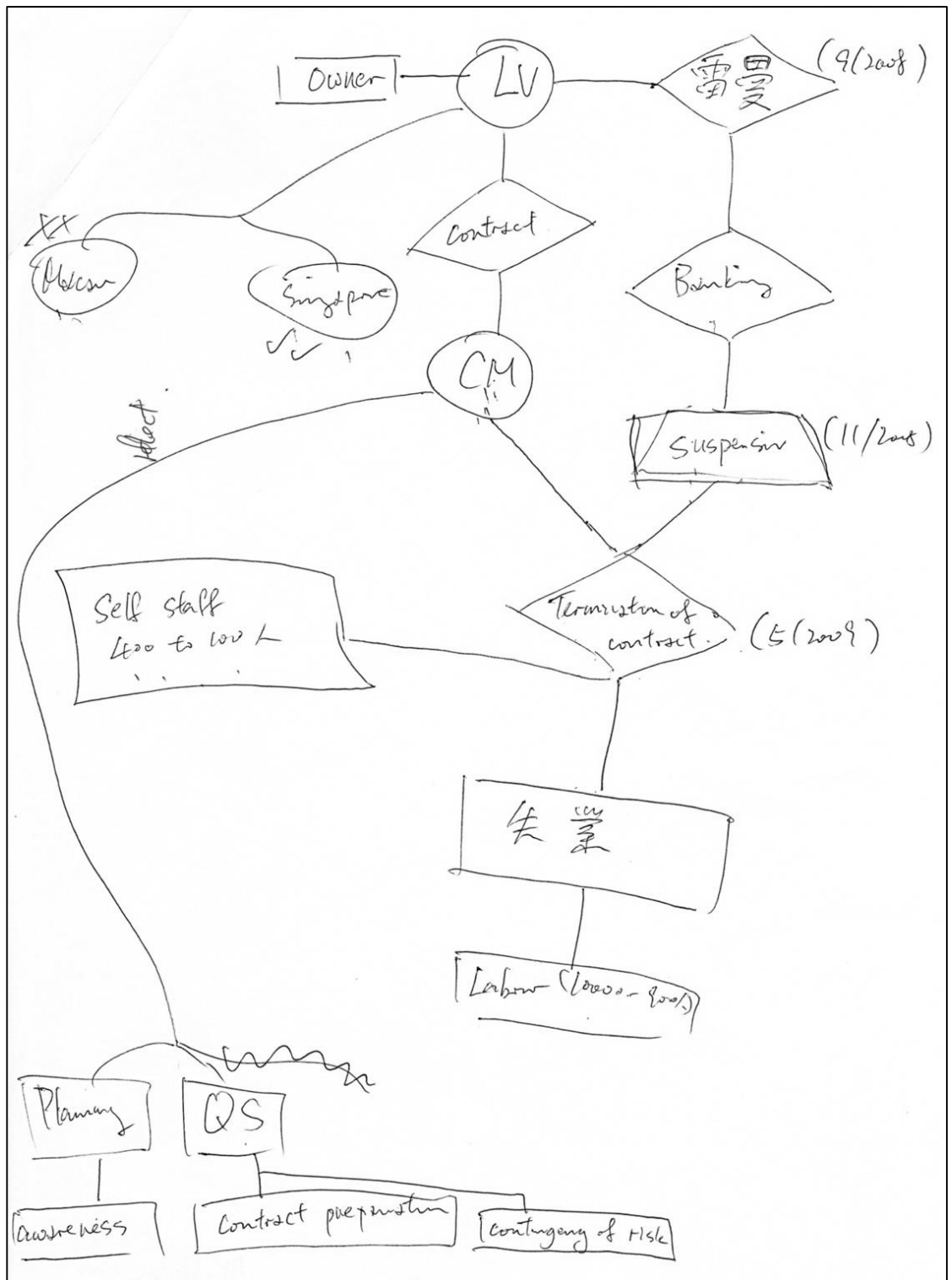
Map 8 (Corresponding to Story 4)



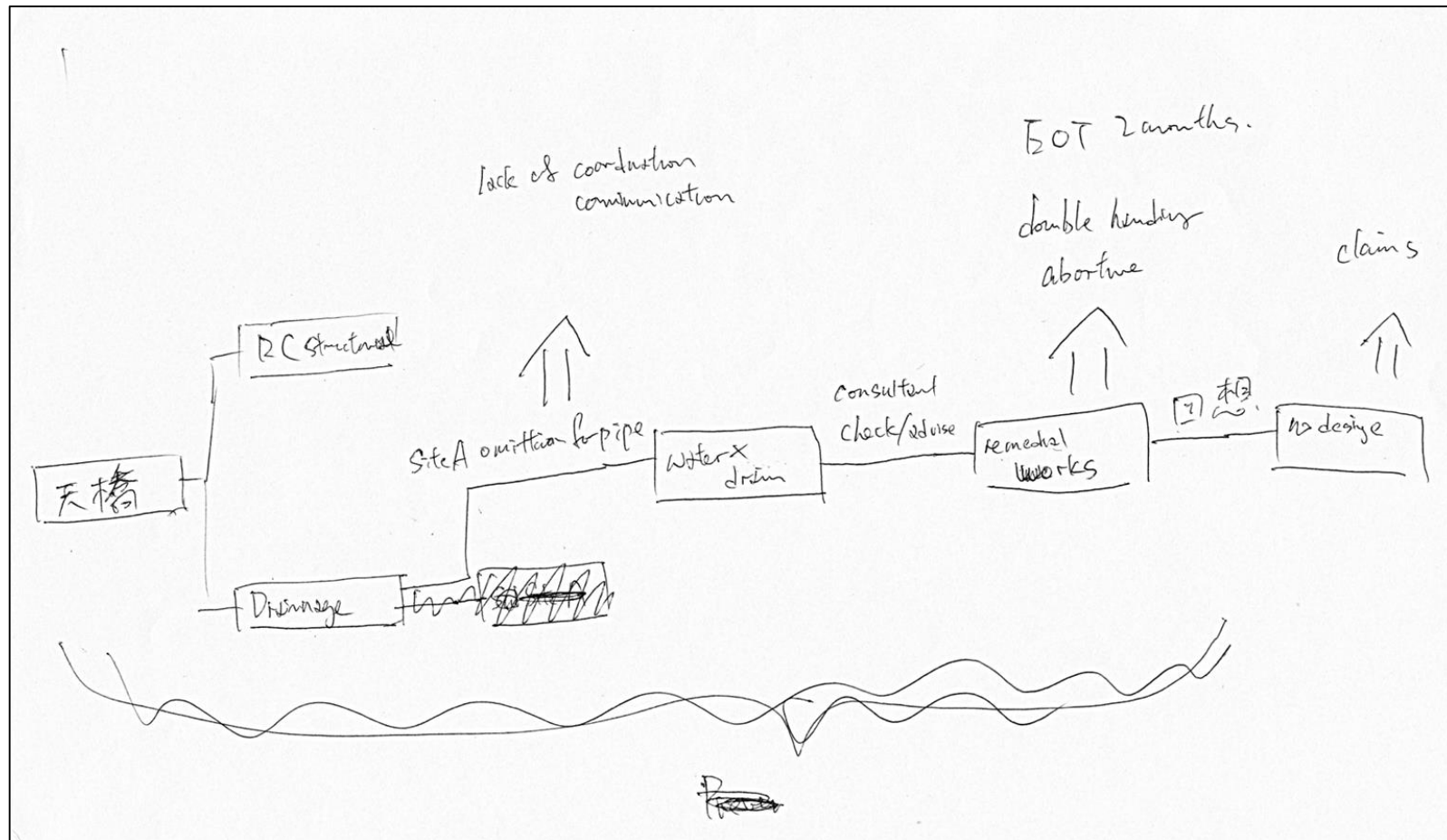
Map 9 (Corresponding to Story 6)



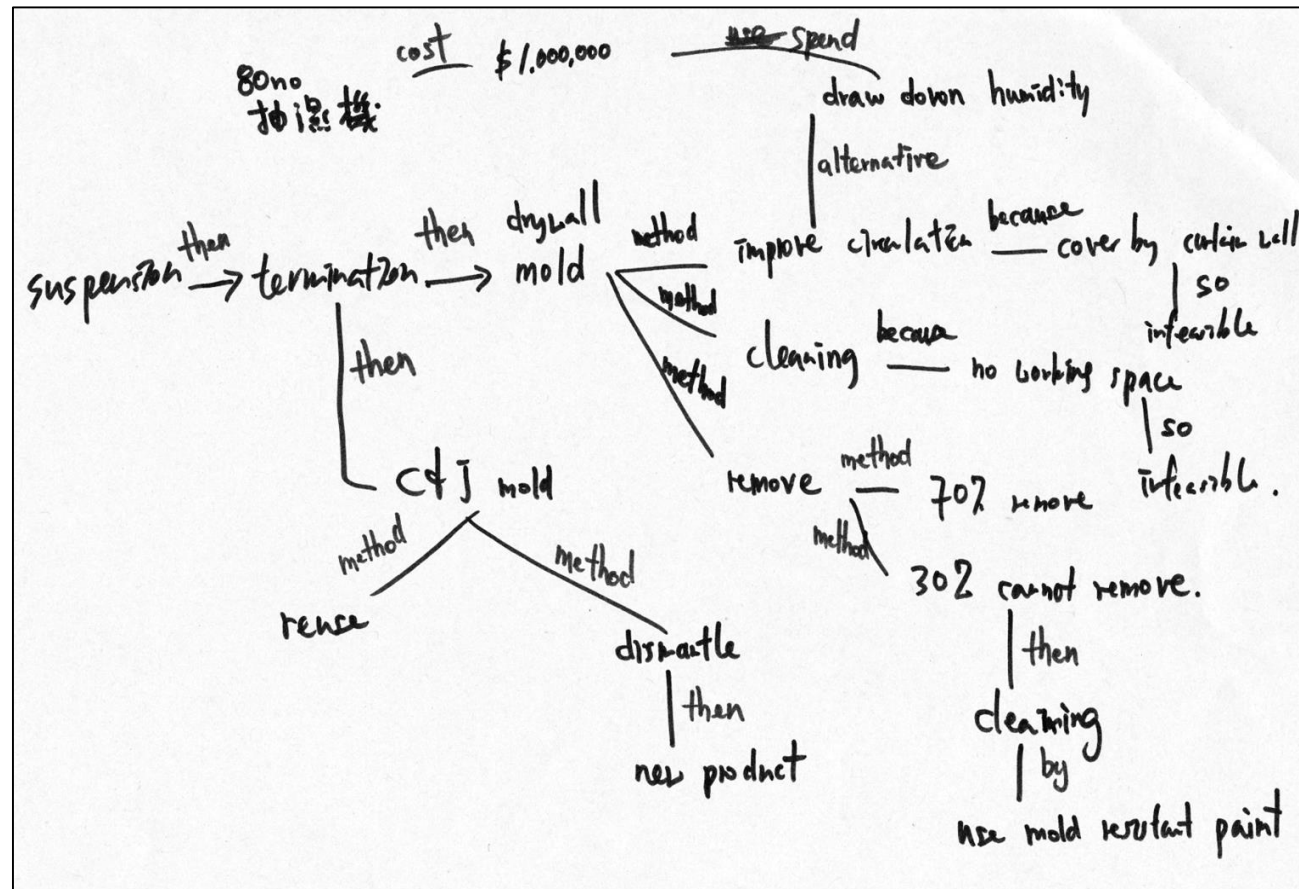
## Map 10 (Corresponding to Story 5)



## Map 11 (Corresponding to Story 1)



## Map 12 (Corresponding to Story 2)





### Map 13 (Corresponding to Story 3)

