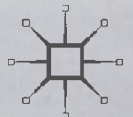Edited by
Mitsuru Kodama

MA THEORY AND THE CREATIVE MANAGEMENT OF INNOVATION

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Editor

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Preface and Acknowledgement

Japan is a country that has a culture of Ma, and the Japanese have a unique type of Ma culture that can be found in the exquisite sensitivities, imagery, colors and meanings expressed through traditional Japanese culture and arts. In no small measure this unique and refined Ma has also influenced the sensibilities and behavior of the Japanese people and enabled them to bring forth the distinct aspects of their culture and art.

In the structure of the Japanese language, the mindset of the Japanese, the organizational principles behind Japanese families and corporations, the organizational climate, the layout of cities and the use of land in Japan, the interposition and existence of characteristic Ma has created organic, dynamic perceptions of time and space. "Ma" is often defined as a gap or opening, and it is from such gaps and openings that new phenomena and events emerge into the flow of dynamically changing space-time.

Ma also becomes the foundation that engenders the power of harmony that creates new things and ideas by harmonizing dissimilar things and ideas and allowing them to coexist. From the past up until the present Japan has created its own unique culture by absorbing many aspects of international culture and allowing these to coexist and flourish alongside its own culture through the creation of highly refined Ma.

Against this backdrop of Japanese culture, the authors assert that Ma is a dynamic phenomenon of space-time that allows for a balance in discrepancies in people's particular thinking and actions as they synthesize the diverse contradictions that arise in the course of their daily practical

activities and social activities. Accordingly, in this book the authors define Ma as follows:

> *Ma is the holistic relationship that enables connection of continuous and discontinuous events and matters in distinct types of space-time (structured space-time vs. unstructured space-time).*

As explained in the book, if we accept in a general manner the viewpoint that Ma is born of the crystallization (tying together) of emptiness and countless possible contents and that Ma functions to allow dissimilar matters and ideas to coexist, we can assume that Ma has the characteristic of bringing together and combining diverse paradoxes (including countless possible contents). The authors view Ma as a holistic relationship capable of connecting the continuity and discontinuity of disparate matters and events.

Thus, research focusing on the concept of Ma is an important theme relevant not only to business and management but also to architecture and the arts, and even cultural studies and linguistics. However, such research into Ma in relation to people and organizations engaging in and developing economic and social activities on a daily basis, and people in the field of business and management, is almost nonexistent. We may then ask why leading companies, organizations and individuals unceasingly produce high quality innovations? The thinking and actions of leading practitioners (innovators and creators) originate in Ma thinking, the core theoretical concept presented in this book.

In this book, in the context of business and management, and the arts and architecture in particular, we describe Ma as the fountainhead for the capability that allows the coexistence of dissimilars, an important factor in achieving creativity and innovation; and we describe how the formation of Ma is a critical factor in the integration, convergence or creation of dissimilar knowledge in people, organizations, companies or industries, as analyzed and observed in our in-depth case studies across different areas of specialization, including business and management, and architecture and the arts, which are deeply connected to a wide range of human activities. Therefore, we hope that the content of this book as a core theoretical framework on Ma thinking will be further developed to encompass new academic research areas based on Ma thinking across a wide range of different specializations.

This book could not have been brought to fruition without the exhaustive and robust interaction of the authors with many practitioners (innovators or creators). The authors would like to extend their gratitude to these practitioners; their number is too great for us to name each one here. We would also like to express our gratitude for the support of Nihon University's College of Commerce and for the Nihon University Multidisciplinary Research Grant (2015–2016), which we received to undertake research for this book.

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Japan has a culture of Ma (間), and the Japanese have a unique type of Ma culture that can be found in the exquisite sensitivities, imagery, colors and meanings expressed through traditional Japanese culture and arts. In no small measure has this unique and refined Ma also influenced the sensibilities of the Japanese people and enabled them to express distinct aspects of their culture and art.

As some Japanese cultural anthropologists and researchers have noticed, for example there is a stark difference between the spatial arrangements of rooms in Japanese and Western dwellings. Rooms in Western houses are separated by walls and completely compartmentalized; Japanese dwellings have fewer walls than Western dwellings. Instead, sliding doors called *fusuma* or paper-covered *shoji* screens allow a spatial Ma to exist, thus making the boundaries between rooms somewhat ambiguous. The shoji can be removed, creating a wide open and well-ventilated space. In traditional Japanese construction, too, examples of Ma can be found, such as the *madori* (floor plan), *cha no ma* (Japanese living room), *toko no ma* (Japanese-style alcove), *kyaku no ma* (space for receiving guests) and *akima* (spare room). Ma also has significance in Japanese music and dance.

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Here, it refers to the sensations of space-time and is in contrast to the uninterrupted sound of Western symphonies, concertos or quartets. Western orchestration is often boisterous, whereas Japanese traditional music has Ma. None of the Japanese musical instruments make a continuous sound the way a bow drawn across strings does. Rather, the sounds from Japanese koto and shamisen come from plucking, a Ma aspect. The sound of drums is also different than what is heard in Western music. Even in dance, there is a clear and distinct difference between Western ballet and Japanese traditional dance, also due to Ma.

The same can be said about works of art. Western art often has many colors, often thickly layered, features which are visible in the mosaics of the Middle Ages, the paintings of the Renaissance, and in nineteenth century Impressionist works. In Western art work, blankness may give the impression of incompleteness, whereas in Japanese artwork unfilled space is important. It can be said that Western paintings appear hot and somewhat crowded (of course, depending on individual subjectivity), whereas Japanese art (if limited to pre-modern works) has a certain coolness.

Research on Ma in countries other than Japan mainly focused on architecture and the arts. According to Giedion (1967), the discovery of the three-point perspective of space during the Renaissance—a period that inspired many scientific discoveries—led to the development of models that combine space and time. In architecture, also, he emphasized the extremely important role of Ma as a medium for the expression of spatial perception, linking the passing of time to space in particular. After Giedion, a number of researchers of Japanese culture clearly defined spatial concepts of Ma useful in architecture, which in turn led to further research of Ma from a variety of perspectives (e.g., Kwinter 2008; Nitschke 1988; Isozaki 2009).

On the other hand, French geographer Augustin Berque's *Vivre L'espace au Japon* (1982) presented Japanese culture from the perspective of the uniqueness of both Japanese customs and language by contrasting them with Christian culture. Berque's work offers a uniform view in which he verifies many special aspects that organically tie in the Japanese cultural idea of Ma, such as the structure of the Japanese language, the mindset of the Japanese and organizational principles behind Japanese families and corporations as well as the layout of cities and the use of land in Japan.

Berque (1982) perceived Ma as a concept born of the crystallization (tying together) of countless possibilities with emptiness (blanks, silence, discontinuity and stillness). Viewed from the perspective of communications

theory or linguistics, Ma incorporates free zones into the flow of information put forth by a disseminator, while receivers of that information detachedly write meaning into those zones according to their own preferences. The intended meaning or actual meaning cannot be conveyed no matter what is perceived. Nevertheless, since some kind of meaning is implicit in a relationship, the disseminators of messages need only make the effort to suggest it. Therefore, Ma can be defined as "intersubjective space"—a space that escapes control or restriction on symbolic expression, and in which exchanges of complete messages between one actor (the message disseminator) and another (the message receiver) can take place. Ma is often depicted as a gap or opening, and it is from these gaps and openings that new phenomena and events emerge into the flow of dynamically changing space-time.

In this way, the author believes that Berque's (1982) concept of Ma corresponds to the "hollow equilibrium structures" in the philosophies of Shintoism, described in the next section, and also described by the Buddhist concepts of emptiness, selflessness and "the Middle Way." Thus, Ma can be defined as dynamically changing holistic relationships that allow a diversity of meaning (see Box 1.1).

More recently, the Japanese haiku poet Kai Hasegawa (2009) developed his own theories that focus on the characteristics of Ma and the "coexistence of dissimilars" in Japanese culture. Hasegawa offers a fascinating hypothesis regarding the power of harmony, which generates new creativity by harmonizing dissimilar things and events by allowing them to coexist, and Ma is the foundation from which this harmony can be brought forth. According to Hasegawa, Japan has created its own unique culture with highly refined Ma by absorbing many aspects of international culture and allowing them to coexist.

As discussed below, we assert that Ma is the third space-time domain that allows for the combination of discrepancies that results when human beings synthesize the wide-ranging contradictions that arise in daily activities.

Ma is the holistic relationship that enables connection of differing continuous and discontinuous events and matter in distinct space-time (structured space-time vs. unstructured space-time).

As Berque (1982) asserted, Ma are born of the crystallization (tying together) of countless possibilities within emptiness and, as Hasegawa

Box 1.1 Eastern Thinking: The Source of Ma

Japan has unique national conditions and a social climate that has shaped the distinctive culture and thinking of the Japanese people. Historically, the backbone of Japanese thinking developed from concepts and ideals of two religions: Shintoism and Buddhism. Ideas originating from Shintoism were handed down in *The Records of Ancient Matters* and *The Chronicles of Japan*. Being geographically a group of islands, Japan remained almost completely isolated from the outside world until its formation as a nation state before the era of Prince Shotoku (574–622 CE), during which time solid foundations for Shintoism were established through faith in and worship of local ancestral gods.

The official arrival of Buddhism in Japan occurred in the year 538. Having embraced Buddhism at a young age, Prince Shotoku, as the regent, laid the first foundations of the Japanese nation by including the teachings of Buddha in his 17-article constitution, promulgated to establish a national system. This act came to have a significant influence on shaping the characteristic thinking and culture of the Japanese. It is often thought that Prince Shotoku poured efforts into fusing Shinto with Buddhism (the syncretization of Shinto with Buddhism) to maintain stability in the new Japanese nation.

Kawai (2003) considered the fundamental structure of Japanese mythology in *The Records of Ancient Matters* while identifying the importance of knowledge of mythology to human beings, and he proposed that Japanese myths also had "hollow equilibrium structures." The concept of hollow equilibrium structures originates from the idea of overall harmony in the human world. Overall harmony means the acceptance of new concepts or contradictions, and concordant coexistence of individual elements within the whole. That does not mean the whole as being integrated according to some centralized power based on a logical principle but rather the aesthetic of a sense of harmony which adequately sums up the equilibrium of the whole, which is also an essential concept of Ma. At a glance, this appears to be dialectical thinking, although it is not the Western-style logical dialectic of Hegel (the process of thesis, anti-thesis, synthesis), but is closer to the Eastern dialectic with its focus on finding a happy mean, as put forth by Nisbett (2003). (The author refers to this as "the harmonic dialectic.")

In addition, Takazawa (1996) points to the existence of an "ethic of harmony" as a unique sense of order in Japanese culture. It is often thought that for a long time before Confucianism or Buddhism came to Japan, importance was half-consciously placed on an ethics of harmony to help ensure Shinto-like order. Furthermore, the first article of Prince Shotoku's 17-article constitution had a major impact on the establishment of the Japanese nation, as it formalized the ethics of harmony with the proverb, "Wa wo motte totoshi to nasu (Getting along with each other is the most important thing of all)." The ethics of harmony have built a unified society and enabled mutual trust and resonance of values (Kodama 2001) between human beings. In a similar manner, for example, the value-based management of excellent Japanese companies (e.g., Kodama 2011) also achieves a culture and power of harmony.

The second main influence on Japanese thought was Buddhism. As a foreign religion, Buddhism was in conflict with the older Japanese Shintoism in the latter half of the seventh century during the era of Tenmu, which was reflected in the political power at the time. However, Prince Shotoku's 17-article constitution emphasized Buddhist worship and was a conscious attempt to make Buddhism a Japanese religion. The Japanese people at the time did not accept the ideas of Buddhism in their entirety, but they absorbed those aspects that could be adapted to the unique ways of thinking of the Japanese rooted in the older Shinto religion. Thus, a common interpretation is that Japanese-style Buddhism developed out of these attempts to harmonize Buddhism with Shintoism. Later on, through a process of infusing Buddhism into Shintoism, Japanese-style Buddhism began to germinate and an era of Japanese Buddhist culture and thinking blossomed.

Two of the most important concepts in Buddhism are the aspects of emptiness and selflessness. These concepts entail not adhering to any fixed ideas or actions. When ideas become fixed and there is pressure to adhere to them, biases emerge and flexibility gets lost. New advancements and developments cannot occur in such circumstances. The idea of humans flowing and moving freely is also part of the concept of progress and development (e.g., Mizuno 1971). The Buddhist ideas of emptiness and selflessness naturally lead to practice. Thus, the principles of practice contained in Buddhism are often referred to as

"the Middle Way." Based on the above ideas of emptiness and selfless-ness, the concept of the Middle Way places importance on steering away from extremes and biases, and combining aspects while acquir-ing strengths and compensating for weaknesses (e.g., Masutani 1971). Therefore, the idea of the Middle Way, grounded in emptiness and selflessness, has many commonalities with the "harmonic dialec-tic" of Shintoism described above, with its sense of balance; these aspects are also fundamental characteristics of Ma.

A concept similar to the Shinto ethic of harmony also assists in establishing the platform for resonating values at excellent Japanese companies and enables the knowledge convergence process as team work and commitment through the formation of strategic commu-nities based on the formation of Ba, enabled by the formation of Ma. In particular, management ideas based on the concepts of overall harmonization and harmonic dialectic in Shinto and the idea of the Middle Way in Buddhism can be seen to bring about diverse dynamic Ma systems (temporal, spatial, psychological and contextual) in response to entire situations. From the Shinto and Buddhist per-spectives also, Ma can be defined as dynamically changing holistic relationships that allow diversity of meaning.

(2009) suggests, Ma function to allow dissimilar matters and events to coexist. From these perspectives, it seems Ma generally have the character-istic of bringing together and combining a range of paradoxes (including infinite possibilities). Accordingly, there are commonalities between our perspective of Ma and Berque's (1982) and Hasegawa's (2009) perspec-tives. In other words, Ma can be interpreted as a holistic relationship con-necting continuity and discontinuity of different matters and events as described in Box 1.1.

Thus, research that focuses on the concept of Ma is highly relevant not only to architecture and the arts and even cultural studies and linguistics but also to business and management (technology and innovation man-agement, in particular). However, such research into Ma in relation to people and organizations engaging in and developing economic and social activities on a daily basis and in the field of business and management is almost nonexistent.

In this book, we describe Ma as a starting point for the capability of allowing for the coexistence of dissimilars, an important factor in achieving innovation. In Part II, In-depth Case Studies, we describe how the formation of Ma is a critical factor in integrating dissimilar knowledge and creating knowledge in organizations and companies, as observed in our in-depth case studies in business and management, architecture and the arts. Thus, as a study on innovation related to Ma in business and management and in the arts and architecture, this book provides a template for new Ma-based academic research domains across a range of different specializations with prospects for further development.

1.2   Examples of Ma in the Business Workplace

How are certain leading companies, organizations and talented individuals able to achieve high quality innovation, continuously and without interruption? The core theoretical concept presented in this book is the idea of "Ma thinking," which serves as a springboard for the thoughts and actions of adept practitioners (innovators). Before presenting the theoretical framework of Ma thinking, we first present case studies of companies that have demonstrated innovation recently by first focusing on the thinking and actions of practitioners and the nature of the organizations; we then move on to discussion of the features and content of this book. To begin, we present the cases of two American companies currently in the global spotlight: Apple and Cisco Systems (in-depth case studies of these two companies are mentioned in Chap. 3).

1.2.1   *Apple and Cisco Systems*

The U.S. company Apple is often in the limelight for its world-leading innovation. As a large corporation, Apple's aggregate market value reached $65.2 billion in 2014. What kind of aspirations for innovation did it need to achieve such a result? A number of comments made by the late Steve Jobs offer some insight into the origin of the creativity at Apple.

For instance, Jobs said Apple had to be a place where anybody could casually approach the CEO with an idea, and he as a leader would strongly encourage open discussion. At any given time at Apple, two engineers might meet in a hallway, one letting the other know of an idea he or she had been forming, and the other encouraging him or her to start working on it. The first gets back to his or her work area and quickly forms a team

that will spend some months developing the idea. It is still not uncommon at Apple for new projects to start up from such informal conversations.

In general, business activities are carried out through time and space in formal organizations with rules. At Apple, however, Jobs encouraged informal meetings and communications because he believed creativity came about through spontaneous gatherings, communication and random conversation. Thus, whenever ideas or questions spring to mind, it remains the practice at Apple for a staff member to call another with a request to write up what needs to be done, any time of day.

Jobs also described the business system at Apple that generated such ideas and innovation this way: "The system is that there is no system," adding, however, that this did not mean Apple was without processes. "[Apple] is a very disciplined company and we have great processes. (Burrows 2004) But that's not what it's about. Process makes you more efficient." For innovation to come about, however, Jobs said people had to be able to discuss things in places like hallways, or they had to be able to call each other when a good idea arose or when they thought of a solution to a problem they were facing, even if it might be 10:30 at night. When Apple staff think up their "coolest" ideas, they often bring together six of their workmates to sound them out. Jobs spoke of how innovations were born through these types of situations and discussions. This raises the question of how the thinking and organizational actions of Apple staff (including Jobs at that time) can be truly interpreted, given that Apple is a large company with many regulations.

Another innovative American company is Cisco Systems. With its vision of "Changing the way we work, live, play and learn," Cisco bought up more than 170 companies between 1993 and 2014, and when the company celebrated its 30th anniversary in 2014, it had grown to a giant corporation with revenues of around USD 47 billion. Now in 165 countries, Cisco has a staff of 74,000, with a high portion of 39% in engineering, 24% in sales, 20% in services and 17% in other areas. The previous CEO John Chambers, has steered the company for 20 years, which has 14 executives and a senior leadership of 58.

The organizations that characterize Cisco consist of people needed to carry out business operations for individual projects. As these projects progress, their members generally change. Cisco refers to these as "dynamic virtual teams" (which consist of both formal and informal organizations). These teams are quickly brought together to deal swiftly with specific business circumstances, transcending the framework of the company's existing organizations.

Dynamic virtual teams include core teams and extension teams. Core teams have the power to make decisions and are responsible for business conditions, whereas extension teams provide specialist and experiential knowledge. Accordingly, members of a staff often participate in more than one project. Team members at Cisco usually fall into the following five classifications: executive sponsor (who serves as general project manager), team leader (who actually drives the team), operations leader (who brings the team together), meeting facilitator (who provides coordination so that meetings proceed according to the agenda) and team members.

At Cisco, these dynamic virtual teams have dramatically improved the quality and speed of decision-making because the dynamic structure of these informal organizations gives them the business advantage of a high level of flexibility to handle situations quickly. Even though it is thought that Cisco's management style evolved as a result of the influence of Steve Jobs, Cisco believes that strategically concentrating business resources into each product at the micro level and setting up dynamic virtual teams for each product can potentially have greater impact on the entire company than overarching macro strategies.

Thus, the company adopts bottom up rather than top down systems by implementing strategic collaboration through this kind of team management. The strategy empowers individual staff members to contribute to their teams as leaders, expecting they will be able to handle challenging issues. Cisco believes that driving this kind of strategic collaboration not only in formal organizations but also in dynamic informal organizations is an efficient way to get the most out of staff capabilities and get organizations moving quickly so they can achieve a competitive edge.

Strategic collaboration is covered by Cisco's code of conduct, leadership competency and all of the five areas on which Cisco focuses. For the company to run smoothly, culture, processes (exchanges between people) and technology must be coordinated. Through strategic collaboration across formal and informal organizations, Chambers emphasizes that if people belonging to organizations effectively combine their strengths to unleash each other's talents, they will be able to adapt to new market opportunities with agility. Strategic collaboration is used at Cisco for meetings and problem solving, and includes the company's top, middle and lower layers as a matter of course. The effectiveness of strategic collaboration is demonstrated when all members of an organization come to understand this to be the best way to share ideas and meaning.

Here, "strategic collaboration" does not mean "joint work" but refers to co-creation enabled by bringing personnel together to cooperate in organizational operations and in creation of new ideas.

1.2.2   *Knowledge Gained from Existing Research and New Challenges Ahead*

How can we interpret the processes of generating innovation through these dynamic recursive organizational actions between formal and informal organizations that come about through these dynamically structured yet unbound informal organizations (or informal organizational networks) in companies like Apple or Cisco? Previous studies suggest that new innovation can originate in informal organizational networks, while research to date on network theory (e.g., Motter 2004; Watts 2003; Barabasi 2002) and the communities of practice (e.g., Wenger 1998) that typify informal organizations offer important perspectives on the innovation process.

According to these studies, networks of people, groups and organizations (including communities of practice) have proven to be important platforms for facilitating information and knowledge-based activities, in that the formation of informal organizations and networks have a major impact on the conveyance of information and knowledge (e.g., Owen-Smith and Powell 2004; Lin and Kulatilaka 2006). Thus, it is also essential that companies form networks dynamically to acquire sustainable organizational capabilities (e.g., Kodama 2005) and reconfigure these networks to respond to changes in circumstances and strategic activities (e.g., Kodama 2006). However, these innovation studies mainly focus on observing and analyzing the organizational networks of these informal organizations, and there is little discussion concerning the relationships they have with formal organizations—organizations that play a crucial role in corporate activities.

Genuine innovation is achieved by striking a balance between efficiency and creativity (e.g., Kodama 2007). Decision-making rules, strict regulations and routines in formal corporate organizations enable the strategic management mechanisms needed for process efficiency in business. On the other hand, the existence of informal organizations, in other words the informal human networks like those at Apple and Cisco described above, play an important role in creating the ideas needed to achieve innovation. Thus, although the tactic deviates from processes designed for efficiency,

in fact, creativity is more likely to emerge from the irregular trials and errors in the dynamic and diverse practices that go on between people.

Interpreted in the Japanese way, these informal networks are characterized as "Ba" (場) (Nonaka and Takeuchi 1995; Kodama 2005). Ba is the space-time that effects generative change through the synergies between individuals sharing and exchanging contexts with each other. Knowledge in which ideas and creativity originate comes into being in dynamic contexts—in time and places, and in human relationships. Thus, forming high quality Ba in which tacit knowledge can be shared is key, as they lead to commitment (proactive involvement). At the staffs at Apple and at Cisco are literally always engaging in diverse practices based on high quality tacit knowledge made possible by Japanese-style Ba.

However, innovation can never be achieved purely by building informal networks between members of staff alone. Realizing creative knowledge, ideas or concepts also requires strategic process management to bring about efficient business models by establishing good quality supply chains (production, distribution and sales systems, and high-performance ICT, etc.). The question then arises as to what kind of thinking and actions practitioners apply to manage the tug of war and discrepancies between efficiency and creativity that constantly occur between formal and informal organizations. Furthermore, practitioners ask what they should do, specifically, to perceive and recognize the various boundaries between formal and informal organizations? To date, there is little research that focuses on the boundaries between formal and informal organizations.

1.3   Ma in Architecture and the Arts

As familiar examples of Ma, the Japanese place great importance on Ma in music and dance, as these art forms happen in temporal space. Their character stands in contrast to the unceasing sequence of sounds found in western symphonies, concertos or quartets, where orchestral performances can sound particularly boisterous to Japanese ears, accustomed as they are to music interspersed with Ma. As we noted previously, Japanese musical instruments do not make a continuous sound as is evoked by the drawing of a bow across strings. Instead, the sounds from Japanese taiko drums, hand drums, and the plucking of the koto (Japanese harp) and shamisen (three-stringed Japanese musical instrument) evoke Ma. A clear and distinct difference in Ma is found even in comparing Western ballet and the

Japanese traditions. From this perspective, Ma in fields such as architecture and the arts is particularly noteworthy, as discussed below.

1.3.1   Ma in Paintings

As touched on above, Ma can also be observed in paintings. Canvases in Western art are often thickly covered with colors, as seen in mosaics of the Middle Ages, paintings of the Renaissance, and nineteenth century Impressionist works. In Western art, blank spaces usually denote incompleteness, whereas in Japanese art empty spaces play an important role. Perhaps it could be said, as a comparison, that Western paintings convey a sense of heat; space is somewhat crowded (depending on individual judgment), whereas Japanese art (if limited to pre-modern works) conveys a certain coolness.

For example, Katsushika Hokusai was an Ukiyo-e artist from the late Edo Period whose influence was felt not only in Japan but all over the world including by artists such as Van Gogh and Debussy. With his most renowned works being the Thirty-six Views of Mount Fuji and Hokusai Manga (Hokusai's Sketches), Hokusai is an artist known throughout the world. The Thirty-six Views of Mount Fuji are his most famous landscape Ukiyo-e works. Among these is a landscape print depicting a diminutive Mount Fuji in the background with a towering, menacing wave in the foreground that instantly conveys fear. This picture also shows passengers on a boat instinctively cowering to avoid the full force of this fearful sea wave. The simplicity of the layout, and the light and shade between the print background and the coloration also convey this fearfulness effectively. The sense of distance from the land out into the open ocean is also expressed by the far-away Mount Fuji. The positioning of the near and the far, the short and low-down appearance of Mount Fuji in the open space above, and the powerlessness of the people (passengers) being tossed about by the great ocean wave all speak of the Ma of space-time and the Ma of context in this picture. By leaving space in pictures like these, the Ma of space-time and the Ma of context more profoundly express the intention of the artist through the empty space itself. At the same time, observers of the picture can also see and feel the context as a reflection of their own individual lives and experiences.

In contrast, in the Momoyama Period (1573–1603), when Christianity came to Japan, the missionaries also taught painting in the schools they established such as the Colledgio and Seminario. Adopting subject matter

and techniques of European painting, these missionaries for the most part used religious images and copper engravings to promote the spread of Christianity, which is apparent in the example of a folding screen painted by a Japanese person who had received such Western-style artistic education. The screen depicts a scene with Westerners in hills overlooking a harbor, enjoying music, reading and conversation, with sheep among the trees, a tabernacle and a citadel, all copper-engraved in the Western medieval style. The work is a realistic painting, provides depth and shading, and gives the impression of the elaborate rationality and objectivism of Western culture. Western medieval engravings such as these are in stark contrast to the Hokusai work discussed above with its use of space in that they do not give the feeling of the Ma of space-time or the Ma of context experienced by observers of the Hokusai picture.

1.3.2   Ma in Architecture

Ma also plays a crucial role in architecture, where the word "Ma" itself is used to describe aspects of spatial perception, in particular, a series of spaces and the association with the passing of time. As mentioned, physical space is organized in Japanese homes quite differently than it is in Western dwellings. To the architectural features listed we add *suki-ma*, which means, simply, "gap." As an example of a public building, Japanese architect Tadao Ando's "Hikari no Kyoukai"[1] (Church of Light) is a building that aims to express the coexistence of the natural and the human-made. Hikari no Kyoukai is a classic example of Ma in architecture (Ando 2000)—aspiring for the coexistence of dissimilars—the coexistence of the natural and the human-made as in the Ma of dissimilars discussed by Hasegawa (2009) mentioned earlier. This church is a simple building resembling a rectangular box and created using spray concrete. The cross-shaped window is cut out of the front wall of the church, filling it all the way to the edges, so that sunlight can shine in through its narrow openings, dramatically breaking the darkness of the room, creating the 'Church of Light."

Churches are buildings that enable people to commune with their God and with each other and are thus places that must have a holy and sublime atmosphere. The contrast of light and dark in the church also contributes to the holy and sublime atmosphere through the Ma of dissimilars, allowing the coexistence of the natural and the human-made. Moreover, as light is generated, moves and disappears in time, the Ma of dissimilars and

the Ma of the spirit are also brought about, so as people hear the word of God and feel a sense of the eternal, they can move towards purification of their hearts.

The Ma of space-time and its dynamics of time and space in Hikari no Kyoukai can also be understood in the structure of the actual Chinese character for Ma (間) itself. This character consists of two parts: the first, 門, represents a gate or an opening (in this case the cross in the church), while the other part, 日, can be interpreted as the sun or the moon. Thus, when combined into a single character, these two parts express the moment in which sunlight or moonlight comes through the cross-shaped opening in the wall. In this way, the phenomenon of sunlight or moonlight shining through such gaps or openings can induce feelings of the divine and sublime in people. Put differently, the presence of gaps and voids is essential for creating certain effects. These empty spaces are open to let the sunlight or moonlight in and strike the ground, and thus create moments for sunlight or moonlight to shine through in a dynamically changing phenomenon. Ma can also be the interval or separation between two or more events or phenomena that occur in the passage of time. However, these are not wildly separate chasms, but intervals that have seams and linkages running between them. The union of space and time is central to the concept of the Ma of space-time; if there were no time in this scheme, then no light from the sun or the moon would be able to pass through the gaps. Therefore, the factor of time in Ma also changes with the atmosphere created as the light from the sun or the moon changes as it strikes the surface of the earth, hence bringing new human meaning into being as the Ma of space-time, the Ma of context, the mental Ma, the Ma of dissimilars, and the Ma of the spirit.

Ma is also seen in architecture outside Japan, because it is a concept that can be expressed in such a wide variety of ways. Research on Ma in architecture and the arts is underway in other countries. In addition to the aforementioned influence of the discovery of three-point perspective during the Renaissance, which led to the development of models combining time and space in European arts and architecture, cubism and, later, modernism involved attempts to apply combined time and space to architecture in order to achieve a "flow of space." Yet, the concept of time and space as inextricably linked existed as Ma (particularly as the Ma of space-time) in Japan from centuries earlier.

The word "Ma" is unique to the Japanese language in that it expresses the concept of both space and time as a single word; the application of the

meaning of Ma is not exclusive to Japan. For example, Caplutta Sogn Benedetg (St. Benedict Chapel) is an example of the Ma of space-time in Western architecture. Surrounded by the Swiss Alps in the small village of Sumvitg in Graubünden, Caplutta Sogn Benedetg was designed by Peter Zumthor and built in 1989 after the old church was destroyed by an avalanche. Although it is not a Japanese building, Ma can be found throughout this chapel and in its surroundings. The ruins of the old church can still be seen upon one's arrival in the village, acting as the entrance to the new church, and is the first Ma encountered. Like a hologram of the past, the ruins stand as if time has frozen. From there, a long path leads to the chapel, much like the pathway leading to a Japanese tea room (discussed later). But before this vantage, further from the village, the approach requires a climb up a steep slope, where as yet the building cannot yet be seen. Thus, the space-time connecting to the church acts as a buffer between it and the village. As one draws closer to the building, the rounded church building with its distinctive entrance appears. Standing in the space in front of the entrance and looking outwards, one can take in the spectacular view of an unbroken range of mountain peaks. The space visible from this point extends far into the distance, enabling a view of a space much further away. Time also stretches outwards in this place; because there is so much to see, one must pause and to take in the view. This is the first instance in which the aspect of the Ma of space-time can be recognized.

Next, one climbs the five steps to the building. The entrance hall into which one enters after climbing the stairs delineates the outside and the inside of the building and features a door wide enough for only one person to pass. The door into this church creates a similar effect to that of ducking into a Japanese tea room. Because the entrance space is small and dark in contrast to the interior of the church, it creates the impression that the space inside the chapel is much larger than it actually is. The length of the entrance hall also forms an intermediary space that draws out the moment one enters the chapel. Thus, the effect of the buffer between the outside and inside achieved by the garden space around a tea room is also achieved in the entranceway to Zumthor's chapel. This buffering is the effect of the second Ma, again of space and time.

Immediately noticeable upon entering the church is the rhythmical alignment of the wooden beams that make up its ceiling and walls, and the empty space between these members. The beams and the flooring are not in close contact with the walls, and just as the sun and moon can shine

through the gaps, in other words through Ma, these parts of the building cast shadows on the elements below.

Zumthor incorporates gaps into the various elements of depth, space and time in his buildings. In *Thinking Architecture,* he discusses how it is possible to visualize the spreading of space through assemblies of freely positioned or aligned paneling and pillars in spaciously created rooms (Zumthor 2010). Thus, Zumthor's work has commonalities with the Hikari no Kyoukai of Tadao Ando mentioned earlier, in that it expresses the idea of the coexistence of dissimilars through the Ma of dissimilars, as the coexistence of the natural and the human-made. In this way, we again see Ma as not exclusive to Japanese buildings, but as universally applicable.

Thus, we can confirm that the Ma of space-time is the notion in which spaces are mutually connected by means of transition. In an age where the flow of time seems to be constantly accelerating and space is becoming more valuable and scarce, the concept of Ma offers one solution for creating more comfortable and human-oriented buildings. Having always held a central position in Japanese architecture, the role of Ma is set to become even more important in the future.

1.3.3 Ma in Japanese Architecture: The Traditional Tea Room

The traditional Japanese tea room is relatively smaller in construction than other spaces in Japanese buildings, and enables our understanding of the Ma of space-time and the Ma of the spirit in Japanese architecture. The tea ceremony is one of the most well-known of all Japanese rituals; it has been practiced since the fifteenth century when *cha no yu* (the way of tea) was perfected by Sen no Rikyu.[2] In the sequence of events of the tea ceremony, each action and change in atmosphere are closely connected with one another, from the boiling of the water through to the making and drinking of the tea.

We chose the tea room as an example, as it is characteristic of the sophisticated style of Japanese architecture and because an idealized tea room enables a good understanding of the concept of Ma in Japanese architecture.

After passing through the gate, one follows a winding footpath called a *roji* through a garden space connecting to a dark pine woodland or bamboo grove. The tea room stands at the end of the footpath but is not immediately visible. The path is dark, monotonic and long. This is the first

aspect of the Ma of space-time to be recognized. As one walks along the footpath to the tea room, it becomes unclear where the path ends, while the monotony of the journey seems to make the time pass more slowly. There is almost nothing to see in the plainness of the woodland, and there is nothing to do but proceed quickly.

Towards the end of the path, the tea room comes into view, but one does not arrive at it directly. One must make a detour onto another footpath, enabling appreciation of the various aspects of the garden. This new path is constructed so that it winds around through various places in the garden, with its beginning and end far apart to stretch out the time that one is in the garden to enable full appreciation of it. This is the second effect of time and space, recognized as the Ma of space-time in tea room architecture.

There are stepping stones positioned in the winding path to the tea room that must be traversed. It is thus the Ma of space-time tempers this rhythm, in the interspacing of the stepping stones. In this way, the Ma of space-time can be used to accelerate or slow the pace of walking. Here then is the third factor operating on time and space. Proceeding at a pace through time, the stepping stones interleave pauses here and there to enable viewing of the garden. These short pauses along the way also have the effect of making time feel as if it were elongated. Thus, a visit to a tea house seems longer than it actually is—the result of a function of the Ma of space-time.

In *The Book of Tea*, Kakuzo Okakura (1906) describes the experience of the roji as follows:

> One who has trodden this garden path cannot fail to remember how his spirit, as he walked in the twilight of evergreens over the regular irregularities of the stepping stones, beneath which lay dried pine needles, and passed beside the moss-covered granite lanterns, became uplifted above ordinary thoughts.

In other words, the Ma of the spirit is in the garden around the tea room invoking discontinuous changes in one's mind. The synergies of the Ma of the spirit and the calming environment enhance the minds of people who walk through the garden; one feels as if one is in a completely different world to the hustle and bustle of the one outside. Here, there is a design to this different time, different space and different mind (spirit). From the moment one steps foot in the garden, the relationship with the

outside world is severed, and one moves into the quiet space for enjoying tea, a transition symbolized by the garden.

Taking a step up onto a platform raised above the garden, one arrives at the entrance to the tea room. Called *nijiriguchi*, the entrance to the tea room is an opening, a mere 40 centimeters wide, and one must bend down to go through it. According to Okakura (1906), a samurai warrior would have had to leave his sword outside the tea room before bending down to enter it. Japanese tea rooms are purported to be places of humility and peace, and the narrow entranceway not only prevents the samurai from bringing his sword into the room but also plays a role in affecting the space. When moving from the extremely narrow entranceway into the room to enjoy tea, the inside of the room feels bigger than it actually is. Such different perceptions of space and time can be created by including these spaces, in other words, by utilizing the Ma of space-time.

Ma can thus be seen as shifting between at least two spaces—the way leading to the tea room with its the path into the garden, the garden around the tea room, the entrance to the tea room, and the interior where the ritual with the tea is performed. Ma can entail passing through a variety of spaces with different features, proportions and sensations, although the most important aspect is how the spaces fit together, rather than the differences between them. Thus, the operations of space and time using Ma create a chain of intermediary spaces, and the sensations enabled by Ma in these buildings are created and brought together by these connections, rhythms and transitions. The above clarifies a useful concept of the time and space of Ma for architecture and has been the subject of a range of related architectural research (e.g., Kwinter 2008; Nitschke 1988; Isozaki and Oshima 2009).

1.4   Constructing a Theoretical Framework of Ma

We carried out global innovation research with a focus on formal and informal organizational boundaries (in business and management and also in architecture and the arts, fields in which innovation is most prevalent on a day-to-day basis), and we performed qualitative studies (in-depth case studies through investigations in the field) from a "boundaries and innovation" analytical perspective. The process enabled us to inductively infer several new theoretical concepts and verify the universality of this framework by comparative analysis of multiple case studies in different areas of specialization, as discussed in the book.

In Chap. 2, we explain the main concepts of Ma theory. In Part II, we provide a number of in-depth case studies in business and management (particularly in the areas of innovation and technology management), industrial organizational theory, financial theory, art and architecture.

NOTES

1. A small religious building in the suburbs of Osaka. With design criteria limited by financial constraints, architectural elements were considerably stripped back. By focusing on the light and shade phenomena as the main theme, the architects achieved a strikingly impressive prayer space in a simple box-like structure made of concrete. Ten years after the church was completed, a new Sunday school building was added that complemented the church. For details, see the video: https://www.youtube.com/watch?v=Y22LxAnHlWk

2. Known as "Chasei" (Saint of Tea), Sen no Rikyu was the primogenitor of the Senke Tea ceremony tradition. He served under two Daimyo of the Japanese Sengoku Era, Oda Nobunaga and Toyotomi Hideyoshi. Rikyu's birth name was Tanaka Yoshiro, and he was given the Buddhist name "Soeki." He was born in Sakai City, in Osaka, to a fish wholesaler known as Totoya. At the time, Sakai was an international city booming with international trade and was also a cultural center comparable to the capital Kyoto. Sakai was not dominated by the warring states of the time, but was a small, moat-surrounded and independent country with autonomous governance undertaken by merchants and security provided by "Ronin" (samurai warriors with no master). Many of the merchants at the time were also highly cultured.

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The Five Types of Ma Thinking and Five Architect Capabilities: Theoretical Concepts

Mitsuru Kodama

2.1 The Theoretical Concept of Ma (1): Dynamic "Recursive Practice Activities" to Generate Ideas and Demonstrate Serendipity

One common feature of innovative companies like Apple and Cisco, described in Chap. 1, is that of "recursive practice activities" between their formal and informal organizations to integrate dissimilar knowledge both inside and outside of the company and bring about creative new products and business models. From our extensive investigations in the field, it became clear that formal organization in a company like Apple or Cisco does not imply old-school, business-as-usual bureaucratic organization with hierarchies. These companies have flat-structured formal organizations in which quick delegation of authority and decision-making are well established (these flat, formal organizations are made up of multiple business units).

The specific business of practitioners in formal organizations is to steadfastly execute strategy in the territory of their respective business units. However, there are plenty of cases where formal organizations are newly

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reconfigured like those at Apple and Cisco to achieve a strategy agreed upon through practical processes carried out in informal organizations. In contrast, within and across formal organizations, there are communities of practice (e.g., Wenger 1998) concerned with similar areas of specialization or job function, which simultaneously make improvements and upgrades to routine and existing business in order to make operations more efficient. In addition, business unit practitioners organically form autonomous, decentralized, informal organizations while engaging in strategic collaboration with practitioners from other business units to respond to changing business circumstances. Informal organizations are configured with external partners and special customers and proactively take in wide-ranging contexts and absorb dissimilar knowledge.

In particular, our field investigations revealed that rather than draw only on the knowledge and know-how of staff within their companies, leading practitioners dynamically form informal organizations through interaction with external partners and customers in diverse contexts to acquire dissimilar knowledge as the need arises, and they engage in dynamic "recursive practice activity" between their formal and informal organizations. This enables practitioners to expand their own fields of vision and generate new knowledge.

Knowledge is intrinsic to conditions, situations and spaces and is inherent to contexts. Thus, to acquire, share or create (integrate) knowledge, practitioners have to look directly at and analyze diverse workplaces, objects, realities and phenomena, and share dynamically changing contexts among themselves. However, practitioners cannot share aspects of particular contexts in a particular time and space unless they participate in particular informal organizations. Thus, the important issue of integrating dissimilar knowledge can be achieved through the medium of the dynamic shared context, and sometimes this integration of dissimilar knowledge has the potential to trigger serendipity, the capability to discover new value and never-before-seen innovations by chance.

Serendipity, which the discovery of valuable resources and opportunities in the search for something else (Baker and Nelson 2005; Cunha et al. 2010; Day and Schoemaker 2008), alerts practitioners to new threats (or business opportunities) in the periphery of the core competences of their companies (Day and Schoemaker 2004) and potential business domains far removed from the boundaries of their own companies (Kodama 2011; Fleming 2002; Popescu and Faussone-Pellegrini 2010; Roberts 1989). Thus, in terms of pure emergent strategy-making, serendipity also entails

strategies arising from ideas that suddenly spring up in the thoughts of practitioners; such strategies are not uncommon in actual business workplaces and are often observed in processes of discovery and invention in science and in development of new products. They can also be thought of as "incidental emergence strategies" (Kodama 2011) or processes that evolve from intuition, the senses or awareness of scientists and researchers through coincidence, learning from failure or another ongoing learning process, to give birth to new products and inventions.

Some examples[1] of these include the development of products such as 3M's Post-it, P&G's Ivory Soap and Pfizer's Viagra, or scientific developments such as Fleming's penicillin, Pasteur's vaccines and Leo Esaki's Esaki Diode. The 2014 Nobel Prize in physics awarded to Professor Shuji Nakamura of the University of California for the discovery and invention of the blue light-emitting diode (LED) is another case of the kind of serendipity described in Chap. 4. To integrate dissimilar contexts to bring about new contexts in these instances, practitioners spontaneously form informal organizations with new knowledge boundaries, and they bring in other practitioners as stakeholders into certain informal organizations or, alternatively, they make efforts to learn and absorb knowledge from dissimilar knowledge, which differs vastly from that knowledge within their own knowledge boundaries. We describe this phenomenon as "drawing into knowledge boundaries."

Knowledge boundaries are those boundaries that delineate specializations (job functions) of practitioners such as research, design, manufacture, sales and product planning. Knowledge boundaries determine the individual "thought worlds" and mental models of practitioners and solidify uniformity in thoughts on matters and job territories. In many corporations, conflicts between the marketing intentions of marketers and the technical intentions of engineers occur at these knowledge boundaries on a daily basis.[2]

However, practitioners who expand their "dynamic range of knowledge boundaries" enhance their knowledge capabilities regarding dissimilar contexts and knowledge and increase the potential of triggering serendipity, that is, the capability to bring about new knowledge by tying together accidental discoveries with other knowledge. When facing new challenges and looking for solutions to problems, practitioners must dynamically link and mutually interlock dissimilar knowledge boundaries; they must engage in dynamic and recursive practice activities between formal and informal organizations.

The "dynamic range of knowledge boundaries" refers to the scope of change of contexts and knowledge, and the level of ability that business people have to accordingly recognize the range of values and diversity. The range of the people described in this book strengthens their boundary vision, allowing them to respond to the changing boundaries of their environments. The dynamic range of their thinking and action is thus broadened. For practitioners aware of wide-ranging contexts and knowledge in their boundary networks, creative dialogue expands the dynamic range of thinking. (These include organization-to-organization and human-to-human networks that span multiple boundaries.) Dialogue enables members to build common foundations to share meanings and interests.

Expanding the dynamic range of knowledge boundaries promotes sharing and resonance of values and mutual trust building; it fosters commitment and drives creative collaboration. Thus, creative collaboration through creative dialogue in organic organizational systems with boundary networks fuses and integrates diverse contexts and knowledge. To achieve a strategy for new challenges, practitioners must be able to solve urgent problems and issues in organizations or to bring consistency to various business elements through various technologies or operations.

2.2   The Theoretical Concept of Ma (2): The Five Architect Capabilities: Context, Ba, Human Networks, Boundaries and Willpower

Dynamic recursion in practice activities between formal and informal organizations triggers the "five architect capabilities" in practitioners, as discussed below (see Fig. 2.1). The first of these architect capabilities is the "context architect capability," which practitioners need so they may successfully tap into a knowledge boundary. Leading practitioners demonstrate context architect capability to raise awareness in other practitioners of hidden contexts in formal and informal organizations and generate new contexts.

The second architect capability is the ability to create Ba (shared contexts in motion) while creating and sharing new contexts both within and outside organizations. This is "Ba architect capability." The space-time stage on which dialogue and practice generate new knowledge is Ba. Not a physical place, Ba is a state of mind. Therefore, it is *context* that must be shared in order for Ba to exist. Contexts are not static: they constantly
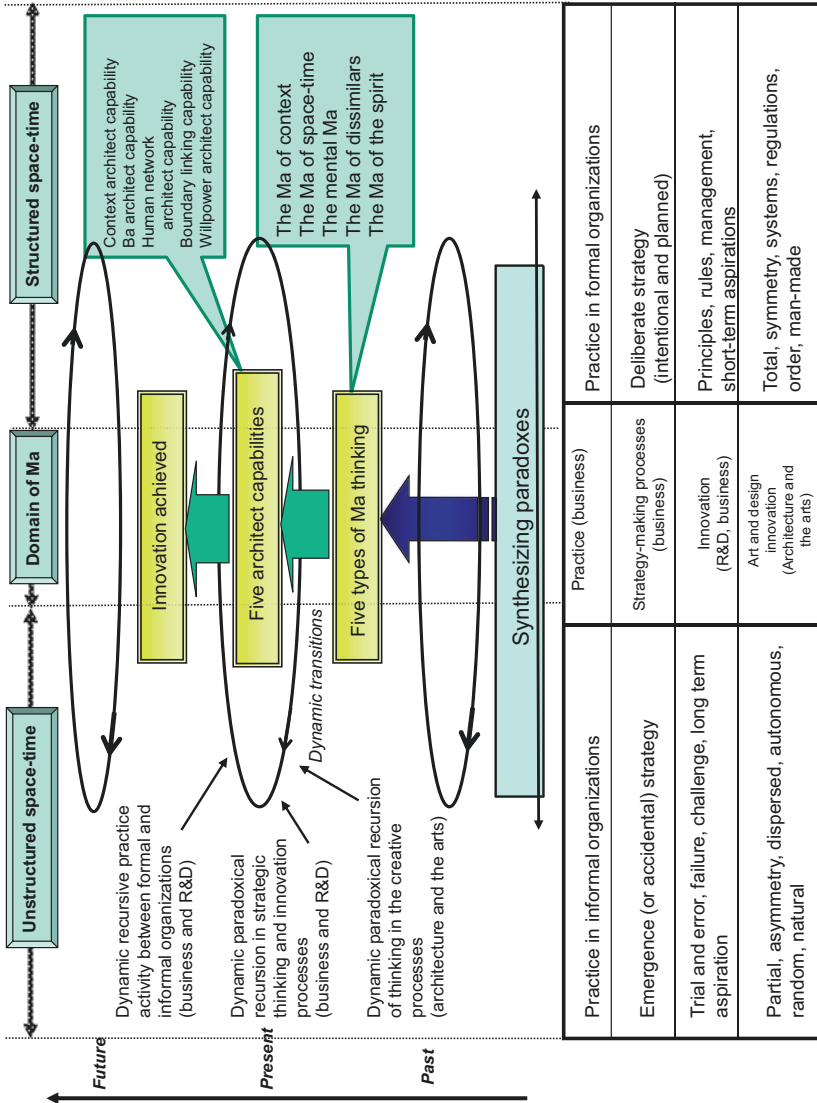
Fig. 2.1 Innovation through Ma thinking and architect capabilities

change as places in time as situations and relationships among practitioners at work in a Ba change. In their minds, individuals create unique contexts for themselves that reflect their own respective histories. Thus, when Ba is created (or emerges) in which these individuals can come together, people can begin to share their various contexts, and in these dynamic contexts knowledge emerges (in time, in places and in human relationships).

Thus, the third architect capability is the "human network architect capability." Human networks both within and outside of companies are not configured solely because of formal or informal events and meetings. The dynamic synergies arising in human networks such as temporary cross-functional teams (CFTs), tasks teams and project teams bring about new contexts and new knowledge. Practitioners intentionally or unintentionally traverse organizational and knowledge boundaries, share new contexts and create human networks, which originate in Ba. As practitioners transcend and conquer organizational and knowledge boundaries, the context architect capabilities and Ba architect capabilities induced by their new perspectives go on to develop human network architect capabilities within themselves.

Moreover, these three architect capabilities bring about the fourth architect capability: the "boundary architect capability," needed to configure human networks that transcend the boundaries of knowledge between different organizations and areas of specialization. As noted earlier, leading practitioners bring about new, high quality knowledge by forming particular informal organizations and bringing particular practitioners into these organizations as required, where practitioners participate in or form multiple informal organizations. By circulating contexts and knowledge in these different informal organizations in order to share them, practitioners engage in activities that inspire the creation of new knowledge. Also as noted earlier, practitioners transcend dissimilar contexts and knowledge and promote the linking together of knowledge boundaries to integrate dissimilar knowledge. Here, practitioner activities involve boundary architect capability, which enables practitioners to network multiple dissimilar informal organizations.

To maximize these four architect capabilities, the fifth architect capability, "willpower architect capability," is required of practitioners. Willpower is the energy and concentration of thoughts and actions that accompanies a sense of purpose (Bruch and Ghoshal 2004). Energy is vitality, and concentration is the ability to direct energy to achieve a certain result. Through

trial and error, practitioners arrive at a clear mental picture of their intended strategy, with the most important factor being a conscious commitment to achieving their intended strategy. To achieve this intended strategy in the future it is imperative practitioners exercise their willpower as architects.

These five architect capabilities bring about the new ideas and solutions needed to formulate and execute strategy (sometimes as demonstrations of serendipity) and develop the practical processes of practitioners dynamically moving back and forth between formal and informal organizations. Conversely, it can also be said that the practical processes of practitioners moving dynamically and recursively through formal and informal organizations spur them toward the five architect capabilities. As in the cases of Apple and Cisco mentioned earlier, the leading practitioners acquired these five architect capabilities through their dynamic practices as they moved between formal and informal organizations.

In network theory (e.g., Kodama 2009a, 2009b), the practical processes in which such top company practitioners engage are recursively executed through formal organizations as "centralized networks" and informal organizations as "distributed networks." In other words, practitioners achieve strategic objectives through dynamic recursion between the formal and informal organizations and in the space-time of knowledge and contexts that span knowledge boundaries.

Practitioners must not only adhere to fundamental rules and decision-making processes in formal organizations and communities of practice but must also manage autonomous and decentralized, organizational actions, ones which are challenging, in informal organizations, while at the same time coordinating those informal organizations to expand and develop them. The context architect capability and boundary linking capability that they have expands the dynamic range of their knowledge boundaries and enables them to create hybrid networks consisting of different centralized and distributed networks.

From the perspective of management, recursion and combination of hybrid networks are significant for the following two reasons. The first is the partial optimization of all business elements (strategy, organizations, technology and operations, etc.) in formal organizations in centralized networks. Practitioners thoroughly recognize the common understanding in related organizations and at all management levels in informal organizations, and they promote optimization of all business elements in their own organizations, to achieve consistency between all business elements within the corporation.

Moreover, looking at the strategic activity on the time axis, practitioners carry out business to execute strategy (including improvements and upgrades) in their own territories in formal organizations in centralized networks; at the same time they take on the challenge of difficult problem solving or the creation of high quality business with new products and services through informal organizations on distributed networks. This enables both incremental innovation, for sustainable growth, and efficiency in existing business and radical innovation, for business creation and growth in the long term. This can also mean that recursive practice activities between formal and informal organizations are organizational activities for adapting to dynamically changing environments and for creating new markets to develop new business.

The second reason is practitioners seek consistency among business elements within their own organizations as they engage in correction and adjustment for overall optimization between business elements that span formal organizations by forming informal organizations. Through their hybrid network recursion and combination, practitioners are able to merge and integrate diverse contexts and knowledge both within and outside their organizations to create an optimized management system throughout the entire company.

By considering organizational management from the perspective of informal organizations, practitioners are released from the conventional management model of formal organizations. Completely new management models are important for practitioners. Essentially, this means management models that can dynamically execute strategy by flexibly changing informal organizations to respond to strategic objectives through recursion in hybrid networks responding to dynamically changing contexts.

This does not mean that formal and informal organizations are polar opposites; they are in fact complementary. For practitioners to not only manage their own business domains but also achieve solutions to problems and issues, and for innovation to advance business by integrating dissimilar knowledge (to create new products, services and business models), they must also engage in comprehensive practices to find ways to manage informal organizations, since these are organizations that promote the sharing of dissimilar contexts and knowledge.

In the ten years of research into global innovation that we have conducted to date, we have clarified that practitioners demonstrate these five architect capabilities to integrate dissimilar knowledge (or sometimes demonstrate serendipity), and that "Ma thinking" is indispensable to the

creation of new value. The thinking and action of innovators to achieve strategies through their dynamic and recursive practice activities (between formal and informal organizations) originate in Ma thinking, of which there are five types: the Ma of context, the Ma of space-time, the mental Ma, the Ma of dissimilars, and the Ma of the spirit, as discussed below.

2.3   The Theoretical Concept of Ma (3): Ma Thinking

Our own life-worlds and social structures consist of both structured and unstructured space-time. In formal organizations, which exist in structured space-time, companies (or organizations) delegate duties according to systemized positions. These organizations are domains in which efficiency and rationality rule. In contrast, informal organizations, which are characterized by unstructured space-time, occur naturally, overlapping formal organizations, and are domains ruled by the logic of sentiment and irrationality. These informal organizations, which exist alongside formal organizations controlled by rules, have been conceptualized as patterns of mutual personality relationships, while the importance of societal factors regarding human relations and the roles of informal groups in organizations were uncovered in the 1920s by a research group at Harvard University (Mayo 1933; Roethlisberger and Dickson 1939).

In addition, regarding informal organizations, Barnard (1938) stated that these are groups which enable individuals to interact and are characterized by synergies that can bring about significant results, although this may not be a common objective. However, later research into typical examples of informal organizations such as communities of practice (Wenger 1998), strategic communities (Kodama 2005) and project-based organizations (Kodama 2007c) indicated that in reality there are often shared objectives in informal organizations, and that practitioners in companies (or organizations) work to achieve common strategic objectives with their formal and informal organizations complementing each other (in other words, recursive practice activities). This means that formal and informal organizations can achieve an organization's strategic objectives in tandem through dialectical synergies within them (through the dialectical process).

People engage in their day-to-day practice activities while moving back and forth between both of these types of space-time. In these two types of space-time, various contradictions exist such as paradoxical organizational

systems similar to the formal and informal organizations discussed, but also "strategy paradoxes" in business activities (particularly in strategy-making processes) and "innovation process paradoxes" in R&D activities. Practitioners constantly uncover and face these contradictions in their everyday business activities.

Nevertheless, leading practitioners engage in dynamic transitioning over and over again to synthesize the wide-ranging contradictions and discrepancies that occur in business activities in such structured and unstructured space-time. The elimination of these contradictions by transitioning is in the third domain of space-time, the territory of Ma (see Fig. 2.1). In this book, Ma is defined as follows:

> *Ma is the holistic relationship that enables connection of continuous and discontinuous events and matters in distinct types of space-time (structured space-time vs. unstructured space-time).*

As described in Chap. 1, Ma characteristics can be seen not only in business and management but are also observed as phenomena (events and matters) in the daily practice activities of people in architecture, the arts, language and culture, among other areas. Leading practitioners demonstrate Ma thinking either consciously or unconsciously as they achieve innovation not only in the world of business and management but also in a wide range of creative activities.

The theoretical and practical importance of the Ma concept in new innovation activities lies in the thinking and activities of leading practitioners that demonstrate the five architect capabilities mentioned earlier. However, there is little academic research clarifying these characteristic dynamic transition mechanisms and the synthesis of diverse paradoxes through recursive activities between formal and informal organizations to achieve integration of dissimilar knowledge (or sometimes the demonstration of serendipity).

This is because there are invisible boundaries between formal organizations with structured space-time and informal organizations with unstructured space-time, and research to date has not focused on the characteristics of these boundaries. In reality, however, the world's leading innovative companies and practitioners unconsciously (or consciously) understand and apply the concept of Ma to these invisible boundary characteristics and promote dynamic recursive practice activities (between formal and

informal organizations) and the synthesis of diverse paradoxes. The greatest challenge and inquiry for us are to understand how practitioners (innovators) in organizations and companies manage daily practice activities creatively, efficiently and productively to succeed in innovation activities. For this understanding, new insights can be found in the "practical theory of Ma." Thus, this is also the world's first academic work to research innovation from the perspective of Ma thinking.

As practitioners repeatedly engage in dynamic practice activities in organizational forms with dissimilar formal and informal characteristics to drive daily business and R&D activities, they have to directly face and dynamically synthesize not only the paradoxes of formal and informal organizations and strategy-making paradoxes (for example deliberate vs. emergent strategies) but also innovation process paradoxes (principled, regulated and managed for the short term vs. trial and error, learning from failure and challenges for the long term) (see Fig. 2.1).

Through our global qualitative studies, we clarified that the five types of Ma thinking—the Ma of context, the Ma of space-time, the mental Ma, the Ma of dissimilars, and the Ma of the spirit—lie behind the demonstration of the five architect capabilities discussed earlier. These five types of Ma thinking bring about context architect capability, Ba architect capability, human network architect capability, boundary linking capability, and willpower architect capability, respectively.

Thus, to overcome a range of paradoxes, practitioners not only must engage in dynamic recursive practice activities between formal and informal organizations but also enact the above five types of Ma thinking through dynamic and paradoxical recursion in their strategic thinking and innovation processes. In short, Ma thinking synthesizes wide-ranging paradoxes and drives the five architect capabilities in practitioners so they can bring about strategies to achieve objectives through optimal methods (see Fig. 2.1).

As a result of investigating innovators and creators in architecture and the arts, fields in which design innovations and artistic innovations are born, we clarified that creative works often originate in similar Ma thinking. In the process of creating and producing works, leading creators demonstrate the five architect capabilities by introducing the five types of Ma thinking in numerous contradictions and conflicts and dynamically synthesizing diverse paradoxical aspects such as the whole vs. its individual parts, symmetry vs. asymmetry, integration vs. dispersion, regulation vs.

autonomy, and natural vs. human-made (see Fig. 2.1). At a glance, it seems there are different perspectives and thoughts in the fields of architecture and the arts compared to business and management. In the context of achieving innovation, however, as creative products (or events), our field research clarified that a common concept exists regarding the Ma thinking required by innovators and creators as practitioners.

2.4   The Theoretical Concept of Ma (4): The Formation of "Ba" and Communities Originating in "Ma"

In this chapter, the author discusses the relationship between Ma, Ba, communities (e.g., communities of practice, strategic communities) and formal organizations. Invoking the concept of Ma discussed, the author has observed that the types of Ma enable the coexistence of dissimilars, and the formation of Ma is an important factor in bringing about the knowledge convergence process (e.g., Kodama 2011) to integrate dissimilar knowledge in organizations and companies. As noted earlier, the concepts of the Ma of space-time, the mental Ma and the Ma of context can be applied to various everyday activities. The first concept in their application to everyday activities is the temporal Ma of experience, the second concept is spatial Ma that enhances the quality of dialogue, the third concept is psychological Ma that ties together knowledge from different areas of specialization. In addition to these, the author stresses the importance of the fourth concept of Ma, situational Ma, which ties together different contexts.

Here, one form of the temporal Ma of experience is the concept of "time consumption." For example, in practitioners' acquisition of deep knowledge from various experiences, temporal Ma is a mechanism for efficiently and effectively acquiring tacit knowledge—knowledge that is novel, flexible and empirical rather than existing, completed (or accumulated) empirical. Although this mechanism requires a significant amount of time to nurture in company personnel, it is an important concept for a company in realizing high quality knowledge management in the intentional formation of the temporal Ma of "time consumption."

Moreover, spatial Ma that enhances the quality of dialogue is relevant to the design of workplaces within organizations. For example, in ordinary companies where the R&D department is in a separate location, staff in

other departments often have no knowledge of what is going on there. To some extent this arrangement is to prevent the leaking of information and to maintain security. To focus on the free exchange of ideas among staff, however, it is important to enhance the quality of dialogue. To facilitate this process, a design that creates "spatial Ma" in the form of an open workplace encompassing different departments and functions is necessary.

Open spaces promote dialectical dialogue (e.g., 2007a, 2007b, 2007c) on a daily basis and generate a common feeling among practitioners. The development of a common feeling paves the way for sharing subjective and physical tacit knowledge and establishes the primary sociality of a joint subjective view. This in inspires the mutual interaction of tacit knowledge (subjective) and explicit knowledge (objective), and enhances the possibility of new knowledge creation (Nonaka and Takeuchi 1995). For example, in companies where all departments from planning and development to sales, production and services openly share time-space in the same location and work to achieve flexible, rapid collaboration (e.g., Kodama 2015), staff from various offices and departments including machine designers, managers of technology and sales, production managers and maintenance supervisors come together when there are difficult issues to resolve or when there is an emergency. When an emergency meeting is called, the various staff members arrive at solutions by pooling their individual wisdom. In companies where all staff unite in concerted efforts to serve their customers, there exists at all times a spatial Ma that enhances the quality of dialogue for generating a common feeling.

The existence of such temporal Ma of experience and spatial Ma enhancing quality of dialogue promotes the overlap of knowledge in different specialist fields among practitioners and enables the intentional formation of psychological Ma, which enables individual practitioners to consider things from a comprehensive viewpoint. To promote new knowledge creation, psychological Ma consisting of different specialist viewpoints among practitioners must be embedded and shared within an organization. Conversely, the separation of specialist knowledge within an organization also becomes a factor that inhibits the knowledge convergence process of new knowledge creation.

The commonality in these four concepts of Ma is the existence of relationships that tie together different contexts and knowledge (in other words, boundaries) in dynamically changing space-time. However, Ma

does not refer to relationships that have specific meanings but describes holistic relationships that allow a diversity of meanings in dynamically changing flows. The author argues that various Ma, as dynamically changing holistic relationships, have their roots in the Eastern philosophies of Japanese Shintoism and Buddhism, which the author discusses in Box 1.1 in Chap. 1.

Berque (1982) argued that Ma were born of the crystallization (tying together) of countless possibilities and emptiness (blanks, silence, discontinuation and stillness). Viewed from the perspective of communications theory or linguistics, Ma create free zones into the flow of information put forth by a disseminator, while receivers of that information simply write meaning into those zones based on their own inclinations. However, as long as they remain as gaps, meaning cannot be properly conveyed to the receivers of messages. Nevertheless, as relationships, some kind of meaning is suggested, and the disseminators of messages need to be attentive only in pointing out that meaning. Therefore, Ma can be defined as intersubjective space—a space free from controls or restrictions on symbolic expression, in which exchanges of complete messages between one actor (the message disseminator) and another (the message receiver) can take place. Ma can be viewed as gaps or openings from which new phenomena emerge in the flow of dynamically changing space-time. In this sense, the author believes that Berque's (1982) concept of Ma corresponds to the "hollow equilibrium structures" in the philosophy of Shintoism, described in Box 1.1, and is also reflected in the Buddhist concepts of emptiness, selflessness, and "the Middle Way." Thus, Ma can be defined as dynamically changing holistic relationships that allow a diversity of meaning.

The space-time dynamic characteristics of Ma can also be understood by the Chinese character 間, which represents the word and means "a space between." This character for Ma actually consists of two characters. The first, 門, represents a gate or an opening, and the other, 日, can be interpreted as the sun or the moon. Thus, the combination of these two characters expresses the moment in which sunlight or moonlight passes through the gap in the gate. Such a moment inspires people with the idea that gaps or voids may have a powerful effect on the phenomena of sunlight and moonlight. Put differently, the presence of gaps and voids is essential to cause certain moments to occur. These spaces open and let the sunlight hit the ground or create moments for the moonlight to shine, and these are always dynamically changing.

In this way, Ma represents moments of dynamic transitioning like shining light. A Ma can be a gap between two or more events or phenomena occurring in time. However, rather than being wildly separate, these gaps have seams running between them. The unification of space and time is central to the concept of Ma. If there were no time in this scheme, then light from the sun or moon would not pass through the gaps. Thus, the time factor in Ma signifies the changing nature of the sunlight striking the ground or the presence of moonlight, and thus brings about new meaning.

Consequently, Ma on its own does not have a set meaning or defined role but is a hollow-structured virtual layer (a psychological boundaries layer). Nevertheless, as the situation and environs surrounding Ma interact and therefore bring something forth, psychological boundary layers accommodate the situation and environs as the occasion demands, and creatively bring forth new meaning, thus changing the entire environment surrounding the Ma. As Nitschke (1988) asserted, while Ma function to mobilize the creativity (or imagination) of people, what is born of Ma is dependent on space, time and situations.

Therefore, as discussed earlier, if Ma are interpreted as dynamically changing holistic relationships that allow a diversity of meaning, the author believes these Ma comprehensively synthesize various paradoxes observed in the strategy-making processes, organizational formations, leadership systems and practical processes of corporate organizational structures.

Moreover, as Ma are hollow structures, their presence does not separate subjects from objects but rather acts to trigger the establishment of "intersubjectivity." Intersubjectivity describes relationships established when all persons involved mutually accept, interact and join with the subjectivity of others to transcend the self and become the collective "we." Thus, intersubjectivity also generates Ba (Nonaka and Takeuchi 1995) for dynamically sharing living contexts. Practitioners belonging to official organizations in companies dynamically form Ma that allow a wide range of meanings while mutually interacting with their environment, and by doing so form Ba for sharing new meanings that emerge as part of these comprehensive relationships. Accordingly, the presence of Ma is a requisite for the formation of creative Ba. Moreover, Ma are required in the formation of communities of practice and strategic communities as an informal organization (or informal human networks) (e.g., Kodama 2005) based on the formation of Ba (see Fig. 2.2).
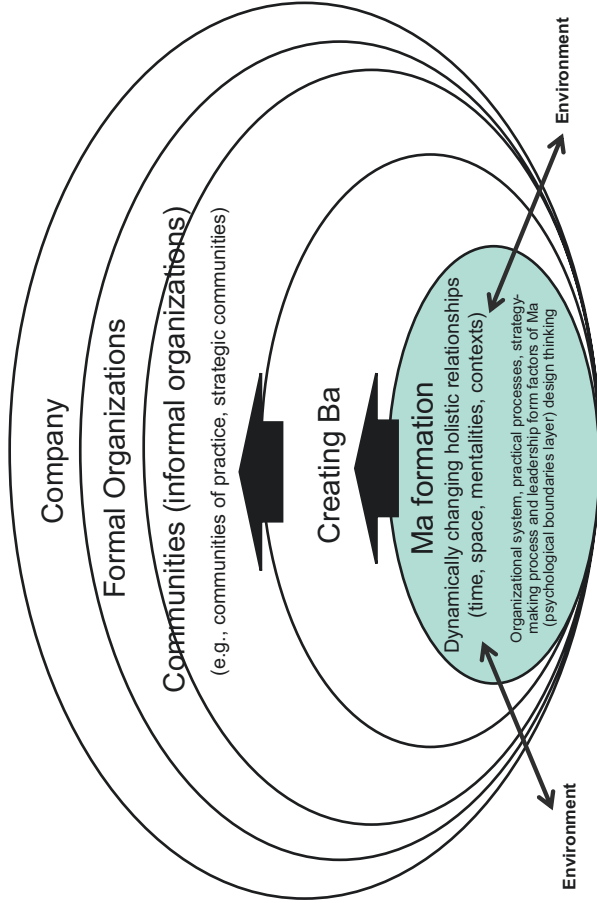
Fig. 2.2 Relationship of Ma, Ba, communities, formal organizations, companies and environments

2.5   Research on Ma that Transcend Disparate Academic Fields

As discussed previously, our global innovation research indicated that to produce new value by integrating dissimilar knowledge (sometimes demonstrating serendipity) practitioners must think and act to drive the dialectical processes of recursive dynamic practice activities between formal and informal organizations, as well as dynamic paradoxical recursion in innovation processes and strategic thinking, and dynamic paradoxical recursion of thinking in creative processes. The knowledge gained from these new insights is Ma thinking, the theme of this book.

The subject matter of this book developed from deep observation and analysis of the creative and innovative activities of practitioners (innovators and creators) not only in the business workplace but also in the fields of architecture and the arts over the long term. Our academic research and experiences in different fields to date (as scholars of business, architecture and the arts) have enabled us to develop a deep recognition of the mechanisms and characteristics of the invisible boundaries between formal and informal organizations that drive innovation in companies, organizations and individuals. We found that these mechanisms and characteristics originate in the Ma thinking of leading practitioners who bring them into being creatively, efficiently and positively.

Ma thinking encourages people and organizations to combine creativity and efficiency to bring about innovation. Particularly at the micro level, dynamic thinking and actions based on Ma thinking, consciously or unconsciously executed by practitioners not only in formal organizations but also in informal organizations, are crucial to strategically bring about new innovation. In our research and investigation, we have clarified that Ma thinking of practitioners is an important factor in bringing about high quality innovation in areas in which "tugs of war" and contradictions between efficiency and creativity occur.

This book is the result of research spanning dissimilar academic disciplines on innovation based on Ma thinking carried out through collaboration between scholars involved in business, architecture and the arts (see Fig. 2.3). In Part II (In-depth Case Studies), we present detailed case studies and theoretical concepts of innovation activities at the micro level in business workplaces (from the perspective of strategic activities and organizational actions) as well as design and artistic innovations in
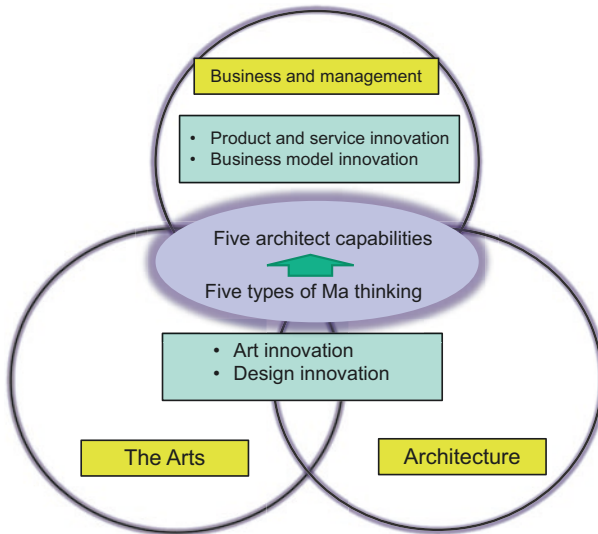
Fig. 2.3 Ma thinking-based innovation research across dissimilar academic fields

architecture and the arts. In Part III (Results and Discussion), by compar-
ing the in-depth case studies, we present new theoretical concepts related
to the five architect capabilities enabled by the five types of Ma thinking,
as shown in Fig. 2.1, and discuss a theoretical framework for the creation
of new innovation. We then present implications for further academic
research on the application of Ma thinking and implications for practitio-
ners aiming for innovation.

Notes

1. Brown (2005, p. 1230) stated, "Chance encounters, accidental occurrences
   and sheer good fortune loom large in business life. Everyone is familiar with
   the fortuitous stories mentioned … as well as with others such as those of
   Velcro, Corn Flakes, Band Aids, Post-it Notes and Nike's waffle sole, to say
   nothing of Teflon, Kevlar, dynamite, artificial dyes, polyurethane and
   penicillin."
2. Refer to Brown and Duguid (2001), Dougherty (1992), Spender (1990)
   and Grinyer and McKiernan (1994) regarding knowledge boundaries,
   thought-worlds and mental models respectively.

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Ma Thinking and Innovation in Global High Tech Companies: The Lessons of Business Model Innovation in Apple and Cisco Systems

Mitsuru Kodama, Takehiko Yasuda,
and Katsuhiko Hirasawa

3.1 Ma Thinking in Innovative Companies

How are leading companies, organizations and talented individuals able to unceasingly achieve high quality innovation? As a plausible response to this question, this book presents the theoretical concept of Ma thinking, a process that serves as a springboard for the thoughts and actions of distinguished practitioners (innovators). This chapter takes a look at some of the ideas and behaviors of practitioners of some of the most innovative companies today as well as the nature of those companies. It also further discusses the five architecture capabilities that are the building blocks of Ma thinking mentioned in Chap. 2.

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3.1.1   *Apple and Cisco Systems*

Apple in the United States is a company that has been the focus of attention in recent years for its world-leading innovation strategies. As a large corporation, it had an aggregate market value of $65.2 billion in 2014. One cannot help but wonder what kind of innovation ideas enabled Apple to achieve such a stunning result. The views and convictions of the late Steve Jobs offer some insight into the origins of creativity at Apple.

Jobs was a leader who strongly encouraged open discussion and believed that Apple needed to be a place where any staff member could casually approach the CEO with an idea. For example, two engineers might meet in a hallway, one of them letting the other know of an idea he or she had been forming, and the engineer would encourage the first to start working on it, who then quickly forms a team that will spend some months developing the idea. It is not uncommon at Apple for new projects to start up from such informal conversations.

In general, business activities are carried out in time and space in formal organizations with rules. On the other hand, Jobs encouraged informal meetings and communication because he believed creativity came about through spontaneous gatherings, communication and random conversations. At Apple it is not uncommon for people to contact each other whenever ideas or questions spring to mind, no matter what time of day it might be, and discuss what needs to happen next.

Jobs also described the business systems at Apple that bring about these ideas and innovations as "mechanisms with no mechanisms." He said this did not mean there were no processes, emphasizing that Apple was a company with strict rules and wonderful processes, but they were not what was important. Rather, processes were there to make people more efficient. On the other hand, he stressed that for innovation to come about people had to be able to discuss things in places like hallways, or to be able to telephone each other when they had a good idea or a solution to a problem they were facing, even at 10:30 at night, if necessary. When Apple staff come up with what they think are "cool" ideas, it is a common practice to gather a group of workmates to sound them out. Jobs spoke of how innovations were born through these types of discussions and gatherings. The question is: How can the thinking and organizational behaviors of Apple staff including Jobs be truly interpreted in the context of a company Apple's size and having many regulations?

Another innovative American company is Cisco Systems. With its vision of "changing the way we work, live, play and learn," Cisco acquired more than 170 companies in the period from 1993 to 2014. By the time the company celebrated its 30th anniversary in 2014, it had grown to a sizeable corporation with revenues of around USD 47 billion. Currently, with a presence in 165 countries Cisco has a staff of 74,000, with engineers accounting for a significant 39% of employees, followed by 24% in sales, 20% in services, and 17% in other areas. The previous CEO John Chambers, has steered the company for 20 years, which has 14 executives and a senior leadership of 58.

The organizations that characterize Cisco consist of teams of individuals required to carry out specific business operations for individual projects. As these projects progress, team members generally change. Cisco refers to these teams as "dynamic virtual teams" (which are both formal and informal organizations). These teams are quickly brought together to respond swiftly to specific business circumstances, and they transcend the framework of the company's existing organizations. Dynamic virtual teams include core teams and extension teams. Core teams have the power to make decisions and are responsible for business conditions, whereas extension teams provide specialist and experiential knowledge. Accordingly, staff members often participate in more than one project. Team members at Cisco usually fall into the following five classifications: executive sponsor (general project manager), team leader (actually drives the team), operations leader (brings the team together), meeting facilitator (provides coordination so that meetings proceed according to the agenda) and team members.

At Cisco, these dynamic virtual teams have dramatically improved the quality and speed of decision-making because the dynamic structure of these informal organizations gives them the business advantage of a high level of flexibility to handle situations quickly. Even though it is thought that Cisco's management style came about due to the influence of Steve Jobs,

Cisco believes that strategically concentrating business resources into each product at the micro level and setting up dynamic virtual teams for each product can potentially have greater impact on the entire company than overarching macro strategies.

Thus, the company engages bottom up rather than top down systems by implementing strategic collaboration through this kind of team management. This empowers individual members of staff to contribute to

their teams as leaders in the expectation that they will be able to handle challenging issues. Cisco believes that driving this kind of strategic collaboration not only in formal organizations but also in dynamic informal organizations is an efficient way of getting the most out of staff capabilities and getting organizations to move quickly to achieve success.

Strategic collaboration is covered by Cisco's code of conduct, leadership competency and all five areas of Cisco's focus. For the company to run smoothly, culture, processes (exchanges between people) and technology must be adjusted. Through strategic collaboration across formal and informal organizations, Former CEO Chambers emphasizes that if people belonging to organizations effectively combine their strengths to unleash each other's talents, they will be able to adapt to new market opportunities with agility. Strategic collaboration is used at Cisco in meetings and problem solving, and it includes the company's top, middle and lower layers as a matter of course. The effectiveness of strategic collaboration is demonstrated when all members of the organization come to view this approach as the best way to share ideas and meaning. At Cisco, "strategic collaboration" does not mean "joint work" but refers to the co-creation of new ideas achieved by bringing personnel together to cooperate in organizational operations.

3.1.2   *Balance Between Efficiency and Creativity*

How can we interpret the processes of generating innovation through these dynamic recursive organizational actions between formal and informal organizations that come about through these dynamically structured yet unbound informal organizations (or informal organizational networks) in companies like Apple or Cisco? Previous studies suggest that new innovation can originate in informal organizational networks, while research to date on network theory (e.g., Motter 2004; Watts 2003; Barabasi 2002) and the communities of practice (e.g., Wenger 1998) that typify informal organizations offer important perspectives on the innovation process.

According to these studies, networks of people, groups and organizations (including communities of practice) have proven to be important platforms for facilitating information and knowledge-based activities, in that the formation of informal organizations and networks have a major impact on the conveyance of information and knowledge (e.g., Owen-Smith and Powell 2004; Lin and Kulatilaka 2006). Thus, it is also essential that companies form networks dynamically to acquire sustainable

organizational capabilities (e.g., Kodama 2005) and reconfigure these networks to respond to changes in circumstances and strategic activities (e.g., Kodama 2006). However, these innovation studies mainly focus on observing and analyzing the organizational networks of these informal organizations, and there is little discussion concerning the relationships they have with formal organizations—organizations that play a crucial role in corporate activities.

Genuine innovation is achieved by striking a balance between efficiency and creativity (e.g., Kodama 2007). Decision-making rules, strict regulations and routines in formal corporate organizations enable the strategic management mechanisms needed for process efficiency in business. On the other hand, the existence of informal organizations, in other words the informal human networks like those at Apple and Cisco described above, play an important role in creating the ideas needed to achieve innovation. Thus, although the tactic deviates from processes designed for efficiency, in fact, creativity is more likely to emerge from the irregular trials and errors in the dynamic and diverse practices that go on between people.

Interpreted in the Japanese way, these informal networks are characterized as "Ba" (場) (Nonaka and Takeuchi 1995; Kodama 2005). Ba is the space-time that effects generative change through the synergies between individuals sharing and exchanging contexts with each other. Knowledge in which ideas and creativity originate comes into being in dynamic contexts—in time and places, and in human relationships. Thus, forming high quality Ba in which tacit knowledge can be shared is key, as they lead to commitment (proactive involvement). The staffs at Apple and at Cisco are literally always engaging in diverse practices based on high quality tacit knowledge made possible by Japanese-style Ba.

However, innovation can never be achieved purely by building informal networks between members of staff alone. Realizing creative knowledge, ideas or concepts also requires strategic process management to bring about efficient business models by establishing good quality supply chains (production, distribution and sales systems, and high-performance ICT, etc.). The question then arises as to what kind of thinking and actions practitioners apply to manage the tug of war and discrepancies between efficiency and creativity that constantly occur between formal and informal organizations. Furthermore, practitioners ask what they should do, specifically, to perceive and recognize the various boundaries between formal and informal organizations? To date, there is little research that focuses on the boundaries between formal and informal organizations.

3.2   Dynamic "Recursive Practice Activities" to Generate Ideas and Demonstrate Serendipity

One common feature of innovative companies like Apple and Cisco, described in Chap. 1, is that of "recursive practice activities" between their formal and informal organizations to integrate dissimilar knowledge both inside and outside of the company and bring about creative new products and business models. From our extensive investigations in the field, it became clear that formal organization in a company like Apple or Cisco does not imply old-school, business-as-usual bureaucratic organization with hierarchies. These companies have flat-structured formal organizations in which quick delegation of authority and decision-making are well established (these flat, formal organizations are made up of multiple business units).

The specific business of practitioners in formal organizations is to steadfastly execute strategy in the territory of their respective business units. However, there are plenty of cases where formal organizations are newly reconfigured like those at Apple and Cisco to achieve a strategy agreed upon through practical processes carried out in informal organizations. In contrast, within and across formal organizations, there are communities of practice (e.g., Wenger 1998) concerned with similar areas of specialization or job function, which simultaneously make improvements and upgrades to routine and existing business in order to make operations more efficient. In addition, business unit practitioners organically form autonomous, decentralized, informal organizations while engaging in strategic collaboration with practitioners from other business units to respond to changing business circumstances. Informal organizations are configured with external partners and special customers and proactively take in wide-ranging contexts and absorb dissimilar knowledge.

In particular, our field investigations revealed that rather than draw only on the knowledge and know-how of staff within their companies, leading practitioners dynamically form informal organizations through interaction with external partners and customers in diverse contexts to acquire dissimilar knowledge as the need arises, and they engage in dynamic "recursive practice activity" between their formal and informal organizations. This enables practitioners to expand their own fields of vision and generate new knowledge.

Knowledge is intrinsic to conditions, situations and spaces and is inherent to contexts. Thus, to acquire, share or create (integrate) knowledge,

practitioners have to look directly at and analyze diverse workplaces, objects, realities and phenomena, and share dynamically changing contexts among themselves. However, practitioners cannot share aspects of particular contexts in a particular time and space unless they participate in particular informal organizations. Thus, the important issue of integrating dissimilar knowledge can be achieved through the medium of the dynamic shared context, and sometimes this integration of dissimilar knowledge has the potential to trigger serendipity, the capability to discover new value and never-before-seen innovations by chance.

Serendipity, which the discovery of valuable resources and opportunities in the search for something else (Baker and Nelson 2005; Cunha et al. 2010; Day and Schoemaker 2008), alerts practitioners to new threats (or business opportunities) in the periphery of the core competences of their companies (Day and Schoemaker 2004) and potential business domains far removed from the boundaries of their own companies (Kodama 2011; Fleming 2002; Popescu and Faussone-Pellegrini 2010; Roberts 1989). Thus, in terms of pure emergent strategy-making, serendipity also entails strategies arising from ideas that suddenly spring up in the thoughts of practitioners; such strategies are not uncommon in actual business workplaces and are often observed in processes of discovery and invention in science and in development of new products. They can also be thought of as "incidental emergence strategies" (Kodama 2011) or processes that evolve from intuition, the senses or awareness of scientists and researchers through coincidence, learning from failure or another ongoing learning process, to give birth to new products and inventions.

Some examples[1] of these include the development of products such as 3M's Post-it, P&G's Ivory Soap and Pfizer's Viagra, or scientific developments such as Fleming's penicillin, Pasteur's vaccines and Leo Esaki's Esaki Diode. The 2014 Nobel Prize in physics awarded to Professor Shuji Nakamura of the University of California for the discovery and invention of the blue light-emitting diode (LED) is another case of the kind of serendipity described in Chap. 4. To integrate dissimilar contexts to bring about new contexts in these instances, practitioners spontaneously form informal organizations with new knowledge boundaries, and they bring in other practitioners as stakeholders into certain informal organizations or, alternatively, they make efforts to learn and absorb knowledge from dissimilar knowledge, which differs vastly from that knowledge within their own knowledge boundaries. We describe this phenomenon as "drawing into knowledge boundaries."

Knowledge boundaries are those boundaries that delineate specializations (job functions) of practitioners such as research, design, manufacture, sales and product planning. Knowledge boundaries determine the individual "thought worlds" and mental models of practitioners and solidify uniformity in thoughts on matters and job territories. In many corporations, conflicts between the marketing intentions of marketers and the technical intentions of engineers occur at these knowledge boundaries on a daily basis.[2]

However, practitioners who expand their "dynamic range of knowledge boundaries" enhance their knowledge capabilities regarding dissimilar contexts and knowledge and increase the potential of triggering serendipity, that is, the capability to bring about new knowledge by tying together accidental discoveries with other knowledge. When facing new challenges and looking for solutions to problems, practitioners must dynamically link and mutually interlock dissimilar knowledge boundaries; they must engage in dynamic and recursive practice activities between formal and informal organizations.

The "dynamic range of knowledge boundaries" refers to the scope of change of contexts and knowledge, and the level of ability that business people have to accordingly recognize the range of values and diversity. The range of the people described in this book strengthens their boundary vision, allowing them to respond to the changing boundaries of their environments. The dynamic range of their thinking and action is thus broadened. For practitioners aware of wide-ranging contexts and knowledge in their boundary networks, creative dialogue expands the dynamic range of thinking. (These include organization-to-organization and human-to-human networks that span multiple boundaries.) Dialogue enables members to build common foundations to share meanings and interests.

Expanding the dynamic range of knowledge boundaries promotes sharing and resonance of values and mutual trust building; it fosters commitment and drives creative collaboration. Thus, creative collaboration through creative dialogue in organic organizational systems with boundary networks fuses and integrates diverse contexts and knowledge. To achieve a strategy for new challenges, practitioners must be able to solve urgent problems and issues in organizations or to bring consistency to various business elements through various technologies or operations.

3.3   Five Architect Capabilities that Create Innovation: Context, Ba, Human Networks, Boundaries and Willpower

Dynamic recursion in practice activities between formal and informal organizations triggers the five architect capabilities in practitioners. The elements of each of these capabilities are discussed below.

3.3.1   Context Architect Capability

The first of these architect capabilities is the "context architect capability," which practitioners need so they may successfully draw into a knowledge boundary. Leading practitioners demonstrate context architect capability for raising awareness in other practitioners of hidden contexts in formal and informal organizations and generating new contexts. For example, Apple is a strong advocate of simplicity not only in the products it creates but also in every aspect of corporate life including the company organizational structure and business systems. However, as Steve Jobs noted, "Simple can be harder than complex. You have to work hard to get your thinking clean to make it simple." While Apple achieves integration of "goods" (components comprised of diverse hardware and diverse software) and "services," it aims for "simplicity" in its products, a proposition that seems contradictory. According to Jobs, however, such integration is well worth the effort, "because once you get there, you can move mountains." Apple's most powerful mechanism is its "adherence to simplicity" regarding complex ideas and things, and this adherence to simplicity symbolizes the values and strategy at the core of Apple. Achieving simplicity has been the driving force of the company since Apple was launched by Jobs and Wozniak. This drive for simplicity is not only reflected in Apple's products based on a simplicity-oriented context, but it is also applied to every aspect of design at Apple including the corporate organization, style of meetings and product lines. This adherence to simplicity is also the core of Apple's strategic thinking and "context architect capability" that its employees possess.

One specific example of this adherence to simplicity is the elimination of middle management, which exists in the corporate structure of most large companies. This has facilitated clear, rapid communication in the ranks from CEO to staff. Moreover, the ratio of the numbers of vice-presidents to employees at Apple is fewer than in most companies. Apple

has also made utmost effort to create extremely simple products that consumers can understand intuitively. Users of Apple products can attest to this feeling of simplicity. At Apple, there are just two simple rules: maintain confidentiality, and take responsibility for your work. At meetings, too, Jobs preferred conversation over lengthy presentations and the use of handouts. In product lines, rather than offering a huge number of computer models, Jobs narrowed the number of products to just four: a notebook and desktop model for consumers and a notebook and desktop model for professionals. As a result, the more advanced the products and services in which Jobs was involved, the fewer and simpler they became.

This context architect capability of adhering to simplicity in response to complex ideas and things was also evident in the product development of iTunes and the iPod. Not satisfied with music applications such as Real Jukebox and Windows Media Player, which were on sale at the time, Jobs initiated the development of iTunes as a product and announced it as part of Apple's digital hub strategy in Macworld in January 2001. After the launch of iTunes, Apple then commenced development of a new concept for a music player. Portable music players on the market at the time like the Rio had only lukewarm popularity despite enabling consumers to transfer and listen to music while driving or shopping. Jobs queried this situation and discovered that the MP3 player actually had significant market potential.

Jobs' superior foresight, creativity and inspiration based on the simple aspiration to enable consumers to enjoy music anywhere and anytime with ease resulted in the creation of the world's first legitimate large-scale music delivery business. To achieve this goal, the strategy he adopted was based on a concept and actions aimed at connecting complex ideas and things in a simple manner. In the case of iTunes, it involved the construction of a business architecture where Jobs negotiated product content with the content holders to connect music content with iTunes and the iPod. Furthermore, to realize this new music delivery service, Jobs himself visited the five major music labels to convince them to allow Apple to sell their digitalized music. At that time he engaged in all negotiations and bargaining.

On the other hand, merger and acquisitions (M&A) was at the core of Cisco's strategy. One of the long-term goals of Former CEO Chambers, who served for many years as Cisco's CEO, was to make Cisco a comprehensive solutions company in the area of ICT. In its strategic vision, Cisco identified the kinds of products customers would need over many years

and proceeded to acquire the leading companies of those products. At the same time, Chambers understood that the larger the company's acquisitions grew, the greater the possibility of failure. Moreover, he understood that the risks of clashes in corporate culture, conflicts over authority and large-scale layoffs to reduce staff grew proportionately with the growth of the companies. Therefore, when considering acquisitions, Cisco had a preference for small start ups. For example, StrataCom was among the many companies Cisco acquired. Chambers felt it would be good to sell all data solutions and acquire StrataCom, which specialized in high speed switching products, for USD 4.5 billion. As a result, Cisco recorded its high speed switching product sales of close to USD 500 million among its total sales of USD 2.0 billion.

Cisco also concentrated on products that connected various home electronics products with IP networks. In 2003, it acquired Linxus, which sold routers for home use, for approximately USD 500 hundred million, and in 2006 Cisco changed the company name from "Cisco Systems" to just "Cisco." In the same year, Cisco launched its "Human Network" campaign and a strategy to make Cisco a "household" brand based on the provision of support for consumer products. In 2007, Cisco acquired WebEx, a market leader in collaboration applications, for about USD 3.2 billion, resulting in the acquisition of communications tools. Next, it acquired the email security company Iron Port for USD 830 million, and the following year, Nova Systems, which provides high-end network equipment to corporate data centers. In 2009, Cisco acquired Starent Networks, a supplier of IP-based mobile infrastructure solutions, for USD 2.9 billion, thereby entering into a new market. In the same year, it acquired the Norwegian company Tandberg, a rival corporate video communications company, for USD 3.3 billion, and in 2011, Chambers made video-conferencing one of the company's five priority areas.

Following a strategy aimed at "changing the way we work, live, play and learn" (Ricci and Wiese 2011), Cisco continued its acquisitions. In fact, in the period from 1993 to 2014, it acquired more than 170 companies, so that by 2014, just 30 years after its founding, Cisco had grown to a company with revenues of USD 47 billion. A company reputed to be customer-centered and to place value on corporate citizenship, Cisco strives to provide intelligent networks, technologies and business architectures for platforms that integrate products, services and software.

The expansion of Cisco's business areas through acquisition of new capabilities based on this consistent strategy of M&A was, like Apple's

approach mentioned earlier, extremely simple. However, the thinking behind M&A strategy was to execute management that would provide for and balance complex, diverse business contexts involved in acquisitions, including avoidance of clashes in corporate culture, evasion of conflicts in authority and the acquisition of outstanding human resources, and to demonstrate human resource potential to the maximum. It can also be said that Cisco's unique context architect capability involved in this kind of M&A contributed to establishing the company's current competitive position.

3.3.2   Ba Architect Capability

The second architect capability is the ability to create Ba (shared contexts in motion) while creating and sharing new contexts both within and outside organizations. This is "Ba architect capability." The space-time stage on which dialogue and practice generate new knowledge is Ba. Not a physical place, Ba is a state of mind. Therefore, it is *context* that must be shared in order for Ba to exist. Contexts are not static: they constantly change as places in time as situations and relationships among practitioners at work in a Ba change. In their minds, individuals create unique contexts for themselves that reflect their own respective histories. Thus, when Ba is created (or emerges) in which these individuals can come together, people can begin to share their various contexts, and in these dynamic contexts knowledge emerges (in time, in places and in human relationships).

Furthermore, such Ba architect capability leads to the formation of strategic communities (SC) (Kodama 2001, 2005, 2007a, b) that have strong connections among practitioners and boundary networks (Kodama 2011), which are networks among SC (i.e., networked SC) (Kodama 2009).

A typical example of results achieved from Ba architect capability at Apple is the realization of Apple Stores aimed at deep interaction with customers. This happened at the time iTunes was announced, in April 2003 in San Francisco. Jobs had become involved in a new area and was focusing on user experience rather than profit, and Apple succeeded in realizing a spectacular business model based on the idea of creating products that went above and beyond products of other companies in design. If iTunes sold, so too would the iPod and Macintosh.

On the other hand, sales personnel at major retailers which sold Apple products at the time were not particularly motivated to sell Apple products

and did not have the knowledge to explain product features. Furthermore, retailers accepted Apple products on the condition that they received a 35–45% margin of sales. With a desire to control the customer experience here too, Jobs began to think of ways of getting across Apple's message and promoted a plan for Apple Stores. At the time, even Gateway reported poor performance after opening stores. Dell, on the other hand, had achieved success in direct sales without owning any stores. Therefore, Apple's directors were opposed to Jobs' idea. It was at this stage that Jobs replaced the majority of directors. As a result, the board finally agreed to open four Apple stores on a trial basis.

Superior companies must protect their corporate image. Jobs proceeded to draw up a plan based on the maxims of marketing guru Mike Makkula, who said that everything from a product's packaging to marketing had to communicate the value and importance of the company. Millard Drexler, a director of Apple and CEO of GAP, was of the same school of thought as Jobs and advised him to create a prototype store in the vicinity of the Apple campus and to trial various approaches and products there. On numerous occasions, Jobs called upon his friends, including Oracle's Larry Ellison, to come and experience the store. In 2000, about the time examination of the prototype was about to end, Ron Johnson noticed a decisive problem and proposed a solution to it: respective product lines should not be placed on display for show but should be arranged in a manner that would entice people to want to use them. Johnson expressed his view to Jobs, who gave his approval to delay the stores' opening instructed that the layout of the stores be changed. In 2001, after inspecting the completed prototype, the directors unanimously approved the establishment of stores.

In Jobs' "absolute value vision" (hereafter synonymous with Apple's "willpower architect capability"), one sees the thorough control of every aspect of the product experience from design and manufacture to sales is the Apple management philosophy, and this handling of every fine detail is practiced even at Apple Stores. For example, in order to do away with cash register counters at stores, accounting software for use with portable terminals was introduced. Even the materials used in the store design are uniform from store to store, and all stores share various distinctive design aspects such as the "genius bar" for providing technical support to customers. Apple Stores are also strategically located in malls and on main roads where large numbers of people pass through. In 2001, the first Apple Store was opened in the United States, in Virginia. In contrast to

the 250 customers visiting Gateway each week, the number of customers visiting Apple Stores in 2004 each week was 5400, and sales at stores in the same year grew to USD 1.2 billion. The success of the Apple Stores was such that the store that opened on Fifth Avenue in Manhattan in 2006 attracted 50,000 visitors a week in its first year. By 2013 the number of Apple Stores worldwide reached 402.

Moreover, the demonstration of "Ba architect capability" ubiquitous throughout Apple is evident. The basic forms of the structural elements that make up "networked collaborative organizations" characteristic of Apple's organizational morphology include the formal organization (in the case of Apple, functional *organizations*), with a flat organizational structure, and the informal organization comprising various business men and women of formal organizations (in this book, these informal organizations are referred to as "strategic communities" (SC), and the informal organizations that traverse the boundaries of these SC are referred to as "networked SC" or "boundary networks"). Boundary networks are organizational structures that generate new knowledge by promoting creative dialogue among business people between knowledge boundaries and facilitating practice processes for meeting new challenges.

The specific work tasks performed by business personnel at boundary networks are centered on decision-making relating to important strategies (in the case of Apple, the strategy vision, new product concepts and design, etc.) by the top management team (in the case of Apple, the executive team (ET) of senior vice-presidents which included Jobs), integration of understanding for the formulation and execution of strategies at a practical level, the generation of new ideas, and initiatives for drafting and executing problem resolution measures in the senior management teams (for Apple, about 100 persons at the vice-president level; the title of "vice-president" varies according to country or business sector, but these persons are deemed to be middle managers at a senior level).

Unlike business on a daily routine basis, these initiatives for the most part are strategic, non-routine activities. Needless to say, top management and senior management teams engage in intense efforts at reconciliation of differences and unification of their understanding concerning contexts involving goals or matters of interest with regard to formulation and execution of important strategies. Task teams, which consist of the manager layer and general staff (below manager level) engage in discussion and dialogue at a more concrete and practical level with regard to formulation and execution of strategies and contexts relating to specific issues and

problem areas, and they take action on these after determining the optimal direction and solutions. Boundary networks functioning as informal organizational platforms broaden the dynamic range of knowledge boundaries of business women and men, enhance sensing as cognitive ability in different contexts and knowledge, and dynamically link and mutually connect different knowledge boundaries to take on new challenges and resolve issues. The design of such boundary networks is achieved when practitioners of Apple intentionally expand the dynamic range of knowledge boundaries using their Ba architect capability.

In the "networked collaborative organization," a "formal organization" does not refer to a conventional old-fashioned, hierarchical bureaucratic organization with a layered structure. The networked collaborative organization has a formal organization with a flat organizational structure where the delegation of authority (in the case of Apple, this is top-down), individual responsibility and commitment, and promptness in decision-making are established. This flat formal organization is made up of several business units (for Apple, functional organizations). The specific tasks of people in the formal organization play a vital role in executing strategies within the working range of each business to realize strategies decided on in practical processes at the boundary networks.

It is interesting to note that the organizational morphology of Cisco has many similarities with that of Apple. As of 2014, Cisco was an organization with a presence in 165 countries and more than 74,000 employees, with engineers accounting for a significant 39% of all employees, followed by 24% in sales, 20% in services and 17% in other areas. Also as of 2014, Cisco had a framework consisting of an executive leadership team (LT) of 14 persons including CEO John Chambers, and a senior leadership team (LT) of 58 persons.

Organizational arrangements at the company are such that whenever there is a project, employees required to execute work for the project come together for that purpose, and the composition of the members generally changes as the project progresses. At Cisco, these are referred to as "dynamic virtual teams." These are teams formed outside the framework of existing organizations in the company to accommodate specific business situations, and these teams include core teams and extension teams and exist in the strategic communities mentioned earlier. Core teams have decision-making power and responsibility for business conditions, whereas extension teams provide the necessary specialist and experiential knowledge. Therefore, employees may at times participate in a

number of projects. Having employees simultaneously participate in several SC promotes the sharing of information and collaboration among the strategic communities and results in the automatic formation of boundary networks (i.e., networked SC). At Cisco, the formation of such SC and boundary networks based on the company's Ba architect capability dramatically improves quality and speed in decision-making. Moreover, these SC and boundary networks are extremely flexible in organizational structure and respond rapidly to change. The formation of these types of organizations may have been influenced by Apple's Steve Jobs but, unlike Apple, Cisco tends to focus on individual products rather than sweeping strategies. This is based on the belief that groups taking charge of individual products have a greater impact on the company.

Cisco's team members are generally divided into the following five classifications: executive sponsor (responsible for the overall project), team leader (actually drives the team), management leader (brings the team together), meeting facilitator (coordinates meetings so they proceed according to agenda), and team members. However, in 2009 Chambers changed its top-down decision-making system to a system comprising a number of boards and councils. Cisco's executive officers attended these boards and councils where they provided strategic advice and assessed the progress of the projects according to individual teams. In some cases, however, this system delayed decision-making processes, and the locus of responsibility was not always clear. Therefore, in 2011 the company revamped the organization, reducing the nine boards and councils to three. The company then decided to focus its attention on five network and Internet areas where it was promoting growth. They are: core products (routers, switches and services); collaboration; data center virtualization and cloud services; video; and architecture for business change. This direction was in line with Cisco's mission to simplify its operating model, improve customer, partner and employee experience, and answer the challenge of innovation. In this way, Cisco's collaborative management—based on networked collaborative organizations of the company centered on councils, boards and working groups—intends to create capabilities different from those of operation management based on ordinary routine activities.

3.3.3   Human Network Architect Capability

The third architect capability is the "human network architect capability." Human networks both within and outside of companies are reconfigured,

among other reasons, because of formal or informal events and meetings. The dynamic synergies arising in human networks such as temporary cross-functional teams (CFTs), task teams and project teams bring about new contexts and new knowledge. Practitioners intentionally (or due to unintentional circumstances) span organizational and knowledge boundaries, share new contexts and create human networks that originate in Ba. As practitioners transcend and conquer organizational and knowledge boundaries, the context architect capabilities and Ba architect capabilities induced by their new perspectives go on to spur the human network architect capability in themselves.

Steve Jobs was convinced that forming human networks originating with what was in fact the formation of Ba would bring about the success of a new music delivery service. This is why he called Hilary Rosen, CEO of the Recording Industry Association of America (RIAA), to attend meetings as a consultant, and together with design engineers and Rosen, he revised over and over again a draft model before creating an iTunes Store. Furthermore, as alluded to previously, Jobs himself visited all five major music labels to persuade them to allow Apple to sell their digitalized music engaging in all negotiations and bargaining.

During his efforts to persuade the five major music labels, Jobs had Barry Schuler, CEO of the AOL division of Time Warner and also a friend of Jobs, sit in on his meetings with the other companies. The advice he received from Schuler at that time was that the best approach for Apple would be to sell the idea as an end-to-end integrated service from iPod to iTunes Store, and that Apple's management of the music would be the best option in terms of protecting the way it was used. The pricing model of the iTunes Store was to charge consumers 99 cents per track and to sell music not as albums but as individual tracks to enable consumers to own the music. The music industry was vehemently opposed to this condition, but Jobs was able to convince his opponents by explaining that this was an arrangement for Macintosh only, which represented only 5% of the market. Therefore, the success of Apple's music delivery business based on iTunes and the iPod is greatly indebted to the human network architect capability of Jobs.

Furthermore, Jobs placed significant value on hiring outstanding human resources and on their teamwork. The excellence of these human resources can also be cited as a contributing factor in the successful development of the series of Apple's new products and services from the iPod and iTunes to the iPhone and iPad. Jobs had a preference for top level

specialists who were thoroughly knowledgeable of products in specific areas, whom he hired. To some extent he saw his own work as maintaining the quality of the people he worked with at their optimum. He also focused on the presence of people who agreed with his own vision of the future. In fact, the number of staff hired by Apple on the basis of Jobs' decisions ran into the thousands.

Among the key persons that led Apple to success and whose contribution to Apple is exceptionally notable is Jonathan Ive, who was responsible for all hardware design. Locked behind closed doors in the design research lab, Ive undertook development at Apple's design research laboratory. As the company pared down its projects, products and staff after the reinstatement of Jobs, Ive's superior was also dismissed on the grounds that the design of almost all of Apple's products at the time was terrible. Jobs had decided to poach his successor from elsewhere, and at that time he noticed Ive's talent and placed him at the center of the new Apple's designers where he was provided with the necessary work environment. Since then Ive has been instrumental in bringing about the success of Apple's products. As described above, Jobs had the ability to spot outstanding talent. When he discovered someone he believed would make a valuable team member, he took the initiative to telephone that person. Tony Fadell and Jon Rubenstein, who were appointed by Jobs to be in charge of the iPod, also played significant roles in developing products including the iPod.

Jobs also had remarkable talent for nurturing creativity. His ability to find people with talent, hire them, and retain them as well as his ability to form teams made up of talented people and create an environment where magical events occurred was nothing short of extraordinary. Jobs' ability to engage and form teams of such outstanding people can also be described as his human network architect capability.

Likewise, it can be said that Cisco's top management and senior managers possess human network architect capability. The Cisco culture is centered on a code of conduct consisting of 13 principles. They are innovation, fun, no technology "religion" (avoiding a single technical approach), continuous improvement/stretch goals, quality team, profit contribution (frugality), giving back/trust/fairness/integrity, collaborative teamwork, market transitions, inclusion, drive change, empowerment and open communication. Based on this set of principles, employees are encouraged to voluntarily and autonomously build human networks within the company and collaborate mutually.

In staff recruitment from around 1999, Cisco instigated a staff introduction system called "Friends" and received a large number of applications every month by advertising in unconventional venues such as movie theaters and garden shows and on the radio. It also devised strategies to attract the top 10 to 15% of the networking industry. In 2006 it introduced "Cisco Choice," a program for attracting new graduates of universities—talented engineers from around the world. Over a two-week period, candidates participate in an orientation where they learn Cisco technology, meet with managers and hear about management style and team plans at Cisco. The prospective employees can choose the team they wish to join and even nominate their own manager within the team. Cisco has achieved outstanding results with this program. After two years, the retention rate of employees who had participated in this program was 98%. At present, the 9000 Cisco Networking Academy Program operates in 170 countries, providing skills required for qualifications and ICT careers, training for talented engineers and promoting Cisco as an employer.

Therefore, in addition to its top-down practices, Cisco introduces bottom-up elements centered on personnel recruitment activities such as collaborative activities and engineer training within and outside the company. It also empowers individual employees who are expected to respond by demonstrating human network capabilities as leaders and voluntarily forming and contributing to various teams. Furthermore, at the background of Cisco's achievement and success in M&A to date is its establishment of networked collaborative organizations, which are similar to those at Apple, based on human network architect capability that many employees possess, and its collaborative management based on outstanding human resources.

3.3.4   *Boundaries Linking Capability*

Moreover, these three architect capabilities bring about the fourth architect capability: the "boundary architect capability" needed to configure human networks that transcend the boundaries of knowledge between different organizations and areas of specialization. As discussed, leading practitioners bring about new, high quality knowledge by forming particular informal organizations and bringing particular practitioners into these organizations as required; practitioners participate in or form multiple informal organizations. By circulating the contexts and knowledge in

these different informal organizations to share them, practitioners also engage in activities that inspire the creation of new knowledge. As discussed previously, practitioners span dissimilar contexts and knowledge and promote the linking of knowledge boundaries to integrate dissimilar knowledge. Here practitioner activities involve boundary architect capability, which enables practitioners to network multiple dissimilar informal organizations.

At Apple, emphasis is placed on the formation of strategic communities (SC) as informal organizations (as well as boundary networks/networked SC) for the success of new product development and new business development. Furthermore, the formation of new meaning through deep mutual creative dialogue between practitioners and mutual understanding is necessary at the beginning. Creative dialogue becomes an enabler that promotes the sharing and understanding of meaning among business personnel with regard to new challenges. At the same time, the challenges of new issues and friction and discord over current problems and issues are also opportunities for innovation.

At Apple, business leaders at every management level including at the top, and people who evoke traits such as the late Steve Jobs possessed, made proactive, earnest efforts through in-depth dialogue among business persons to address questions such as "Where is the friction and discord?" and "What are the problem areas and methods of resolution for these?" Compromise as an easy way out of friction and discord at Apple is never considered an option even in its relationships with external partners. It is believed that such an attitude serves only to nip new growth of the company in the bud.

In 2012, journalist Adam Lashinsky (2012) stated the following with regard to the environment at Apple:

> 'High-performance teams should be at each other's throats' is how one person with multiple Apple executives summarized the culture. 'You don't get to the right trade-off without each person advocating aggressively for his position.'
>
> Arguments at Apple are personal and confrontational. This began at the top, and it is part of the company's culture. (Lashinsky, p. 23)

Likewise, Jobs never shied away from friction in the service of change within the company. For friction and discord to act as drivers of corporate growth, however, business people must share common viewpoints by establishing common interests (common advantages among the respective

organizations) (Kodama 2007c), motivating partners and establishing a win-win relationship between stakeholders. Moreover, people in a business must share strategic goals and clearly articulate a specific action plan. In addition, clear explanations of decision-making processes with regard to substantive matters must be shared fully with all employees. Without such clarification, the creative dialogue needed to produce a sense of trust and a feeling of unity cannot develop.

Apple establishes common ground among its personnel by forming boundary networks (Bechky 2003) and transforming mutual abrasion and conflict into creative abrasion (Leonard-Barton 1995) and productive friction (Hagel and Brown 2005). This makes it possible to establish mutual trust among practitioners and to promote collaboration at different knowledge boundaries. Harvard University Business School Professor Rosabeth Moss Kanter views conflict as creative and something to be encouraged (Kanter 2001, p. 231). People should not consider situations that invite friction, conflict or chaos as something to avoid. Creative dialogue that forms common ground enhances the cognitive capability of business men and women with regard to different contexts and knowledge and at the same time encourages creative collaboration among different specialist areas and departments. The promotion of creative dialogue expands the dynamic range of personnel with regard to changes in knowledge boundaries that shuttle between formal organizations and boundary networks.

As stated earlier, the formation of strategic communities at Apple as informal organizations consisting of people with disparate, diverse capabilities and those with backgrounds in different specialist fields is encouraged. Absorbing personnel with different ideas from outside the company is also important, as in the development of Apple's iTunes and iPod. Furthermore, teams and organizations with different natures breathe fresh life into existing, traditional organizations and provide new stimuli and inspiration for achieving strategic goals, breaking away from the status quo and allowing for change, creativity and innovation, even when friction and conflict exist.

Regarding this practice, Jobs commented:

Edwin Land of Polaroid talked about the intersection of the humanities and science. I like that intersection. There's something magical about that place. There are a lot of people innovating, and that's not the main distinction of my career. The reason Apple resonates with people is that there's a deep

current of humanity in our innovation. I think great artists and great engineers are similar in that they both have a desire to express themselves. In fact some of the best people working on the original Mac were poets and musicians on the side. In the seventies computers became a way for people to express their creativity. Great artists like Leonardo da Vinci and Michelangelo were also great at science. Michelangelo knew a lot about how to quarry stone, not just how to be a sculptor. (Isaacson 2011, pp. 567–568)

In other words, innovation occurs at boundary networks of SC and networked SC where business women and me of different cultures and different specialist fields intersect (Kodama 2009). At the intersection of ideas, which are the boundary networks (Johansson 2004), employees like those at Apple must have courage to overcome and transcend the knowledge boundaries among themselves.

It is the context architect capability of business men and women mentioned earlier that draws people toward knowledge boundaries, and outstanding business people form certain SC and draw certain others they believe are necessary to them towards these SC to generate new knowledge high in quality. Furthermore, business people demonstrate behaviors such as voluntarily forming or participating in numerous different SC, circulating contexts and knowledge among different SC, and sharing and inspiring such contexts and knowledge among themselves. These are the behaviors that characterize the boundaries linking capability of business people, who execute the networking of numerous different SC (the networked SC). These context architect and boundaries linking capabilities generate new thinking, ideas and solutions necessary for formulating and implementing strategic goals, and they create practical processes for dynamic business persons who move back and forth between boundary networks consisting of formal and informal organizations.

In the same manner, boundary linking capability is also demonstrated at Cisco. As stated earlier, at Cisco promoting collaboration was an efficient method that drew out to the maximum the abilities of employees and enabled the organization to rapidly achieve success. Collaboration at Cisco does not refer to "joint efforts" but to the co-creation of new ideas through the gathering and cooperation of "human resources." Commitment to collaboration is included in Cisco's code of conduct, its leadership competencies and all five areas Cisco focuses on. Moreover, it is understood that changes in culture, process (exchanges between people) and technology are necessary to implement this smoothly. This boundary

linking capability that employees possess at Cisco forms networked collaborative organizations across business units, thereby making possible the processes of creative dialogue, understanding and cooperation, and rapid decision-making and action.

Chambers stressed that collaboration could effectively combine the capabilities of people belonging to the organization, enable them to mutually unleash their talents, and apply what they learn with agility to new market opportunities. Successful collaboration requires employees to have the boundary linking capability. At Cisco, collaboration is used not only in communications between the top, middle and lower layers, but also in meetings and problem solving.

Collaboration demonstrates results when all members of an organization understand the optimal method for sharing ideas and views. At Cisco, members are defined according to their method of thinking into four types: leaders, starters, planners and influencers. On some occasions teams are destroyed due to differences in communication styles. Therefore, members at times adjust their style somewhat to adapt to the style of others and to overcome mutual differences through productive and creative thinking. In this way, identifying partner and group types for engaging in communications allows for meetings where smooth, effective and creative dialogue may take place. In this way, creative dialogue promotes understanding and cooperation among employees and leads to a rapid decision-making and action as a company.

Nevertheless, collaboration is by no means an easy process, and the form and characteristics of collaboration change with changes in the environment and the situations employees face. It can be said that collaboration is not reproducible, that it is irreversible, and it is a non-routine activity of informal organizations of employees. This kind of strategic collaboration at Cisco demonstrates strength through the formation of SC and networked SC (boundary networks) through the boundary linking capability of employees.

3.3.5   Willpower Architect Capability

To maximize these four architect capabilities, the fifth architect capability required of practitioners is "willpower architect capability." Willpower is the energy and concentration of thoughts and actions that accompanies a sense of purpose (Bruch and Ghoshal 2004). Energy is vitality, and concentration is the ability to direct that energy to achieve a certain result.

Through trial and error, practitioners paint a clear picture of their intended strategy in their minds, with the most important factor being that they consciously dedicate themselves to bringing their intended strategy into being. To achieve these strategies intended for the future, it is imperative practitioners exercise their willpower as architects.

At Apple, willpower exists in the form of a solid, absolute value vision. Knowledge creation begins with the theory of existence of human beings as agents that create knowledge. In other words, it begins from the time we ask the question: "Why do we exist?" This question establishes the position and viewpoint the actor will adopt, and determines what kind of knowledge will be created. The German philosopher Martin Heidegger argued that true living for human beings was not becoming immersed in matters in the "here and now" but in establishing a stance for the "future" and living in fundamental time that looks directly at the present while reconstructing past experiences in a future context (Heidegger 1996). In other words, the past does not determine the future, but rather the way we envision the future determines the meaning the past and the present hold.

Such an absolute value vision will pervade a company and be ubiquitous among employees as willpower architect capability. Like Apple, truly innovative companies pursue an absolute value vision as the core of their strategic thinking. Absolute value visions arise from the most fundamental question managers must ask in regard to visions, that is, "Why do we exist?" At a commencement address at Stanford University, Steve Jobs told students, "So you have to trust that the dots will somehow connect in the future." Jobs was alluding to the idea that certain things cannot be brought about through planning and can only be understood retrospectively. Therefore, he advised, it is sometimes necessary to act on the belief that at some point things will connect. At that time Jobs also added with conviction, "This approach has never let me down, and it has made all the difference in my life."

Few would deny that Steve Jobs was the ultimate practitioner of new knowledge creation. In traditional Western epistemology, knowledge is defined as "justified true belief," but in knowledge creation theory (Nonaka and Takeuchi 1995) knowledge is defined as a dynamic human/social process of justifying personal belief toward the truth. In other words, the dynamic human process of sincerely facing and justifying one's personal beliefs (ideas), as Steve Jobs did, is in itself knowledge. The ideas (subjective view) an individual embraces are justified (objectivized) within the social dynamics the individual engages in with others and the

environment, and they are considered "truth." Knowledge is a process by which an individual continues to question ideals (truth, virtue, beauty) through interaction with others, and the essence of knowledge lies in the very interaction of such beliefs (subjective view) and their justification (objective view). It can be said that the thoughts and actions of Steve Jobs were none other than a knowledge creation process in pursuit of an ideal (truth, virtue, beauty). In such pursuits, however, the concept of absolute value achieved with willpower architect capability is important.

Having an absolute value vision rather than a relative value vision with others allows an individual like Steve Jobs to generate an intellectual passion for achieving significant ideals (truth, virtue, beauty) that transcend the individual's abilities and envision the profile of a knowledge system that has coherence. Apple may have been successful in creating a coherent business model of both hard and soft vertical integration because, instead of aiming to create value relative to that of other companies, it aimed to create a new experience for customers, an absolute value. The innovative, strategic course of action taken by Jobs that led from the successive realization of the iPod to the iPhone to the iPad could only be described as a knowledge creation process based on willpower architect capability for achieving the absolute value vision of "creating the future."

Absolute values emerge at the back of one's mind due to a strong will to "find something you like" as Steve Jobs suggested, and asking oneself the most fundamental questions like "Why do I exist?, What must I do?, What is most important to me?" This "absolute value strategy" based on an "absolute value vision" stemming from willpower architect capability was the very essence of Jobs' strategic thinking.

At Cisco, on the other hand, to help teams get a clear understanding of the goals and avoid miscommunication, VSEM was established as a "common vocabulary" for decision-making. The letters of the acronym VSEM stand for vision, strategy, execution and metrics. At Cisco, the VSEM of teams is disclosed throughout the company's intranet and is also adopted in performance assessments.

The document outlining the VSEM vision at Cisco is the "Vision Statement"; it clearly states goals that all staff members can share. Cisco's motto is "Changing the way we work, live, play and learn." The strategy (S) in VSEM briefly defines the method of moving toward the vision, and the role of the leader is to search and specify management resources and assets the team requires, and functions for formulating new strategy schemes. The execution (E) in VSEM means specific, practical

steps for supporting the strategy and achieving it over the short term or long term. When a team decides on an execution plan including, for example, a list of work tasks the team is to actually carry out, the leader will engage in open dialogue with the team members through collaboration. The execution plan assigns the persons who will take responsibility for which work operations, and the personal goals in employee performance assessments are tied to the team strategy. For the metrics (M) in VSEM, Cisco adopts a balance score sheet (BSC) where the responsibilities assumed by the team and the individuals become the criteria for assessment. In this way, managers are able to determine the overall progress in performance. Therefore, this VSEM is a trigger for inducing willpower architect capability in all employees.

While the VSEM indicates the direction in which a team is headed, there is also the "Team Charter," a separate document that guarantees the team is correctly managed and contains basic rules for achieving the goals. At Cisco, these documents are proven methods for promoting smooth communication and building relationships of trust. They are also concrete expressions of the team objectives, roles, goals and the scope of work. In this way, the clear establishment of a common vocabulary (VSEM) and a team charter eliminates team miscommunication and builds relationships of trust. At Cisco, it also embeds willpower architect capability in individual employees to enable them to respond quickly as they move toward the vision and engage in collaboration for the mission.

3.3.6   *The Five Architect Capabilities and Ma Thinking*

These five architect capabilities bring about the new ideas and solutions needed to set down and execute strategy (sometimes as demonstrations of serendipity) and give rise to the practical processes of practitioners dynamically moving back and forth between formal and informal organizations. It can also be said that these processes spur practitioners toward the five architect capabilities. Leading practitioners of Apple and Cisco, as mentioned earlier, have acquired the five architect capabilities in just this way.

In network theory (e.g., Kodama 2009), the practical processes in which these top company practitioners engage are recursively executed through the formal organizations as "centralized networks" and informal organizations as "distributed networks." In other words, practitioners achieve strategic objectives through dynamic recursion between formal and informal organizations and in the space-time of knowledge and contexts spanning knowledge boundaries.

Practitioners must not only adhere to fundamental rules and decision-making processes in formal organizations and communities of practice, they must also manage autonomous and decentralized challenging organizational actions in informal organizations while at the same time coordinate those informal organizations to expand and develop them. The context architect capability and boundary linking capability that practitioners have expands the dynamic range of their knowledge boundaries, and enables them to create hybrid networks that consist of the different centralized and distributed networks.

From the perspective of management, recursion and combination of hybrid networks have the following two meanings: the first is the partial optimization among all business elements (strategy, organizations, technology and operations, etc.) in formal organizations on centralized networks. Practitioners thoroughly recognize the common understanding in related organizations and at all management levels in informal organizations and promote optimization of all business elements in their own organizations to achieve consistency among these elements within the corporation.

Moreover, looking at strategic activity on the time axis, practitioners carry out business to execute strategy (including improvements and upgrades) in their own territories in formal organizations on centralized networks, while at the same time they take on the challenge of difficult problem solving or the creation of high quality business with new products and services through informal organizations on distributed networks. This enables both incremental innovation for sustainable growth and efficiency in existing business and radical innovation for business creation and growth in the long term. This can also mean that recursive practice activity between formal and informal organizations is organizational activity to adapt to dynamically changing environments; it also is activity to create new markets to develop new business.

Second, as practitioners seek consistency among business elements within their own organizations, they engage in correction and adjustment for overall optimization among business elements that span each formal organization by forming informal organizations. Through their hybrid network recursion and combination, practitioners are able to merge and integrate diverse contexts and knowledge both within and outside of their organizations to create an optimized management system throughout the whole company.

As a result, practitioners are released from the conventional management model of formal organizations by considering management from the

perspective of informal organization. Completely new management models are important for practitioners. In short, this means a management model that can dynamically execute strategy by flexibly changing informal organizations to respond to strategic objectives through recursion in hybrid networks responding to dynamically changing contexts.

This does not mean formal and informal organizations are polar opposites; they are in fact complementary. For practitioners not only to manage their own business domains but also to achieve solutions to problems and issues, and innovation to advance business by integrating dissimilar knowledge (to create new products, services and business models), they must engage in comprehensive practice to also find ways to manage informal organizations, since it is these organizations that promote the sharing of dissimilar contexts and knowledge.

At innovative companies like Apple and Cisco, practitioners must have Ma thinking, as described in Chap. 2, to demonstrate the five architect capabilities, integrate different kinds of knowledge (at times demonstrate serendipity) and achieve new value creation. Ma thinking, which is the source of thinking and behavior of innovators based on dynamic, recursive practice activities (between formal organizations and informal organizations) for achieving the strategy, has five characteristics: the Ma of context, the Ma of space-time, the mental Ma, the Ma of dissimilars, and the Ma of the spirit.

3.4   Ma Thinking at Apple and Cisco

3.4.1   *Ma of Context*

While Apple realizes the creation of products such as the iPod, iTunes and iPad that integrate highly complex "goods" (components comprised of diverse hardware and diverse software) and "services," and that involve a significant level of difficulty, Apple at the same time aims to achieve "simplicity" that might seem at odds with these. In other words, Apple achieves both "unity and simplicity" in the development of its products. In some ways, things that are simple are more difficult than those that are complicated. This is because making things simple requires enormous effort to elucidate ideas as well as complex integration mechanisms. However, the coexistence and balance of different contexts (integration and simplicity) in such product development design and technical design concepts are believed to be well worth the effort. As Steve Jobs said, "It's worth it in

the end because once you get there, you can move mountains." At Apple, Ma of contexts exists for balancing contexts of such paradoxical product concepts.

The expansion of Cisco's business areas through the acquisition of new capabilities based on a consistent strategy of M&A was, like Apple's approach, extremely simple. However, the thinking behind such M&A was to execute management that would provide for diverse business contexts involved in acquisitions including avoidance of clashes in corporate culture and evasion of conflicts of authority, and at the same time to demonstrate to the maximum the potential of the human resources acquired. It can be said that the existence of the context of Ma for balancing the different corporate cultures and the contexts of different thinking and behavior of employees is an element that established the competitive position of the company today.

3.4.2   Ma of Space-Time

Apple forms various Ma of space-time within the company and with customers. The Apple Stores, which are aimed at deep interaction with customers, are also "Ba of joint experience" as well as Ma for establishing intersubjectivity with customers. Apple refuses to undertake quantitative research through market research. This is because it believes it cannot get an adequate understanding of the customer from market research alone. Instead, through face-to-face encounters with users, Apple attempts to find invisible meaning and contexts underlying such data through "joint experiences." It can be said that Apple creates Ma of space-time with customers, and that the formation of these Ma serves as a trigger in the creation of more unifying Ba between customers and Apple. Moreover, it can be said that Apple Stores are Ba where customers and creators alike can share ideas and images. In Apple Stores, Apple employees mingle with customers. There the mutual interaction through customers' gestures, manner of speaking, actions and atmosphere inspire new tacit knowledge.

At the same time, Jobs expressed the following view,

> Some people say, "Give the customers what they want." But that's not my approach. Our job is to figure out what they're going to want before they do. I think Henry Ford once said, "If I'd asked customers what they wanted, they would have told me, 'A faster horse!' People don't know what they

want until you show it to them. That's why I never rely on market research. Our task is to read things that are not yet on the page. (Isaacson 2011, pp. 567–568)

As Jobs indicated, the source of the power to foresee what others cannot see is a form of marketing based on tacit knowledge, and can be interpreted as the formation of Jobs-style Ma of space-time.

Moreover, networked collaborative organizations that are a characteristic of the organizational morphology of both Apple and Cisco, where Ba architect capability is demonstrated, exist everywhere in both organizations. The basic forms of the constituent elements of networked collaborative organizations are strategic communities, comprised of formal organizations with a flat organizational structure (in the case of Apple, functional organizations, and, in the case of Cisco, business divisions) and informal organizations made up of various business persons from the formal organizations, as well as networked SC or boundary networks, which are informal organizations that cross over SC. The back and forth movement of business persons between these formal and informal organizations results in broadening the dynamic range of knowledge boundaries of practitioners, enhancing their cognitive ability in different contexts and knowledge, and dynamically linking and mutually connecting different knowledge boundaries to enable them to take on new challenges and solve problems. It is the existence of Ma of space-time that connects the back and forth dynamic movement between these formal and informal organizations.

3.4.3   Mental Ma

It can be said that the formation of human networks through the formation of mental Ma engendered the success of Apple's new business. To convince the five major music labels to accept Apple's business proposal, Steve Jobs himself visited each of them and engaged in all negotiations and bargaining. He approached them by forming human networks with Hilary Rosen, CEO of the Recording Industry Association of America, and Barry Schuler, CEO of the AOL division of Time Warner. Unlike the development of previous Macs and the iPod, in the development of its music business Apple instigated various conflicts in psychological states of mind in its coordination of business and negotiations with business persons

of different corporate cultures and business customs in the music industry, a business sector with which Apple had no previous dealings, and Jobs forged ahead with business to achieve the absolute value vision Apple itself embraced.

While respecting the customs and culture among different industries, Apple constructed "mental Ma" between both parties to enable the coexistence and balance of disparate psychological states, and constructed and maintained mutual human networks. Therefore, the success of Apple's music delivery service based on iTunes and the iPod owes a lot to the human network architect capability achieved through the formation of mental Ma by Steve Jobs.

Moreover, Jobs placed significant value on hiring talented people and on the teamwork achieved by those talented people. As mentioned before, he had an amazing ability to nurture outstanding creativity in others and to identify people with talent, hire them, and retain them as well as create teams made up of such people. Jobs stood out from others in his ability to create an environment where magical events would occur. To acquire such outstanding human resources and form teams, Jobs devoted efforts to the formation of mental Ma among members to adeptly establish coherence in the psychological states of Apple's diverse human resources. Furthermore, in a similar manner, Cisco's executive officers and senior managers also created mental Ma as time spaces where different psychological states could coexist and be compatible among practitioners within the company based on the 13 principles of the code of conduct as the corporate culture. Moreover, they encouraged the voluntary and autonomous building of human networks and mutual collaboration.

As indicated in Chap. 2, Berque (1982) argued that "Ma" were born from the conjoining (connecting) of emptiness (vacuum, silence, stasis, cessation) and countless possible contents. From the perspective of communication theory and linguistics, in the continuance of information put forward by the sender, a free zone is established with Ma, and the receiver fills in the meaning in a straightforward manner as the receiver wishes. It can be said that the formation of human networks at Apple and Cisco allowed for various individual interpretations of meaning amid disparities in various psychological states including coordination and negotiation with business persons, and unconsciously (or consciously) formed mental Ma as time-spaces where different psychological states can coexist and be reconciled.

3.4.4   Ma of Dissimilars

Hasegawa (2009) developed an argument focusing on the coexistence of disparities and the characteristic of Ma in Japanese culture. According to Hasegawa, the source that harmonizes and allows for the coexistence of different "things" and "aspects," and newly creates them is the "power of Wa" and the platform that creates this "Wa" is the existence of Ma. He also states that Japan has absorbed various ideas from other countries and has formed its unique culture through coexistence of these ideas based on superb Ma. In Chap. 2, the author also stated that while synthesizing various contradictions that arise in the course of people's everyday practical activities, time-space for balancing these are Ma, a third area.

If we comprehensively consider Berque's (1982) viewpoint of Ma as being born from the conjoining of emptiness and the countless possibilities of content, and the viewpoint of Ma being a function that coexists with disparate things as argued by Hasegawa (2009), we can think of Ma as phenomena that have the characteristic of conjoining and balancing various paradoxes (including countless possible substances). Therefore, the existence of Ma at the boundaries between different things (mentality, knowledge, etc.) can also be interpreted as being indicative of a holistic relationship enabling continuous and non-continuous connections of different "phenomena" and "things."

As previously mentioned, the emphasis at Apple is on the formation of SC as informal organizations (as well as boundary networks, or networked SC) for the success of new product development and new business development. At Apple, the formation of boundary networks makes it possible to establish mutual trust among practitioners and promote collaboration at different knowledge boundaries by establishing common ground (Bechky 2003), such as common interests among business persons, and by transforming mutual abrasion and conflict into creative abrasion (Leonard-Barton 1995) and productive friction (Hagel and Brown 2005). Creative dialogue that forms common ground enhances the cognitive capability of business persons with regard to different contexts and knowledge and at the same time encourages creative collaboration among different specialist areas and departments.

Innovation occurs at SC and boundary networks, where business persons of different cultures and different specialist fields intersect (Kodama 2009). The existence of "Ma of dissimilars" creates intersections of ideas (Johansson 2004) (boundary networks). Apple employees intentionally

form Ma of dissimilars and therefore overcome and transcend knowledge boundaries between business persons.

Likewise, at Cisco the existence of Ma of dissimilars can be found within the company. There, promoting collaboration is viewed as an efficient means of enabling the company to draw out the capabilities of employees to the maximum and swiftly set the organization in motion to achieve success. Collaboration in this context means "co-creation" of new ideas through the gathering and cooperation of "human resources." This boundary linking capability based on the formation of Ma of dissimilars that employees possess forms networked collaborative organizations across business units, thereby enabling the processes of creative dialogue, understanding and cooperation, as well as rapid decision-making and action.

3.4.5   *Ma of the Spirit*

As we have noted, at Apple, willpower exists in the form of a solid absolute value vision. Making an ongoing commitment to such an absolute value vision is no easy matter. However, truly innovative companies must pursue an absolute value vision as the core of their strategic thinking. Repeating the earlier idea of German philosopher Heidegger, true living for human beings is not to become immersed in the present to establish a stance for the future and live in fundamental time that looks directly at the present while reconstructing past experiences in a future context. The past does not determine the future, but rather the way we envision the future determines the meaning held by past and present. Therefore, as a company grows its management team deeply internalizes the past in a way that permits its using time and opportunities to join the present and the future. To be precise, the future (vision) is the springboard for internalization. On occasion, it is necessary to discard successful experiences and use space-time for contemplation of a new absolute value vision. In regard to the most fundamental question of vision, that is, "Why do we exist?" and having the kind of mind (that is, spirit) that Steve Jobs refers to when he said, "So you have to trust that the dots will somehow connect in your future," Berque's (1982) viewpoint that Ma are born from connections between emptiness and the countless possibilities of content makes sense. In that regard, the Ma of the spirit as a consistent innovator is important.

At Cisco too, for the company to succeed in a consistent M&A strategy, "strategic collaboration management," which was also an absolute value vision, permeated the company with uniformity. Therefore, at Cisco

management repeatedly internalizes in its work to eliminate team miscommunication, build relationships of trust, and enable employees to respond quickly as they move toward the vision and engage in collaboration for the mission by clearly establishing a common vocabulary (VSEM) and a team charter. Furthermore, individual employees consistently improve and refine their work on a daily basis to achieve better results, and they execute the strategy with short-term and long-term thinking. Therefore, individual employees including management require time and opportunities for internalization, and these are also necessary for the Ma of the spirit.

This Ma of spirit as the springboard for such internalization can also be interpreted as being in the background of the realization of a transcendental hypothesis when considered from the perspective of Husserl's phenomenology. Putting aside judgments on the question as to what something is, irrespective of whether it is a thing or a situation, and instead considering only the phenomenon the thing or situation "appears" before one (me) as the issue is "phenomenology." Husserl referred to this attitude as "bracketing" (epoché). When we see or grasp a thing or a situation or look at the world at large, we have a preconceived notion of the existence of that thing or situation. Husserl refers to this as "belief in existence," and this poses the greatest obstacle in philosophy. To eliminate various preconceived notions such as "the self exists, the world exists, nature exists, and society exists," Husserl advocated the method of "phenomenological reduction."

According to Husserl (1970), phenomenological reduction requires us to change our view of natural phenomena by 180 degrees to "a view that sees things phenomenologically." The view of natural phenomena considers things on the basis of self-evident premises such as "I exist" and "the world exists" as mentioned earlier. To transform the above notions to a phenomenological viewpoint, Husserl argues that it is necessary to clarify what mechanism determines what the self and the world are made up of by going back to human consciousness, which establishes such notions, which may or may not exist.

Based on the teachings of phenomenology, this can be interpreted as the emergence of an "image of conviction" (transcendence) achieved by having all members return to the area of pure consciousness to find conditions for establishing conviction (immanence) through transcendental subjectivity. All individuals are endowed with immanence but "transcendence" never arrives at an absolute conviction. This is because in the area of "immanence," which is the world of conscious experience, immanence

changes dynamically with chronological changes in the flow of individuals' experience, and attitude and will toward strong phenomenological reduction of individuals becomes capable of the realization of a new common structure.

From a practical viewpoint, to achieve "transcendence" as an absolute value vision that will continue to change and grow from the past to the present to the future, practitioners can achieve ongoing innovation through the intentional (in Husserl's words, "intentionality") creation of an immanent area, which is subjective transcendence. The springboard or trigger for returning to the area of pure consciousness in this way and discovering the conditions of establishment of conviction (immanence) based on transcendental subjectivity is essentially the Ma of spirit.

3.5   Summary of the Chapter

As explained in the chapter, both Apple and Cisco embedded within their companies five architect capabilities: Ma of context, Ma of space-time, mental Ma, Ma of dissimilars, and Ma of the spirit. These five types of Ma thinking created their own context architect capabilities, Ba architect capability, human network architect capability, boundaries linking capability, and willpower architect capability, respectively.

Moreover, to overcome paradoxes in various elements, practitioners of Apple and Cisco not only dynamically move back and forth between practical activities in formal and informal organizations but also establish Ma thinking through their paradoxical, dynamic movement in strategic thinking and innovation processes. Ma thinking synthesizes diverse paradoxes, and leads practitioners to the five architect capabilities to achieve strategies they are aiming to achieve through optimal methods.

As in Apple and Cisco, Ma thinking becomes the very trigger that "promotes a balance between creativity and efficiency" in people and organizations to achieve business innovation. Of particular importance are the dynamic thinking and practices that practitioners, as micro agents, execute intentionally (or unintentionally) not only in formal but also informal organizations, based on Ma thinking, which strategically creates new business innovation. In areas where "a tug of war and contradiction between efficiency and creativity" are apt to arise, the Ma thinking of practitioners becomes an important element in generating high-quality business innovation.

Notes

1. Brown (2005, p. 1230) stated, "Chance encounters, accidental occurrences and sheer good fortune loom large in business life. Everyone is familiar with the fortuitous stories mentioned … as well as with others such as those of Velcro, Corn Flakes, Band Aids, Post-it Notes and Nike's waffle sole, to say nothing of Teflon, Kevlar, dynamite, artificial dyes, polyurethane and penicillin."
2. Refer to Brown and Duguid (2001), Dougherty (1992), Spender (1990) and Grinyer and McKiernan (1994) regarding knowledge boundaries, thought-worlds and mental models, respectively.

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Managing Serendipity Through Ma Thinking: Lessons of the Invention and Commercialization of Blue LED (Awarded the Nobel Prize in Physics)

Mitsuru Kodama and Takehiko Yasuda

4.1 Serendipitous Invention of Blue Light-Emitting Diode (LED) and Its Practical Application

The high-luminosity| blue light-emitting diode (LED) made it possible to build large-scale, full-color displays taller than people in the mid-1990s and contributed to the creation of liquid crystal display (LCD) color screens for mobile telephones around the year 2000. This technology became the basis for the development of the blue laser, and its commercialization resulted in various products including Blue-ray players and recorders capable of recording high definition television (HDTV) content. High luminosity blue LED enabled the creation of a wide range of colors in combination with red and green LEDs and opened up the enormous next-generation low-energy lighting market poised to supersede the market for incandescent and fluorescent lighting.

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The practical application of this blue LED as well as the blue-violet semiconductor laser were achieved by Shuji Nakamura, a researcher of a mid-sized regional company, and the impact his achievements had on the business world were immeasurable. The strong character traits that enabled Nakamura to achieve what researchers at major companies could not were a tenacious power of concentration and an entrepreneurial spirit. The very fact that he was not among elite researchers of a large corporation allowed him the leeway to accomplish remarkable feats.

With net sales of approximately JPY 40 billion and 1500 employees,[1] Nichia Corporation is a mid-sized manufacturer. From 1993 onwards, Nakamura achieved a number of astonishing results in rapid succession. The first was the commercialization of highly efficient blue LED, which Nichia announced at the end of November in 1993. Using a semiconductor to convert electric currents to light, LED generates less heat and consumes less electricity than ordinary light bulbs. Although there were already high expectations that LED could be used to replace conventional light bulbs, only red and green had been commercialized by that time, but blue LED remained a long way from the commercially viable stage. (Light's three primary colors are red, green and blue.) Nakamura was the first to bring blue LED to the practical application stage, outsmarting elite scientists at major corporations such as Matsushita Electric Industry (current Panasonic), Sony, NEC and Toshiba.

The impact the commercialization of blue LED had on industry was phenomenal. The availability of red, green and blue made it possible to create full color displays using LED. Furthermore, the use of LED light as the light source for traffic signals would make it unnecessary to change light bulbs every six months. From 1994 onwards, Nichia Corporation commenced the mass production of blue LED. At present Nichia's blue LED business continues to grow as a new source of revenue, second only to phosphor materials, the company's mainstay products. Blue LED was not Nakamura's only research achievement, however. As his next task, he set about making blue semiconductor laser a commercially viable technology, which nobody had yet succeeded in doing. In August 1997, Nakamura extended the continuous laser irradiation period (lifetime) to 300 hours, surpassing by far the 101-hour record set by Sony up until then. In October of the same year, he extended the lifetime to 10,000 hours, at last bringing it to the level required for commercialization. Thanks to Nakamura's achievements, Nichia Corporation was able to begin shipping samples of blue-violet semiconductor lasers with waves shorter than blue

semiconductor lasers. In this way, a lone Japanese inventor took the lead ahead of the world's major corporations.

Now the world's leading company in the field of LED, Nichia Corporation was completely unknown prior to its success in developing and commercializing blue LED technology.

However, from the perspective of business and management, it is not an overstatement to say that the integration of the serendipity demonstrated by researcher Nakamura together with the understanding of the company's management led to one of the last great commercial inventions of the twentieth century. Ma thinking existed in Nichia's business strategies.

Researcher Nakamura did not follow the company's official main business strategy in the course of his research at the time. He actually strongly lobbied the then CEO and founder of the company, the late Nobuo Ogawa, for permission to proceed with R&D into blue LED, which Ogawa granted. Using his willpower capabilities of confidence and patience, Nakamura conducted experiments repeatedly every day, learning from a range of trials and errors. To discover new phenomenon in experimental science or make new inventions, practitioners must engage in both creative and emergent trial and error. It is no exaggeration to say that the degree of good fortune researchers encounter is determined by the degree to which they involve themselves in the area of tacit knowledge and the extent of their creativity.

Nakamura said that one factor of his success lay in the experimental process (Nikkei Technology On-Line 2014). He built his own experimental apparatus, ordering and assembling parts as required, and modifying and improving them as he experimented. Thus, as the experimental equipment became more and more like an extension of Nakamura's own body, he began to understand the ins and outs of every aspect of his research, its strengths and weaknesses, and thus was able to go on to invent a new technique for growing crystals called "two-flow metal organic chemical vapor deposition (two-flow MOCVD). This enabled him to create high quality GaN thin film (later InGaN), a key material[2] required for commercialization of blue LED.

Nakamura had to come up with a number of approaches. In August of 1998, he ran trials of methods introducing four types of gas; in the beginning of September, he discovered that introducing gas with a two-flow method[3] from the side and above the substrate was an effective and successful way of growing the film. The new awareness and inspiration he obtained from this serendipitous process enabled him to create the high quality thin film needed to make blue LED.

In contrast, other researchers in a large corporate R&D department investigating blue LED did not design or assemble their own experimental equipment, opting instead to have customized experimental apparatus provided by a semiconductor equipment manufacturer. These were clear differences between Nakamura—a researcher who engaged in the detailed practice of trial and error with a range of experimental parameters needed to make thin film, such as the substrate temperature, gas flow rates, deposition angles and chamber configuration—and researchers in large corporations who left such details to an external semiconductor equipment manufacturer.

This chapter examines the differences in knowledge and information from the viewpoint of knowledge theory and the importance of the tacit knowledge Nakamura possessed. Dr. Ryoji Noyori, a recipient of the Nobel Prize in Chemistry, stated the following in regard to the acquisition of knowledge and information:

> In reality, information is not power; knowledge is power. What a teacher imparts is information. You turn that information into power (knowledge) by making it your own. Information is something belonging to other people. Knowledge is something you hold onto as your own. You have to keep it in your mind. Therefore, unless you actively practice, apply, review and revise it, it will not remain firmly in place as your own. This is a cardinal rule.

From this perspective, laboratory equipment is information and corresponds to static, explicit knowledge, accessible to researchers in the same areas of specialization the world over. However, the "unification of the lab equipment and Nakamura as the researcher" enriched Nakamura's tacit knowledge of the lab equipment, enabling him to achieve a breakthrough in GaN thin film, which was new explicit knowledge. There is a common thread between the "unification of the lab equipment with the researcher" and the "unification of ICT (information and communications technology) and people" (Kodama 2007b, 2009): the extent to which people are able to engage in creative areas of tacit knowledge through their interaction with physical resources such as lab equipment and ICT triggers new tacit knowledge and innovation.

In terms of R&D management at the company, the forbearance of the company founder, the late Nobuo Ogawa enabled the serendipity to bloom. The founder understood the various risks involved in granting

Nakamura his request to research the blue LED with a degree of freedom and discretion and to engage in research activities using substantial sums of capital resources. The current president and CEO Eiji Ogawa[4] also had a deep understanding and was prepared to turn Nakamura's serendipitous achievement of the blue LED into a new business. Blue LED proved to be the last great invention and commercialization of a product in the twentieth century.

In analyzing the process of moving from basic research to development and commercialization of product, Nakamura's informal, autonomous decentralized strategy of trial and error on the front line of research was a novel environment constantly full of uncertainty and risk, in which emergent and accidental serendipity led to radical (or discontinuous) innovation. On the other hand, the management team in charge continued with planned and intentional strategic activities for incremental innovation through the systematized and centralized formal organizations where risks were low, to proceed steadily with existing business. Thus, the strategic and organizational activities of Nakamura and the management team were diametrically opposite.

Nevertheless, it was in fact the intentional integration of Nakamura's serendipitous awareness as a researcher and the deep understanding of it by management and their conscious integration that drove the dialectical processes of dynamic recursive practice activities between management and Nakamura. The latent fruit of the serendipity of new ideas enabled by Nakamura's trial and error was fully harvested in the execution of a carefully considered strategic grand design by the management team, which in turn led to the last major successful product invention and commercialization in the twentieth century.

This case suggests Ma thinking in the individual practitioner's business strategy and in the strategy shared by the other practitioners is necessary for driving the dialectical processes of dynamic recursive practice activities. The next section will discuss in detail Ma thinking and the five architect capabilities for promoting such dialectical processes.

4.2   MA THINKING AND ARCHITECT CAPABILITIES

Through dialectical processes, "Ma thinking" achieves integration of diverse paradoxical elements centered on serendipity. This section discusses in detail the elements of this Ma thinking and architect capabilities based on it.

4.2.1   *The Ma of Context and Context Architect Capability*

The first element of Ma was Nakamura's rationale in tackling new product development, and this rationale was the proposition of harmonizing a technological viewpoint with the viewpoint of the customer. In other words, the need for the existence of a "Ma of context" that would strategically reconcile the paradoxical context of technology and the market was necessary for Nakamura. In the approximately ten years since joining Nichia until commencing the development of the blue LED, Nakamura had—without realizing it—learned two important lessons as an engineer. The first: while it is important to know how to develop things, it is more important to understand "what you are making." The second: to understand what should be made, engineers themselves need to engage in dialogue with their customers, actually going to the manufacturing floor as well as knowing what is happening on the front line of business. Superior technology alone does not directly result in products that sell. Products are things that customers need, whereas superior technology on its own is simply technology or the pursuit of science. An orientation toward technology alone does not sell products. Amid his many disappointments and very few successes, the ten years Nakamura spent after joining Nichia was a period during which he came to keenly sense the importance of developing a "technology that sells."

In retrospect, all of his work during this period served as the foundation that enabled the successful development of blue LED. In the course of his activities to create a new product, Nakamura continually drove the dialectical processes of dynamic recursive practice activities at the boundary of the two different contexts of "technology and the market." For Nakamura to drive such dynamic dialectical processes, he needed to be constantly aware of productive conflict and friction by creating a certain "Ma at the boundary between technology and the market." The existence of this Ma caused him to "draw towards knowledge boundaries" he possessed, making him aware of the tacit context of determining how to connect the market and technology (that is, the importance of marketable technology) and let him demonstrate "context architecture" for creating new contexts.

4.2.2   *The Ma of Space-Time and Ba Architect Capability*

The second element of Ma was dynamic recursive practice activities at the boundaries of the different time and space axes of management and Nakamura' s research and development site. To drive the dialectic process

at boundaries of different space-time, a Ma of space-time was necessary. Nakamura asked Nichia's founder and president, Nobuo Ogawa, permission to develop blue LED. Ogawa, for some reason, readily consented. Believing he was joking, Nakamura explained, "It will require a budget of several hundred million JPY," but the president, seemingly unfazed, simply said, "No problem." For some unexpected reason, everything was decided and for Nakamura there was no turning back.

When Nakamura announced he would like to engage in the development of blue LED using gallium nitride as a material, Eiji Ogawa, who had become the company's second president, allocated a sum of JPY 500 million for research, an amount equal to 3% of Nichia's sales at the time. Regarding the decision, Eiji Ogawa later commented, "I understood this was an indulgence and I wanted to take a gamble." The president in fact had extremely high regard for Nakamura's talents and entrusted the future of the company to his creativity. And, he all too well aware that if small- to medium-sized companies are to survive amid large companies, they must outwit those large companies by succeeding in some original development, and he had a strong conviction not to copy others. Nakamura's original research challenge wholly coincided with this conviction of Ogawa.

In efforts to combine existing business and the new business of making blue LED a marketable product, management of Nichia at the time created a "Ma of space-time" at the boundary of these two different businesses and gave Nakamura significant freedom and authority. For the company, the formation of this Ma promoted the intentional integration of Nakamura's serendipitous awareness as a researcher with the deep understanding of management about serendipity. This drove Nakamura and the management team's dialectical processes of dynamic recursive practice activities between existing business and new business and enabled Nakamura's team to realize within the project the formation and sharing of new contexts for new product development. As the same time, new Ba (shared context in motion) was formed. In other words, this Ma of space-time caused Nakamura to create Ba architect capability. Ba serves as the space-time stage for dialogue and practice for new knowledge creation in the form of new product development. Ba was a psychological rather than a physical place for Nakamura and others. To create what constitutes a Ba a context must be shared. Context is not static: context becomes dynamic through factors such as time and place, team members led by Nakamura who comprise the Ba, the relationship with the management team, circumstances and so on. While individuals create their own particular

contexts through their respective historical path dependence, when those individuals come together, various contexts come to be shared through the formation of Ba. Furthermore, knowledge develops and becomes manifest in dynamic contexts (time, places and relationships with people).

4.2.3   *Mental Ma and Human Network Architect Capability*

The third element of Ma was mental Ma, which existed at the boundary of the existing business and Nakamura's project in new product development. Sales generated from work in the development division to which Nakamura belonged were very modest in comparison with sales of phosphor materials, Nichia's mainstay products. Therefore, the development division came under rather severe criticism within the company, and Nakamura on a number of occasions felt humiliated. Through these trying experiences, he became increasingly conscious of the fact that even if his development efforts were to succeed, the result would have no meaning unless it could sell. And if it did not sell, his efforts would not be recognized. Keenly aware of his position, Nakamura decided to abandon the development themes he had been assigned by the company and tackle research themes of his own choice. It was at this time that he settled on blue LED. This was because he believed there was a strong latent need for it, and he was confident it would sell without fail if he could commercialize it.

In the previous ten years, Nakamura had gotten firsthand experience in LED materials from the growth of crystals to LED light bulbs, and he was confident that if he consolidated his knowledge and experience he would be able to come up with a final blue LED product. Understanding the negative feelings of staff in the existing organizations, Nakamura created a certain "mental Ma" at the boundaries with members of the existing organization to inspire in them his own confidence and conviction in a highly risky development area. Moreover, at around this same time, management began to make funds and human resources available to Nakamura's research group, indicating the president's eagerness for commercialization of Nakamura's research. The company had already invested in research for the GaN light-emitting diode in units of hundred-million JPY. For Nichia Corporation, this was as bold and unprecedented a decision as jumping from the balcony stage of Kiyomizu Temple.[5] The president wanted to translate this technology into sales as soon as possible. He was the person

who decided to invest in this research and it was only natural he would feel this way. To Nakamura, however, the president's plans became a significant obstacle standing in his way. "A p–n junction is a boundary or interface between two types of semiconductor material, p-type and n-type, inside a single crystal of semiconductor" see Sze and Ng (2006).

Nakamura, however, had already washed his hands of the p–n junction and wanted to proceed with his research of a double heterostructure. He was quite confident he could achieve results in this area in a short time. First, he tried to control the situation by making a breakthrough on this single issue, to gain the president's understanding by explaining the need to change to a double heterostructure. But his efforts were in vain; president insisted he bring his research results to the product stage as soon as possible and refused to compromise. Nakamura decided to appear as if he were assenting when the president gave him pep talks, urging him to hurry up with completing the p–n junction product. Nakamura would simply nod and say, "Yes, yes. I understand." But Nakamura had no intention of moving ahead with research on the p–n junction and instead immersed himself in research of the double heterostructure in his lab. While Nakamura understood the feelings of the president (and at the same time productively deceived him), he created a certain "mental Ma" at the boundary with the president to achieve the development of the double heterostructure, about which he was strongly confident.

To build relationships with members of existing organizations and the president, in a certain sense Nakamura needed human network architecture capability. For Nakamura, management and the employees of the existing organizations, the formation of such mental Ma would drive dialectical processes in the form of dynamic recursive practice activities centered on dissimilar mental axes. It could be said that the intentional integration of Nakamura's serendipitous awareness as a researcher with the deep understanding of management about serendipity took place in the mental Ma at the boundary between Nakamura and management.

Dynamic interaction of human networks centered on dissimilar mental axes within the company productively (or counterproductively) created new contexts and knowledge. Nakamura intentionally (or as an unintentional result) created new productive contexts by crossing organizational and knowledge boundaries within the company and, in so doing, created human networks that originated with the formation of Ba centered on his own project team. Nakamura's physical and psychological transcendence and overcoming of organizational and knowledge boundaries triggered in

him a new perspective, which in turn triggered context architect capability, Ba architect capability and human network capability for building relationships with members of the existing organizations and the president.

4.2.4   The Ma of Dissimilars and Ba Linking Capability

The fourth element of Ma was the existence of the Ma of dissimilars, which allowed for the reception of new, different knowledge through serendipity, expanding the transcendence capability of Nakamura's own diverse knowledge for achieving success in new product development. The existence of a Ma of dissimilars triggered in Nakamura himself dialectical processes of recursive practice activities across dissimilar areas and promoted the acquisition and accumulation of new knowledge. For over ten years of unyielding tenacity, Nakamura's early period of employment was spent welding glass day in and day out. He also endured explosion accidents day after day, and he spent time studying in the United States, driven by the desire to fabricate equipment. These periods in his life were fraught with hardship. However, all the efforts he thought would yield rewarded became fertile ground where exquisite flowers later bloomed in new product development.

Nakamura's success was owed to his triumph over various knowledge boundaries. All his equipment fabrication served a purpose and became sustenance that would nurture successful development of blue LED. His extensive experience welding glass and fabricating piping and equipment allowed him to create and rework MOCVD systems with ease. His previous, bitter experience of being unable to compete with major manufacturers in spite of his successful developments convinced him to "do what others won't do," the conviction that drove him to succeed. Even his experiences with explosions in laboratory equipment were a positive factor, fostering his courage to make bold efforts in reworking the MOCVD system, which was said to be dangerous. Every cogwheel in his past experience contributed to his success in realizing the blue light-emitting diode. Moreover, every aspect of his own personal experience starting with research to manufacturing and quality management, to sales and PR activities of explaining products to customers and entertaining them, as well as the importance of developing "technology that sells" formed the foundation for achieving success in the development of blue LED.

This significant transcendence of knowledge boundaries in dissimilar areas of specialization developed in Nakamura "boundary architect capability." To

create new knowledge high in quality toward the development of blue LED, which nobody else had yet achieved, Nakamura discarded all the existing knowledge of his predecessors and, spent hours engaged in activities that inspired and created new, original knowledge. Crossing dissimilar contexts and knowledge, Nakamura promoted the linking of knowledge boundaries to achieve the integration of dissimilar knowledge (Kodama 2012, 2014). To drive the dialectical processes of dynamic recursive practice activities centered on such diverse, dissimilar knowledge boundaries, the existence of a Ma of dissimilars was essential, an unintended practice process that created boundary architect capability enabling him to achieve the integration of various types of dissimilar knowledge (not only practical skills in all specialist areas such as R&D, manufacturing, sales and support but also in practical skills and know-how in individual academic areas such as materials engineering, electronics engineering, chemical engineering and mechanical engineering).

4.2.5   The Ma of the Spirit and Willpower Architect Capability

The fifth element was that Nakamura's serendipitous awareness and management's deep understanding and acceptance of it, which was vital to the "latent fruit" for creations to come. Because of this understanding and acceptance, management mobilized company-wide management resources and created a "Ma of the spirit" that generated strong motivation in the form of energy and concentration for achieving the commercial viability of blue LED.

So, besides Nakamura's unique approach to research and the support of Nichia's top management, Nakamura's creativity bore fruit for another reason: his power of concentration—or willpower. Nakamura possessed a personality that did not allow him to leave unresolved any problem that stood in his way, being more fired up the more difficult the challenge, and pushing himself headlong into it. From morning till night, seven days a week, he thought of nothing else. Even when he at the workplace, he neither attended meetings nor answered his phone. This power of concentration brought groundbreaking results. Repeating many experiments over and over again, Nakamura had the ability to notice the slightest change and to determine whether or not the change was an essential difference. With the conviction to "do what others won't do," Nakamura achieved stunning results by ignoring what other major corporations were doing. The president also had the strong conviction "not to rely on others." He himself had succeeded in life through his own efforts and insisted that

people at his company also rely on their own efforts. It was the existence of this "Ma of spirit" possessed by Nakamura and management that mobilized management resources throughout the company and generated strong willpower in the form of energy and concentration to achieve a viable product.

The willpower of Nakamura and the management team gave rise to elements of energy and a concentration for thoughts and actions to exist in tandem with a sense of purpose. Energy is vitality, and concentration is the ability to channel that energy to achieve a certain result. Through a process of trial and error, Nakamura mapped out in his mind his own clear strategy for achieving blue LED. He then gave his undivided attention to consciously achieving his strategy, which for him became more important than anything else. At the same time, although they did not have full knowledge of the details of the research and development, the company's managers had confidence in Nakamura as a capable employee and entrusted to him every detail of the project, while they focused their energy on providing ample resources for steering the company in the direction of the future. Essentially, Nakamura and management were "architecting" the willpower they had for realizing a determined future strategy. To reconcile the existing and future business of the company as a whole, Nakamura and management created a Ma of the spirit to drive the dialectical processes of recursive practice activities at the boundary of the current business and new business.

These five types of Ma thinking were to give rise to "five architect capabilities" in Nakamura and management for new innovation, in this case, the blue light-emitting diode. The existence of Ma thinking in the above business strategy of Nakamura and management paved the way for fortuitous serendipity that led to success in making blue LED commercially viable, a feat that was widely believed impossible to realize in the twentieth century.

4.3   Seven Elements Promoting the Five Architect Capabilities

As mentioned earlier, a characteristic of Ma is the demonstration of Ma thinking either consciously or unconsciously at the front line of innovation in new product development by innovative practitioners and their achievement of innovation. The theoretical and practical importance of the concept of Ma lies in the thoughts and actions of practitioners who demonstrate

the five architect capabilities mentioned earlier in new innovation activities. Existing in Ma are dynamic characteristics that enable recursive practice activities with diverse paradoxical elements that enable the integration of dissimilar knowledge (and at times demonstrate serendipity) and the reconciliation of these. The characteristics of these invisible boundaries become Ma characteristics. In reality, the world's leading innovative companies and outstanding practitioners unconsciously (or consciously) understand and apply the concept of Ma to these invisible boundary characteristics of Ma and promote the synthesis of diverse paradoxes through dynamic recursive practice activities.

As in the case of blue LED, Nakamura and management directly faced and dynamically synthesized strategy-making paradoxes (for example, deliberate vs. emergent and intentional, and planned vs. accidental and emergent) as well as innovation process paradoxes (principled, regulated and managed for the short term vs. trial and error, learning from failure and challenges for the long-term) (see Fig. 4.1).

Moreover, Nakamura and management not only engaged in dynamic recursive practice activities centered on a range of paradoxes but also activated the five types of Ma thinking mentioned above through paradoxical and dynamic recursion in their strategic thinking and innovation processes. Furthermore, Ma thinking synthesizes wide-ranging paradoxes and drives the five architect capabilities in practitioners to enable them to achieve their strategies to fulfill their objectives using the best methods.

Through analysis of the example of blue LED, the author now describes the "seven elements" that promote the five architect capabilities discussed above. The seven elements that Nakamura and management promoted are: the dynamic range of knowledge boundaries, creative discipline, creative dialogue, creative abrasion, boundary vision, creative doubt, and creative self-negation. These seven elements promote the formation of Ma and demonstration of the five architect capabilities (see Fig. 4.1).

4.3.1   *Dynamic Range of Knowledge Boundaries*

The dynamic range of knowledge boundaries promotes the Ma of context and context architect capability. "Dynamic range of knowledge boundaries" refers to the scope of change in contexts and knowledge as well as the breadth of ability that practitioners have in perceiving various values and diversity. Elements that allow diverse contexts to dynamically coexist and reconcile with each other are also capabilities
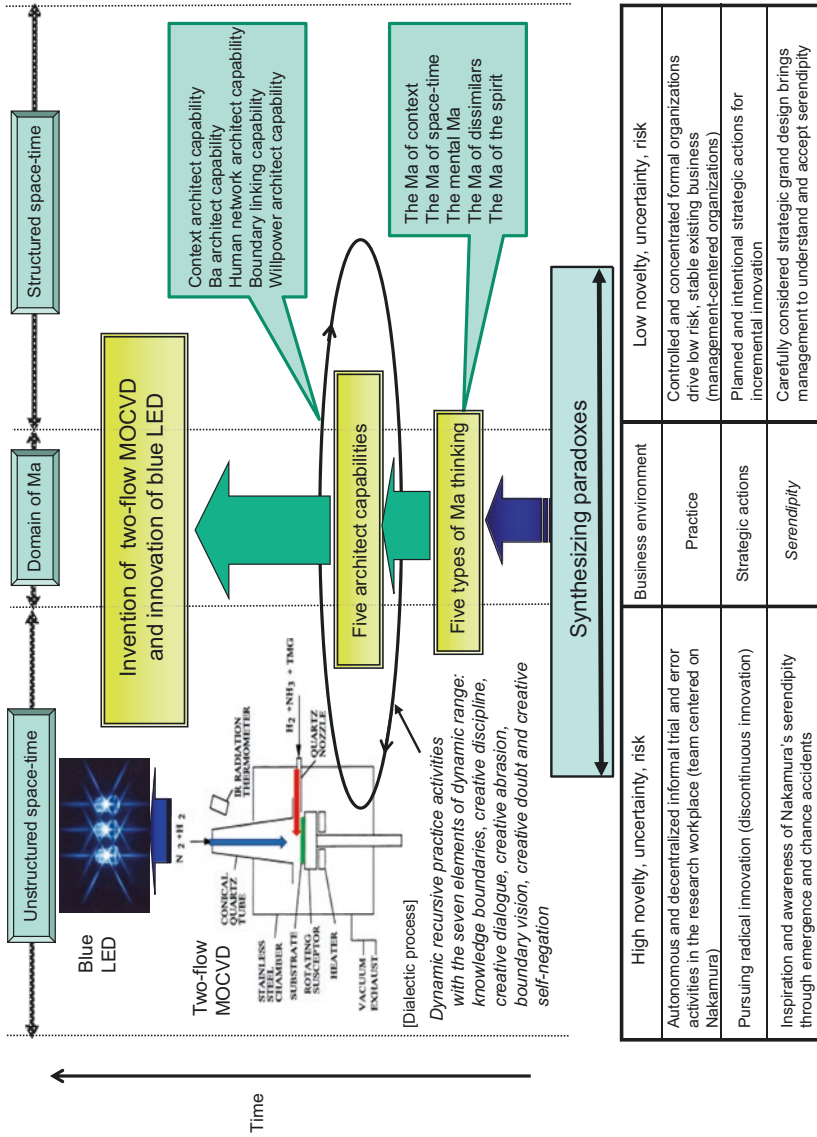
Fig. 4.1 Ma thinking and the blue LED innovation

that widely transcend (quantity, quality, depth and breadth) the range (scale) of one's own knowledge boundaries. The scale of this ability to perceive and recognize is the dynamic range of the knowledge boundaries. Nakamura's "dynamic range of knowledge boundaries" was broad. The breadth of Nakamura's dynamic range of knowledge boundaries enhanced his ability to perceive the market and technology in regard to changes in boundaries in the environment (market and technology) and expanded the "dynamic range of his thoughts and actions."

4.3.2   Creative Discipline

Creative discipline promotes the Ma of space-time and Ba architect capability. At the same time, creative discipline promotes disciplined creativity (or imaginativeness) within the organization. The concept of creative discipline also resonates with the complex adaptive theory (e.g., Morel and Ramanujam 1999; Stacey 1995). Axelrod and Cohen (1999) view the issue as to how people should act in a world where the future is unpredictable as many people mutually adapt to each other as a "complex adaptive system." The Ma of space-time is a platform for shaping such complex adaptive systems. In addition, like the formation of Ba the theory of complex adaptive systems argues that systems as a whole (that is, organizations) are always in a state of flux due to the constant, ongoing mutual intricate interaction of participants.

Complex adaptive systems of living things (for one example) evolve as they move toward the "edge of chaos," which means the boundary between order and disorder, stability and confusion, and they adapt to the environment near the edge of chaos. In other words, in excessively ordered systems, everything solidifies so that complex actions are not possible. On the other hand, in systems that are too chaotic, controls do not work. In that regard, systems existing at the edge of chaos are said to display complex actions and to be capable of constructing models that adapt the most rapidly to the environment. Just as those living things that evolved by moving toward the edge of chaos have a strong ability to adapt to the environment, it can perhaps be said that "pliant organizations" and people like Nakamura who possess autonomy, flexibility and creativity are organizations and people that readily generate innovation through their thoughts and actions.

4.3.3   Creative Dialogue and Creative Abrasion

The elements of creative dialogue and creative abrasion promote mental Ma and human network capability. As in the case of blue LED, the greater the novelty of product development and the uncertainty of the market, the more clashes, friction and conflict are apt to occur among practitioners (Carlile 2002, 2004). On occasion, practitioners sound out their various opinions from their individual points of view and refuse to make concessions (creating a so-called "battle"). However, there is a strong possibility that high quality knowledge creation and innovation will frequently occur in battles comprising dissimilar members (Johansson 2004). As in the case of blue LED, diligent practitioners (Nakamura and management) focused on resolution that would enable adequate mutual understanding among members through creative dialogue and creative abrasion as productive dialogue. For this to occur the promotion of both a dialogue that synthesizes conflicting propositions dialectically (Kodama 2007a) and a creative dialogue (Kodama 2007c) is particularly necessary.

In the course of promoting such creative dialogue, conflict leads to deep collaboration. Dialectical thinking is at the core of creative dialogue. The dialectical method is the logic of solving problems and is a process that progresses from affirmation to denial to denial of denial in the manner of progressing from a thesis to antithesis to synthesis. However, a soft dialectical process for logically resolving contradictions is preferable to a dialectical process aimed at the dogged resolution of contradictions through logic. This essentially means the creation of a middle road that transcends compromise, where there is an understanding in the context of the relationship with the whole. This requires a balance while allowing for ambiguity (Kodama 2007c).

4.3.4   Boundary Vision and Creative Doubt

Boundary vision, creative doubt and the dynamic range of knowledge boundaries mentioned earlier promote the Ma of dissimilars and boundary linking capability. Boundary vision is insight that enables a company to establish optimal vertical and horizontal boundaries, and at the same time is a thinking frame for creating innovation (Kodama 2011). In other words, boundary vision is the ability of a practitioner to map out not

only a concrete, short-term business plan for achieving the strategy the company is aiming for but also a long-term grand design. Boundary vision reviews existing corporate boundaries (the company's own vertical and horizontal boundaries) and renews and redefines new corporate boundaries for strategy transformation. "Strategy transformation" here means changes in the value chain brought about by redefining vertical and horizontal boundaries for realizing new products such as in the case of blue LED discussed in this chapter.

A particularly important element in this boundary vision is the capability of integrating dissimilar knowledge, which is the ability to perceive dissimilar knowledge that has little (or no) relationship through creative doubt, to determine its relationship with one's own knowledge, and to synthesize and integrate it accordingly. Creative doubt is also the ability to recognize relationships with dissimilar knowledge. The intersection and synthesis of dissimilar knowledge triggers creative doubt in practitioners and becomes a fountainhead for creating new innovation (Kodama 2014). Therefore, corporate leaders and managers broaden the dynamic range of knowledge boundaries mentioned earlier and determine relationships between dissimilar knowledge and existing knowledge. Furthermore, the question as to whether they can find new meaning or not in these relationships becomes an important initial trigger in determining whether they can demonstrate the integration of dissimilar knowledge.

To succeed in growing GaN crystals, Nakamura not only analyzed and researched experiment parameters in ordinary processes of crystal growth but also undertook on his own the construction of a manufacturing system that ordinary researchers rarely take on, and he performed theory construction starting from zero as well as demonstration experiment processes. It can be said that these thoughts and actions of Nakamura showed capability in dissimilar knowledge integration achieved through boundary vision.

Like Nakamura, innovative reflective practitioners (also referred to as innovative practitioners) have a strong tendency to view phenomena from a perspective that transcends the framework of different areas of specialization, occupations, organizations, companies and industries. Nakamura understood different mental models and thinking frames and was vigilant about learning to absorb dissimilar knowledge. The human capability for actively generating new knowledge is the bedrock of innovative practitioners.

4.3.5   Creative Self-Denial

Creative self-denial promotes the Ma of the spirit and willpower architect capability. The existence of a firm, absolute value vision is a trait shared by outstanding practitioners. New knowledge creation in the context of innovative new product development begins with the "theory of existence" of people as actors in knowledge creation. In other words, it begins from the time we ask the question: "Why do we exist?" This questioning establishes the position and viewpoint the actor will adopt and determines what kind of knowledge will be created. Heidegger argued that authentic living for human beings was not becoming immersed in matters in the "here and now" but in establishing a stance for the "future" and living in fundamental time that looked directly at the present while reconstructing past experiences in terms of how they should be in the future.

In other words, the past does not determine the future, but rather the *meaning* the past and the present hold are determined by how we envision the future. Therefore, without indulging in past experiences of success and without despairing of experiences of past failures, people require processes for creatively reconstructing their thoughts and actions from the perspective of the past, present and future based on all of their experiences. Creative self-denial promotes self-reflection of each and every individual in the course of their daily lives and leads to the establishment of a certain Ma in the internal workings of the heart and mind, that is, in one's spirit. This state of creative self-denial also becomes a trigger in the creation of an absolute value vision.

Furthermore, innovative practitioners (like Nakamura, as well as Steve Jobs, mentioned in Chap.1 Chap. 3) constantly pursue absolute values, the strategic thinking at the core of the strategic goals of a company. Absolute values arise from the most fundamental question practitioners ask in regard to vision, that is, "Why do we exist?" It can be said that the thoughts and actions of Nakamura and Jobs were simply processes of innovation in pursuit of ideals (truth, virtue, beauty). In their pursuit, however, the thinking about absolute values was important.

By having an absolute value vision rather than a relative value vision with others, individuals like Nakamura and Jobs inspire intellectual passion for achieving significant ideals (truth, virtue, beauty) that transcend their individual capabilities and are able to envision the profile of a knowledge system that has coherence. The achievement of a "technology that

sells" (Nakamura) and a coherent business model that vertically integrated hardware, software and services (Jobs) came about via the formation of a Ma of the spirit and a willpower that aspired to absolute values rather than relative values with other companies.

An absolute value vision triggers in outstanding practitioners a willpower that (1) inspires high ideals (truth, virtue, beauty) that transcend knowledge boundaries; (2) awakens intellectual passion; and (3) envisions the profile of a coherent knowledge system. Achieved through willpower architect capability and acquired through the formation of Ma of the spirit, this absolute value vision creates elements of energy and concentration for thoughts and actions in line with a sense of purpose. Based on his absolute value vision, Nakamura, through a process of trial and error, mentally mapped out a clear strategy for achieving blue LED. He then gave his undivided attention to consciously achieving this strategy, which for him became more important than anything else. At the same time, although the managers did not have full knowledge of the details of his research and development, they had confidence in Nakamura as a capable employee and entrusted to him every detail of the project, while they focused their energy on providing ample resources for steering in the direction of the company's future. Nakamura and management were simply architecting the willpower to achieve the future strategy they had set their sights on as their absolute vision.

4.4   Summary of the Chapter

Through the detailed analysis of a case study of the R&D process of blue LED from basic research to the development of its commercialization, we indicated that the intentional integration of Nakamura's serendipitous awareness as a researcher and the deep understanding of this serendipity by management at Nichia Corporation promoted the dialectical processes of dynamic recursive practice activities between the researcher and management.

Furthermore, underlying the achievement of this dialectical process was the existence of five types of Ma thinking in the company, which gave rise to five architect capabilities in Nakamura and management, in turn paving the way for innovation in the form of blue LED and leading to the successful commercialization of this technology, a feat considered impossible to achieve in the twentieth century.

Notes

1. Nichia Corporation is a chemical company headquartered in Anan City in Tokushima Prefecture. The company had 640 members of staff in April of 1994, and JPY 16.7 billion sales from January to December 1993. Its main manufacturing products are phosphor materials used in CRT devices and fluorescent lighting, accounting for 80 to 90% of its sales. In addition, the company produces compound semiconductor materials, vacuum vapor deposition materials, spattering targets and electroluminescent lamps (EL) used for liquid crystal panel backlighting and other purposes. The company was founded in December 1956. When Nakamura joined in 1979, the company had around 200 members of staff, and sales were about JPY 4 billion. It was at the end of 1993 that the name of the Nichia Corporation became well known around the world. This was when the company first developed and mass produced a blue light-emitting diode with 1 cd luminosity. It had been predicted that blue light-emitting diode would be realized no earlier than the twenty-first century; high luminosity blue LED thus reached commercialization stage ahead of all expectations.

2. Various compounds such as ZnSe, SiC and GaN were known as materials that could be used for blue LED. In 1989, most research into blue LED was carried out using SiC, and there were examples of low luminosity light-emitting diodes being manufactured (Japan Applies Physics Association Meeting 1989). ZnSe was also a popular focus of research, and it gained attention as a promising candidate for blue LED and blue semiconductor laser applications. In contrast, not many researchers were looking at GaN— at the time study groups into ZnSe were always fully attended, whereas those focusing on GaN were only ever attended by fewer than 10 people.

3. In the two-flow method, raw material flows from the right (red arrow) while carrier gas flows down from above (blue arrow) on to the substrate (green), which helps to control turbulence (See Fig. 4.1).

4. When Nakamura began successfully creating a GaN thin film with the two-flow MOCVD method, the company president put even more capital and personnel into Nakamura's research group. At this point the president showed his enthusiasm for a commercial product. The company had already spent hundreds of millions of yen researching the GaN light-emitting diode, a huge decision and risky leap into the unknown for Nichia—an arduous journey to success. Obviously, having made such an investment, the president wanted to get the technology to the market as quickly as possible.

5. "Kiyomizu" refers to Mount Otowa Kiyomizu Temple, headquarters of the Kita Hoso sect of Buddhism, located in the Higashiyama district of Kyoto City. Kiyomizu Temple has a type of balcony stage that is perched on a high jutting cliff, and legend has it that when people jumped from this cliff, if

their prayers were answered they would remain uninjured. Even those who did lose their lives by jumping from the balcony could become Buddhas. As a result, it is said that people continually jumped from this balcony. In this context, the expression means to act with the same hell-bent resolve as someone who has decided to jump from the balcony of Kiyomizu Temple. This expression is often used when a decision is made to purchase a very costly item or to offer something at an extremely discounted price.

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Industrial Innovation with Ma Thinking: Lessons from Singapore's Economic Development

Takehiko Yasuda

5.1 INTRODUCTION

It made headline news in Japan when Singapore surpassed Japan's per capita GDP in 2008. In 2015 Singapore became a wealthy country with a per capita GDP of more than USD 50,000. Overcoming its structural shortcomings of limited national territory, a population of fewer than 5 million and almost no natural resources Singapore promoted an economic development based on exports. Until its independence, Singapore's economy was largely based on an industrial structure driven by relay trade and commerce, but at present the focus of economic development is manufacturing and service industries such as finance, distribution and tourism. Furthermore, Singapore is always rated at the top level in international competitiveness in every sector. In information infrastructure development in particular, it is recognized as the most advanced country in the world. The World Economic Forum ranks Singapore second after Switzerland in international competitiveness and among the top three countries in market efficiency, transparency and infrastructure (World Economic Forum 2016). This kind of success did not come about by

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chance or simply as the result of market factors; it was a process guided by a carefully coordinated government policy.

There is a considerable body of research concerning the economic development of Singapore. Among this research, studies on the Creative City[1] and Singapore's cultural industries focus largely on cultural policy. Furthermore, since a cluster strategy was introduced to its creative industries, cultural policy has been the subject of lively discussion. For example, Yue's research examines Singapore's cultural policy from the perspective of a New Asia (Yue 2006). Gwee, on the other hand, analyzes the cluster strategy for creative industries from the viewpoint of innovation systems (Gwee 2009).

In this chapter, the author discusses the construction of a Creative City and the role of government in relation to the service industries and cultural industries, which have been the subjects of separate studies. The question is taken up as to whether the success achieved by the foreign investment-led, export-oriented strategy of the Singaporean government in developing the service industries can be achieved in developing the creative industries as well. The author begins by analyzing the construction of a creative city and its correlation with cultural industries and shed light on the rationale for commencing the development of the cultural industries from the viewpoint of their importance in the formation of cultural capital. Furthermore, Singapore's cultural industry policy of the 2000s s analyzed and the correlation of the formation of creative Ba and Ma thinking is examined.

5.2   The Creative City and Cultural Industries

5.2.1   The Concentration of Service Industries and the City

The most notable characteristic concerning services of today is their concentration of economic activities in cities. In developed and many developing countries, more than 70% of the population lives in cities. The development of the service economy in cities is progressing remarkably, and the relationship between concentration and innovation in cities is an area of research being actively pursued in fields such as cluster theory from the perspective of strategies in corporate activities led by Porter, spatial economics, which adopt general equilibrium approaches, and regional economics (Fujita 2013).

A number of basic factors are cited to explain why service activities become concentrated in cities. First is the indivisibility of services and economies of scale. One of the characteristics of service activities is indivisibility, which is one reason service industries become concentrated in cities with large populations. Ongoing concentration also results in the creation of economies of scale. Second, there are transport costs in the broad sense in moving resources such as people, goods, services, money and information; the centralization of these resources in cities can reduce costs. Third is the diversity of services and companies and of people that work in the companies and provide the services. People and money flow vigorously inside of and to mature, developed countries to accommodate the diversity of consumption in cities, so concentration of the service industries progresses. We now take a close look at the mechanism of this concentration.

The diversity of services in cities is a response to demand, which leads to an increase in employment and income for service workers themselves. This is a forward linkage effect, whereby the provision of diverse services acts as a mechanism that increases the income of workers. The migration of workers with superior skills to cities where there is plentiful employment in services and investment in service companies becomes robust and results in a supply of even more diverse services. This process of an expanded service market inducing more specialized service producers is a backward linkage effect, indicating an economy of scale is at work in the city. This positive feedback mechanism results in a concentration of service companies and workers in the city.

Let us next look at the situation from the perspective of the mutual interaction of service and manufacturing industries. In this environment, diverse services outsourced by manufacturing industries are provided in cities. As we have seen until now, the provision of diverse, specialized services that a company itself cannot provide makes it possible for manufacturers to improve productivity. This is a forward linkage effect and results in the relocation of many manufacturers in regional areas to cities. The expansion of demand for sophisticated services also attracts companies that provide advanced, specialized services. This is a backward linkage effect; such a positive feedback mechanism results in a concentration of advanced manufacturers and service providers in the city.

Furthermore, the indivisible nature of service activities makes face-to-face communication vital. Such dense communication contributes to the concentration of knowledge-intensive service industries in a particular area

and the formation of places of innovation in services. In such communication, the more diverse the knowledge is the more it promotes innovation. This creates an ongoing need for securing diverse human resources concentrated in that area.

Let us now look at the mechanism of concentration that results from the diversity of knowledge in the service industries, doing so from the perspective of forward and backward linkage effects. Diverse service activities and the human resources that provide them become concentrated in a city, as do business support service industries and venture capital, both of which support the service industries. Productivity of service innovation activities in cities then increases as a result of service activities and complementary activities, and diverse service innovations become concentrated in that city. This is a forward linkage effect. The concentration of these diverse innovations attracts more diverse human resources and also generates a concentration of support activities more specialized in service innovation and promotes the concentration of diverse human resources and support industries in that city. This is a backward linkage effect. The key point here is the nature of the knowledge that diverse human resources introduce to services activities. The concentration of service industry workers with diverse knowledge creates knowledge externality that cannot be traded in the market. The face-to-face exchange of information and knowledge of diverse knowledge workers creates new knowledge in the service industries and contributes to improving the productivity of service activities. The nature of information and knowledge concentrated and exchanged in cities is "tacit knowledge" that cannot be clearly articulated. It is accumulated through dialogue on a daily basis and creates externality of knowledge particular to that city. This externality of rich knowledge creates new combinations of knowledge with knowledge as well as knowledge with techniques, and results in further concentration of rich tacit knowledge in that city.

5.2.2   *Regeneration of Cities and Cultural Industries*

Knowledge that becomes concentrated in a city creates knowledge externalities, and dense communication takes place through communications networks. As a result, places for the creation of service innovation gradually form. Existing works of research have analyzed innovation from the perspective of needs and seeds in regard to approaches to linking science and technology to business. As the development of a service economy

progresses in a city, the issue of determining how to qualitatively enhance the city's service economy by adding art and culture to science, technology and business comes to the fore. Let us now consider, focusing on the historical aspects, why promoting service innovation through the integration of the three elements of (1) science and technology, (2) culture and art, and (3) business came to be considered important in the creation of services that differentiate one city from another.

One major change that took place in cities from the 1980s to the1990s was the deepening of the relationship between urban development and culture. Developed countries in the 1980s entered an era of deregulation and globalization. The appreciation of the domestic currency and intensifying worldwide competition accelerated the trend in the manufacturing industries toward shifting production bases offshore. Factories located in cities progressively moved to developing countries where labor costs were low, and, consequently, the hollowing out of industries in cities progressed in developed countries, where cities entered an age of de-industrialization, bringing with it an increasing need for urban development centered on the service industries. It was widely recognized that attracting cultural industries, where knowledge and sensitivity are vital, was important in the regeneration of areas that had deteriorated into slums following the decline of central urban areas due to the relocation of factories.

There was also an increasing recognition that cultural industries were becoming core industries that created economic ripple effects on other industries such as tourism. This is because tourists who visit cultural facilities generally spend a lot of money on services and goods such as accommodation, meals and souvenirs. The economic ripple effects created by these cultural industries increased employment in facilities such as hotels, the retail business, restaurants and transport, and there were expectations that these ripple effects would absorb the unemployed who lost their jobs due to the hollowing out of manufacturing and other industries.

Furthermore, as competition among cities to attract industries and residents intensified, urban marketing using culture as a drawing card became popular. Specifically, as competition among cities to attract high value-added industries was intensifying, enhanced urban amenities created by cultural industries became a decisive factor in attracting investment and workers with superior knowledge. In addition, urban development aimed at transforming the urban landscape itself into art had become widely practiced. Creative cities were promoting initiatives at revitalization by

utilizing factory and warehouse sites in central urban areas as art spaces and incubators of cultural industries.

In 1997, when the Blair administration came to power in Great Britain, it introduced a policy that comprehensively viewed culture as an industry. The Blair administration established a cross-ministerial Creative Industries Task Force to support the creative industries, assisting them by providing financial assistance, promoting its exports, assisting in the development of technology, expanding human resource development programs, providing tax incentives to the content sector and increasing intellectual property protection.

The task force defined creative industries as "those industries which have their origin in individual creativity, skill and talent which have the potential for wealth and job creation through the generation of intellectual property as well as market development," and defined 13 sectors as constituting the creative industries (advertising, architecture, art/antique markets, crafts, design, designer fashion, film and video, television computer game software, music, performing arts, publishing, computer software and computer services, television and radio). Moreover, it established a framework of support for these.

This so-called "Cool Britannia" initiative and a series of policies to promote the creative industries were based on vague expectations that these industries would bring enormous benefits to the British economy. The policy was highly political and was criticized for lacking in substance and failing to indicate specific future outcomes. Nevertheless, British creative industry policy later had a major impact on content and urban policies not only in Australia, Canada and New Zealand, where Great Britain has significant influence, but also in Taiwan, Hong Kong, Singapore, Korea and Japan.

5.2.3   Knowledge Externality Effects on Cities

The impact of art and culture on the development of cities has been studied as "creative city theory" in urban economics (Goto 2003). To find creative solutions for urban regeneration and other urban problems, Charles Landry examined policy from the perspective of how urban planners might go about creating, managing and maintaining creative spaces, which he referred to as "creative milieu" (Landry 2008). This was a concept similar to "innovation milieu" proposed in Europe. The latter are defined as open, complex groups that are local in nature but are also open

to people outside the local area, and include know-how, rules and relevant management resources. In these milieus, social networks are formed among individuals within or across companies, and lively exchanges of information and knowledge as well as joint learning are said to take place. This is a concept similar to groups defined as community clusters. Focusing mainly on cities in Europe, Landry takes a close look at problems related to creative places. In Europe, old industries are disappearing more quickly than in Asia. As a result, the unemployment problem among young people is becoming serious and welfare statism is facing fiscal crises. Based on the principle that added value in cities can be created by intellectual capital applied to products, processes and services better than by manufacturing, scholars and others have conducted studies of cities as creative places that generate such intellectual capital. Proponents of creative milieus argue that creative places are platforms where certain material conditions are set and as such require an urban foundation in both "hard" as well as "soft" aspects to continuously create ideas and inventions. These proponents stress the importance of an urban foundation in soft aspects in particular. The creative milieu is a structure that links things and systems formed from social networks, connections and exchanges between people, and they include, for example, clubs, regular informal group meetings, and networks or public or private partnerships with common interests, such as business clubs. Furthermore, for such networks to demonstrate strength in creative places flexible organizational management based on a high level of trust, autonomous responsibility and various compelling, implicit principles are necessary. Trust is the core value in the effective operation of these creative places, and brings about a flow of creative ideas and innovations.

Communities where cultural industries became concentrated and which achieved vibrant cultural innovations have been analyzed in cultural economics as cultural clusters. The "cluster approach" based on the urban theory of Jane Jacobs (Jacobs 1985) has been used to study many cultural clusters. Needless to say, these studies take into consideration business expenses and the research outcomes of external effects in Marshall's agglomeration, and the approach examined reasons cultural industries become concentrated and cultural clusters form in major cities such as New York, Los Angeles, London, Paris and Tokyo, and why these cities have become world cultural economic hubs. Among these reasons are the presence of a diverse labor market, tolerance, and word-of-mouth communication that leads to efficient management. These aspects are related

to knowledge that exists in cities, which has a particular rarity and a particular value as well as diversity; securing access to knowledge of this nature can offer a competitive edge to companies. Another reason is that it is possible to rapidly recombine diverse knowledge in cities. The need to rapidly recombine knowledge is one aspect that differentiates traditional industries from cultural industries. An important characteristic of cultural industries is that they are project-based. Almost all projects are new initiatives that clearly differ from previous initiatives. Therefore, to have a competitive advantage it is necessary to rapidly create new project teams with different competencies. Because of this, according to the Jacobs' approach diversity of local human capital is essential in cultural cluster, and such diversity is a characteristic found mainly in large cities. Therefore, cultural clusters form in cities with a high level of tolerance and openness.

Richard Florida asserted that the most important of human resources in today's economy is the worker belonging to the creative class, and such creative people prefer to live in cities. He states that productivity in densely populated cities is high because of the economic efficiency there, which itself results from harnessing the creative energy of people. He cites Robert Lucas' explanation of the role of cities in increasing human capital as the "Jane Jacobs' external effect" (Florida 2007). Florida acknowledges that there is a strong correlation between communities that achieve high economic growth and communities that have a tolerance for human diversity including immigrants, artists, gays and lesbians, bohemian types and for racial integration. The significance of the strong relationship between racial and cultural tolerance and economic growth is an indication of the importance of diversity. Diversity in cultural metropolises where various races coexist enhances the overall value of the services they produce. These metropolises have tolerance for diversity and attract creative people.

5.3   Singapore's Creative Cluster Strategy

5.3.1   *Fostering the Development of the Creative Industries*

In countries with middle to high income in Asia, economic growth is driven by cities. In these cities, the majority of the GDP is generated by the service sector. The industries that have grown the most in the service sector of these cities are high value-added business support services and the creative industries. Business support services include marketing,

finance, legal and accounting services; the creative industries include design, publishing, multimedia and software development (Yusuf 2005, 2006).

The rapid advance of globalization and rapid progress in technology including ICT are dramatically changing the business environment. To develop a knowledge-intensive creative economy, the Singapore government has embarked on a policy to generate the creativity of people in diverse areas. As globalization continues, Singapore has turned its attention to determining how to integrate the three areas of art, business and technology as a major challenge for establishing a new competitive advantage.

To foster the development of the creative industries, the Singapore government has adopted a cluster strategy for nurturing the development of support industries and relevant industries.[2] Creative clusters are cross-sectoral, often encompassing many sectors, and these sectors are not clearly distinguishable in the sense of traditional industrial clusters. Therefore, until quite recently, creative clusters were not recognized as clusters in need of policy coordination or investment.

What types of industries are included in creative clusters? According to the classification of the Singapore government, creative industries encompass both upstream and downstream sectors (Singapore MIT 2003). In the upstream sector, this includes traditional culture and art industries including the performing arts, literature and painting and drawing. In the downstream sector, this includes industries that correspond to applied arts such as advertising, design, publishing and media-related activities. Although the pure arts themselves in the upstream sector have intrinsic commercial value, commercial value can also be obtained in the downstream applied arts sector from the application of the arts to other economic activities. Both sectors are essential elements of the art ecosystem. Furthermore, the Singapore government positioned the downstream sector including the distribution and sales sectors as copyright industries and recognized these as a creative cluster. However, it views the creative industries as being the most important and believes they should be the main focus of attention.[3]

Creative clusters are the key to building a creative knowledge economy. They are a group of industries that contain the wellspring of individual creativity, skills and talent and are defined as industries with the latent potential for creating wealth and employment through the creation and use of intellectual assets.

5.3.2   *Contribution of Creative Clusters to the Advancement of Industry*

The Singapore government summarizes the impacts of the direct and indirect contribution of the creative industries on Singapore's economic growth at four levels (Singapore MIT 2003). The first economic impact brought about by the creative industries is the direct, quantifiable contribution to the domestic economy. This includes the impact artistic activities have on the GDP and employment. The second economic impact is the indirect but quantifiable impact on the domestic economy. This includes the "multiplier effect" resulting from expenditure on art. The third economic impact is the direct but intangible impact on the domestic economy. This includes the impact of artistic works on industrial design, innovation and product differentiation. These are the contributions of art to the advancement of industry and strengthening of economic competitiveness. Finally, there is the fourth economic impact, but its contribution to the domestic economy is indirect and unquantifiable. This impact includes improvement in the quality of life, formation of a cultural identity and formation of a multifaceted society. This last point relates to research concerning the externality of culture and the quality of life. Art and culture have positive externalities and bring about social benefits. These are externalities where art and culture bring benefits not only to those who directly enjoy them but also to the community and society as a whole. The Singapore government has indicated that it recognizes the need to foster the development of a rich culture over time in order to achieve a rich multi-ethnic society.

5.4   Building a Creative Environment in Singapore and Knowledge Externality

The creative industries are attracting attention as a new engine of economic growth. Their impact on the domestic economy occurs at a number of levels. Of these we analyze direct but intangible economic effects of the creative industry on the domestic economy. These are the economic effects of works of art on industrial design, innovation and product differentiation, and the contribution of art to the advancement of industry and strengthening of international competitiveness. Here we consider such economic effects in the creative cluster strategy in Singapore.

The creative industries create original knowledge, products, and services. If these creations are adopted or commercialized by the manufacturing or service industries, their economic value will increase many times. As products and services become more culturally and artistically, accompanying progress in the creative economy, incorporating these effects can become a wellhead of competitive superiority. The key factor here is the usability of creative products and services in other fields.

Based on analyses using an inter-industry table, the creative industries show meaningful links among various sectors and constitute a creative ecosystem. One example is small-scale industries such as movie theaters, which belong to the media industry, and the performing arts, which derive economic benefits from large-scale sectors such as advertising and publishing. Based on a survey of 111 graphic design and industrial design companies in Singapore, the presumed linkage from the design industry to creative networks is deemed significant (Singapore MIT 2003).

Each of the 154 industry-related sectors of the Singapore economy received on average an input of 0.32% from the creative industries. Of this, the manufacturing industry obtained 0.79% input from the creative industry. The chemical industry shows a comparatively high figure of 2.32%, due to its high use of advertising and IT services. In other areas, it can be said that input from the creative industries is generally low. However, if data from the design industry becomes available and is included, the figures will no doubt rise. It is possible to increase the added value of the value chain, and the importance of design input in the manufacturing industry is certainly increasing.[4]

The product utilization rate of the service industries by the creative industries is 6.11%. This indicates that the level of dependence of Singapore's service industries on the domestic creative industries is high. The reason figures for transport are low is because it is an industry where efficiency is valued more than creativity. On the other hand, dependence of the education industry is high because of its high level of use of publishing and IT services. Furthermore, many services such as content can be exported, and raising the quality of creative products incorporated into such service industries will enable international differentiation of Singapore's service industries. Moreover, since the advertising industry makes a significant contribution to both the manufacturing industries and the service industries in acquiring global markets, the greater the economic effects of the creative industries on the advertising industry, the

stronger will be the international competitiveness of domestic companies.

If the creative industries develop, diverse artists and knowledge workers engaging in artistic and cultural pursuits will gather together as a matter of course. This will attract investment in business support services and the media industry, which support the creative industries. When this occurs, productivity of service innovation activities in cities will increase as a result of vibrant artistic and cultural activities as well as support and complementary activities for these, and diverse creative service innovations will occur in an ongoing manner. This is a forward linkage effect, which attracts more diverse and creative human resources from all over the world. It also creates a concentration of business support activities specializing in innovation in the creative industries. Moreover, it creates a backward linkage effect where the concentration of diverse creative human resources and support industries in the city progresses. These various creative human resources that gather and become concentrated in the city create new knowledge through their face-to-face exchanges of information and knowledge, and they also contribute to the improvement of productivity in creative activities. The cultural industry policy of Singapore is regarded as moving in this direction.

5.5   Policy Vision of the Singapore Government

5.5.1   Analysis of the Current Status

The Singapore government has analyzed the current competitiveness of Singapore's creative industries (Singapore MIT 2003). We now examine aspects of this analysis that are of particular importance. First of all, what can be said about Singapore's competitive edge is that Singapore ranks high in international competitiveness, has an ICT infrastructure of the world's highest standard, is recognized as a regional financial hub, and has a stable government. It can also be said that Singapore is a country with a multicultural society and a two-language policy of Chinese and English, with English as the official language, and this policy enables Singapore to target a broad range of markets.

On the other hand, one of Singapore's drawbacks is the small size of its market; because of this, it must maintain a global perspective. In addition, under its longstanding export-oriented industrial policy, hardware was given priority in the past. As a result, investment in software was lagging. This led to problems in elemental conditions and demand conditions

including a dearth of skilled creative human resources and devotees with cultural appreciation. Most notably, Singapore has been recognized by many countries as a highly regulated country. As a result, many international corporations and talented intellectual human resources have avoided Singapore as a suitable place for creative experiments.

In regard to this issue, Singapore has many opportunities for tapping into the economic development of other Asian countries. It is in close proximity to the mammoth Asian markets of China and India, and these countries offer access to consumption markets and creative resources. In addition, Singapore's multi-ethnic society is well-positioned to take advantage of the "New Asia" and niche areas, which integrate lifestyle and entertainment products and services. In Asia, FTA negotiations are taking place in various regions, and the Asian economy is expected to move increasingly towards integration in the future.

However, Singapore's creative industries also face a serious threat. Inspired by Great Britain's development strategy for the creative industries, more countries are making efforts to develop their creative industries as an engine of sustainable economic growth, and competition in this area is intensifying internationally. This is why Singapore must aggressively compete with these other countries to acquire creative human resources (and companies). For this reason, Singapore must come to terms with further enhancing its urban amenities and attracting these human resources and companies.

5.5.2   Development of Cultural Industries and the New Industrial Strategy

In 1999, the Renaissance City Project (RCP I) was drafted as aiming for a distinct global city in art, the budget for National Arts Council (NAC) and National Heritage Board (NHB) was increased in 2000 and strengthening development of cultural software was launched. In RCP I, the goals had been set such as (1) to bring vibrancy to the arts and culture field of Singapore, (2) to build a spectator base, (3) to professionally artists and arts organizations, and (4) to raise the evaluation as a hub of art.

Policy recommendations have been made in RCP I. Emphasis was placed on grants to arts organizations, project subsidies to individuals and organizations, scholarships, etc. Regarding art education, activation of outreach activities to arts and cultural assets, planning of educational programs, etc. are proposed. In addition, the necessity of strengthening major festivals such as Asia Art Mart was pointed out.

To promote the growth of the knowledge economy, the Singapore government recognized development of a dynamic, sustainably growing creative industry as vital. Creative clusters not only create direct economic value but also assist in promoting differentiation in innovation and products and services. Therefore, with the goal of establishing Singapore's reputation as a new creative hub in Asia by 2012, Singapore set a goal to double the creative industries' contribution to GDP from 3% in 2000 to 6% in 2012.

It also proposed a development strategy with a number of specific industry goals. The first was to construct a "Renaissance city" (Renaissance City 2.0), a highly innovative, multifaceted global city renowned for its arts and culture.

Under RCP II, the government adopted a strategy to develop the creative industries to promote arts and culture and adopted an industrial approach to the arts and culture which was both clear and unprecedented. This strategy mapped out the direction of Singapore in areas such as the development of new capabilities in the arts and culture industries, the deepening of the partnership between the arts and culture and business, and the internationalization of Singaporean art. To promote its cultural industry policies, Singapore also indicated the need to identify and analyze the added value of the arts and culture as well as their economic contribution to employment. In addition, the strategy also articulated plans to provide limited assistance for commercial art projects, to participate in international events such as the Venice Biennale, and to sponsor and strengthen key events such as the Singapore Biennale.

Next, it stated Singapore's goal to become a global cultural and business hub for product, content and service design. To that end, it drafted "DesignSingapore," a plan to create venues where design consciousness and creativity would penetrate every aspect of life including the workplace, home and recreation venues. In addition, the government formulated Media 21, a plan for creating a global media city as a powerful media ecosystem with the future potential to expand internationally.

5.5.3   Renaissance City Plan III (RCP III) for Further Development of the Cultural Industries

Following on from RCP I and RCP II, the government drafted Renaissance City Plan III (RCP III) as the next stage of its strategy to make Singapore a global city renowned for its culture and art by 2015. This plan describes in detail the evolution of Singapore's role as a hub and the direction of

Singapore as a vibrant magnet that attracts global talent. To achieve this, it was necessary for Singapore to enhance its amenities as a city and provide the highest level of comfort and convenience in everyday life through introduction of the latest infrastructure. It also had to embrace multiculturalism and establish a future-oriented identity. Therefore, RCP III articulated plans to create what is dubbed a "best home" concept. It also defined the ideal Singaporeans as people who were inclusive, cohesive, understanding of diversity, intelligent and proud of their national identity.

RCP III also clearly articulated three strategic trajectories for Singapore. The first was the creation of distinctive content. To achieve this, Singapore planned to develop a world-class cultural and entertainment district capable of offering outstanding arts and culture. As part of this, Singapore formulated a plan to open a national art gallery by 2015. Through this initiative, Singapore's aim was to become a preferred site for the creation of original content centered on Singapore and Asia. To advertise to the rest of the world content created in Singapore, the government also made plans to enter into a cultural agreement with France.

The second trajectory was to establish a dynamic ecosystem to ensure future sustainable development. To achieve this, Singapore's plan was to reinforce the development of clusters for human resources and companies. MICA, NAC and NHB planned to develop the arts industries jointly with the Economic Development Board (EDB), which promotes the fostering of a lifestyle industry. In the art business and art services, which are expected to develop in the future, Singapore examined measures to enhance specialist skills in art and culture, and formulated a policy to strengthen specialist education and training in the arts at universities and vocational schools as the foundation.

As the third trajectory, RCP III clearly defined community involvement as a new perspective and proposed plans to strengthen community ties and pride through art and culture. The plan includes programs for low income households, the young and the elderly, and participatory art programs for the entire community. It also calls for the broadening of education in culture and the humanities to foster the development of richly talented Singaporeans. The report also indicates the need to encourage patronage activities in the private sector and to provide financial assistance to vitalize artistic and cultural activities. To promote policy recommendations for art and culture through research and dialogue, the plan also provides for the publishing of a cultural statistics yearbook.

5.6   Policies for the Formation of "Creative Ba" and Ma Thinking

5.6.1   Creative Ba and Architect Capability

"Ba," a theoretical concept of this book, is a time-space where an individual shares a context with others, and where this context changes and new contexts are created through mutual interaction with others. When this occurs, dynamic recursion of practice activities, which achieves the "integration of dissimilar knowledge," enhances architect capability to form creative Ba. We now look at this capability building from the perspective of Singapore's policy for the formation of creative Ba. The first area considered is "context architect capability" and the second is "Ba architect capability." These are related in various aspects to Singapore's most important economic policy, that is, to become a hub in Southeast Asia. Singapore has for some time functioned as a hub for trade in Asia, but over the years its role has expanded and today it serves not only as a distribution hub but also a financial and information hub. Asia is multi-ethnic, multicultural and has various religions. The Singapore government has a policy to create a place where the peoples of Asia can coexist, and the government's architect capability is high as its record to date attests in the area of economic development in its joint economic development with Malaysia and Indonesia. Through hard and soft infrastructure, the government has established a sound economic environment, recognized by the world community at large. In particular, Singapore has earned a worldwide reputation for its superior infrastructure, and has been rated as one of the most suitable countries for doing business. As a result, it has succeeded in attracting regional headquarters and international financial institutions from Europe, the United States and other developed countries, and its private sector also attracts many investments in Southeast Asia. Singapore also actively promotes arts festivals and other events, and its reputation as a place for cultural exchanges is growing. Singapore has given priority to investment in cultural capital in infrastructure in particular and has been establishing the country as a hub (Ba) for disseminating cultural information. This can be understood as the development of the cultural industries.

The third area is "human networks." Many capable foreigners are conducting business in Singapore, where they appreciate not only that the official language is English but also that Singapore has good security and a good climate. Moreover, through its vigorous activities to attract universities and research institutes of developed countries including Europe and the United States, Singapore has been enhancing its profile as a Ba for

research even in advanced science. Singapore's initiatives to attract the world's leading galleries and the participation of many people from overseas in its annual arts festival are contributing to the significant expansion of its human networks as cultural capital in its development in "soft" areas. Its previous development strategy was to achieve economic development led by foreign capital. Even in its development of the cultural industries, its dependence on the role of foreigners is significant and, therefore, the construction of "human networks" with other countries is of key importance.

The fourth area is "boundary architect capability." Southeast Asia is a region where people of various ethnic and cultural backgrounds coexist. Even Singapore is home to people of various ethnicities, and to some extent has achieved success in cross-border integration of ethnicities and cultures. Furthermore, in the Association of Southeast Asian Nations (ASEAN), there are significant disparities among countries in stages of economic development. Though Singapore is a developed country, other countries in Asia such as Cambodia and Myanmar are lagging in development. In Asia, where there are many overlapping layers[5], including differences in stages of development in the region, Singapore is in a unique position in terms of architect capability with regard to its boundaries.

The fifth area is "willpower architect capability." In addition to aiming for the economic development of ASEAN as a whole, Singapore faces the challenge of architect capability in its goal to create a "New Asia" in terms of culture. In this regard, Singapore is taking various initiatives in events like arts festivals such as the Singapore Biennale. However, it would have to be said that these initiatives are still at the trial and error stage.

5.6.2   *Ma Thinking and Architect Capability*

Singapore has devoted significant energy to establishing creative Ba to achieve cultural innovation and to develop the cultural industries. Constructing creative Ba requires outstanding architect capability. What, then, is the kind of thinking that supports architect capability? The answer can be found in the five types of Ma thinking.

The "Ma of context" and the "Ma of space-time," mentioned earlier as the first and second areas, are ways of thinking that integrate the diversity of multi-ethnicity and multiculturalism found in the Association of Southeast Asian Nations. ASEAN was founded on principles such as non-intervention in domestic politics and local resolution of local problems, the importance of consensus-building based on dialogue, and non-exercise of military might. However, the question remains as to how it will overcome

the various contradictions that exist in ASEAN such as democracy and dictatorship, prosperity and poverty, and artificial versus natural. Singapore is undertaking initiatives in the arts in regard to the Ma of context and the Ma of space-time. The title of the 4th Singapore Biennale, held in 2013, was "If the World Changed" wherein artists from various countries created works of art depicting the kind of world they wanted to live in at present and in the future based on their own culture and history. Southeast Asia presented a joint curation with 27 professional curators. Featuring 83 artists and teams from 13 countries, the Biennale explored the problems of contemporary society in Southeast Asia, which is undergoing rapid changes.

ASEAN operates on fundamental principles that seek modern wealth and at the same time emphasize tradition and customs. These are the third and fifth aspects of Ma thinking: "mental Ma" and the "Ma of the spirit." Attempts to integrate contradictions in mental Ma and Ma of the spirit were evident in the works presented at the Singapore Biennale. If we consider ASEAN in Singapore, this brings to mind the fourth Ma, the "Ma of dissimilars." The question is, how can such contradictions in Ma be integrated? Those entrusted with innovation in the cultural economy will be people from foreign countries, and the process of trial and error will continue. In such case, there is a possibility that Ma thinking will be lacking in unity. For Singaporeans to take charge of innovation, it may be necessary for them to explore deeply this cultural "Ma" thinking and build new "Ba" based on that.

5.7   Conclusion: Issues in Singapore's Creative Cluster Strategy

Singapore achieved success in determining which sectors of industry to focus on in its economic development strategy. Among these, the government focused particularly on information technology (IT) because it believed that shifting to high-tech and information-intensive industries would create high added value and significantly increase GNP as these industries expanded in scope and scale. If Singapore linked its IT activities with those of multinational companies, the information systems of Singapore's subsidiaries would be interconnected with networks around the world. The government has progressively formulated policies to keep Singapore's society up to date with developments in the computer age, and improvements in its information-intensive structure have led to the development of other industries.

Industrial policies treating computers in other Asian countries have for the most part focused on their production. However, a notable feature of Singapore's policies has been the emphasis on promoting computer use in

line with the production of computers. This was because the government believed that the use of computers had the potential to increase productivity and raise Singapore's status as a production, distribution and financial hub. The government itself took the lead in promoting computer use by computerizing public enterprises such as government agencies, Singapore Airlines and Singapore Port Authority.

In the period of high growth from the late 1980s to the 1990s, the development of a national information infrastructure for networking progressed in tandem with the penetration and use of computers. During this time, the service sector (comprised of commercial, financial and business services as well as transportation, communications and other services) increased the number of its employees. The increase in employees in financial and business services as well as transportation and communications grew remarkably, by far exceeding the level of all industries. Thereafter the service sector accounted for about two-thirds of nominal GDP. There was a general understanding that it would be necessary to continue to upgrade these service industries to maintain stable economic growth.

In addition, the Singapore government formulated a multifaceted strategy to create new industrial clusters, with the goal of creating new clusters in electronics, new media, broadcasting, telecommunications and entertainment. To achieve this, Singapore targeted specific niches to leverage existing infrastructure and capabilities to gain a competitive advantage in new clusters. Furthermore, an important element in Singapore's information industry strategy is the expansion of its role as a regional hub. It intends to become not only a conventional production network hub but also a hub for communications, broadcasting, entertainment, education and health care. It intends to participate in Asia's growth and to expand the "growth triangle concept" to build an external economy that will strengthen the domestic economy. However, it has ambitiously expanded its vision even further to take in all of Southeast Asia as well as China.

After the Asian economic crisis and the collapse of the IT bubble, Singapore set new targets during the 2000s. Its objective was to strengthen its policy for deepening mutual relations between the manufacturing industries and the service industries as the twin engines of growth more so than in the past. In the service industries, in particular, Singapore has indicated that it will promote further improvements in trade, distribution, ICT, financial services and the tourism industry, where it has become more competitive than in the past, and it will promote investment in new service industries such as health care, education and the creative industries, with a view to becoming a regional hub for these.

One area of industry that it has given particular priority to is the creative industries. To develop a knowledge-intensive creative economy, the Singapore government embarked on a policy to generate the multifaceted creativity of people. As globalization continued, it earmarked the integration of the three areas of art, business and technology as a major challenge for securing a new competitive advantage. To foster the development of the creative industries, the Singapore government also promoted a cluster strategy that included nurturing the development of support industries and other relevant industries.

Throughout the 2000s, Singapore has steadily promoted a creative cluster strategy. The question is: Has Singapore again succeeded in promoting a foreign capital-led development policy as it did before, but this time in the creative industries? Foreign companies have engaged in direct investment in Singapore for many years through physical capital and investment in technology, and the government has also engaged in large-scale public investment so such investment will not cause problems. By establishing and improving hard aspects and infrastructure, Singapore has attracted an inflow of human resources and additional capital from all over the world, and it has developed manufacturing and service industries such as finance. In addition, the government continues to invest in Singapore's human capital. In recent years, it has also attracted leading universities of Europe and the United States and articulated a policy to become a hub for educational services in Asia. However, the notion of investing in cultural capital it still new to the Singapore government and has not yet reached a level that would satisfy the world's creative class. Cultural capital has both tangible and intangible aspects, but to accumulate intellectual capital of the latter in particular requires time as well as education. It can also be said that such intangible cultural capital is established as intellectual capital, which takes the form of ideas, customs and values shared by groups. Therefore, it is necessary for new Ma thinking to develop from this intellectual capital.

Singapore has pursued a foreign capital-led development strategy. To some extent it has been successful in establishing Ba that attract such capital. In terms of economic capital logic focused on efficiency in a market economy, it can also be said that Singapore has rationally bridged the Ma of context and Ma of space-time in some areas. By establishing the world's leading business infrastructure as Ba, it has gone so far as to earn the reputation as having the world's best infrastructure. Many companies are investing in Singapore because of its high efficiency, and Singapore is also achieving success in attracting researchers and laboratories that are leaders in their fields of science and technology. As economic globalization progresses, economic capital and science and technology underpinned by a

common international language are gravitating toward Singapore in search of the most efficient Ba.

To create new innovation from a cultural perspective, however, integration of dissimilar knowledge rather than integration of commonality will be necessary. A region where diverse races and cultures coexist, Southeast Asia is blessed with diversity. At the same time, however, it can be said that unity in thinking is not widespread even within ASEAN. However, Southeast Asia is growing into an enormous market, and these countries will provide access to sizable areas of consumption and creative resources. Singapore's multi-ethnic society is in a good position to take advantage of the "New Asia" and niche areas such as the integration of lifestyle and entertainment products and services. In the future, the Southeast Asian economy will move in the direction of integration, and the middle income segment is expected to grow considerably. Therefore, Singapore can be expected to serve as a regional hub capable of refining content of both Southeast Asia and Singapore as well as creating original local content. Therefore, it is essential for Singapore to take up new challenges including exploring Ma thinking and building new creative Ba.

NOTES

1. Following the enormous structural changes faced by post-industrial Europe, culture and the arts have been used to promote industry and revitalize local communities, through collaborations between the public sector, artists, cultural organizations, businesses, universities, and local people. This movement has drawn ever more attention domestically and internationally as "Creative Cities." UNESCO launched a program called the Creative Cities Network in 2004. Its aim was to maintain cultural diversity while maximizing the potential of cultural industries throughout the world by supporting strategic coordination between cities. (Agency for Cultural Affairs, Government of Japan 2017).

2. Great Britain's Creative Industries Development Strategy of 1998 had a major impact on Singapore. In Asia, similar creative industry cluster policies were implemented in Bucheon, a suburb of Seoul in South Korea, and in Shanghai and Taiwan.

3. In Japan and other countries of Asia, the term "content industries" is used, but in Great Britain these are referred to as the "creative industries," while in France they are called "cultural industries" and in the United States, the "copyright industries." In other words, these industries are viewed differently from one country to the next and, consequently, the industry classification and interpretation of statistics may be different.

4. Singapore has given greater priority to design than any other sector. The DesignSingapore Council cooperates with government organizations and has adopted a comprehensive approach to developing design expertise, design companies and design education.

5. These include developmental stage, multiethnic and multicultural people, religion, social class, income differentials, and so on.

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Use and Reproduction of Ma in Financial Cooperative Organizations in Japan: With a Focus on Ma in Japan and Financial Cooperatives

Tsutomu Hasegawa

6.1   Introduction

The word Ma (間) in Japanese has a wide range of meanings, and when the character for Ma is combined with other characters, it can express even more diverse meanings. This makes it almost impossible to arrive at a uniform definition of Ma and enables us only to present a profile of Ma in terms of phenomena.

    This chapter considers Ma from three perspectives. The first is Ma in human relations. This means relations between people or connections between organizations and, at times, may be replaced with the word "ties." According to Granovetter, the strength of interpersonal ties can be measured by their strength or weakness (Granovetter 1973, pp. 1369–1380), and their form can be observed through personal contacts. In this chapter, these will be referred to as a "relational Ma." Next is chronological Ma, which refer to a historically formed sense of time. These

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Ma relate to periods of time or momentary opportunities. In other words, they express breadth of time or a particular point in time. The third type of Ma is spatial Ma, and this can be defined as what Relph (1999) calls the existential space or "lived space." This refers to space surrounded by boundaries capable of distinguishing it from other space (Levi-Strauss 1967), and in many cases the persons within this space share common characteristics (Tuan 1977).

In English-speaking spheres, the respective senses are expressed by different words.[1] In Japan, on the other hand, the term "Ma" is used on its own or in combination with other words, or Ma is expressed in a verb form when one is attempting to skillfully incorporate the three types of Ma in one expression. Hence, Ma encompasses qualitative differences rather than quantitative differences in individual meanings indicated by individual words in English or what the respective individual words express. Therefore, in many cases when the word Ma is used it simultaneously encompasses the meaning of spatial, chronological and relational Ma, although only one particular connotation is overtly expressed. For example, in financial cooperative institutions in Japan, in addition to a time sense based on rational, Western-type economic accounting, a Japanese concept of Ma is at work in various business settings. Consequently, the timing of financial transactions or the agreement period for financial transactions will differ. Or the contents of the agreement may even change in the course of the agreement period. Disparities of this nature are often a cause of confusion from the perspective of the external world (outside the spatial Ma). This is because they differ from results anticipated beforehand based on rational economic accounting on which orthodox economics are premised.

Financial cooperative institutions in Japan, which are the main focus of this chapter, were introduced in Japan from Germany during the Meiji Period, but the model for these was not simply transplanted in Japan in its original form. It was modified and established in a form consistent with conditions of existence in Japan that would allow for its acceptance, and Ma constituted part of the conditions for its establishment. While the concept of a financial cooperative was introduced from overseas, Ma was one factor that set it apart from the model of its origins and allowed for its existence and development. In the following pages, the author will not only discuss the three types of Ma but will also discuss social capital including Ma and clarify Ma's functions as social capital and the relationship of financial cooperatives in regard to the use and accumulation of these types of Ma.

6.2   Social Capital: The Process of Ma and Cooperative Accumulation

6.2.1   Overview of Social Capital

In short, "social capital" essentially refers to connections, trust, cooperation, customs and rules of people. The French sociologist Pierre Bourdieu used the concept of "cultural capital" to talk about the reproductivity of social differences and social classes. According to Bourdieu, ownership of cultural capital did not accurately reflect the financial capital resources of their owners. He argued that it was formed by factors such as the family environment and school education and that it was to some extent independent from economic capital (Bourdieu 1979).

For example, he argued that "different individuals obtain very unequal profits from virtually equivalent capital, depending on the extent to which they can mobilize the capital of a group (a family, the alumni of an elite school, a select club, the aristocracy, etc.)" (Bourdieu 1980, p. 2). In such cases, the amount of social capital accumulated may have an impact on the outcomes of economic activities. In other words, "capital represents social relationships, and is a form of social energy which exists and achieves effectiveness only in the place where it is produced and reproduced. Therefore, each and every one of the various characteristics connected to class receives its value and effectiveness from the particular principles of that place" (Bourdieu 1979, p. 3).

Moreover, in another reference, Bourdieu and Wacquant state that social capital is "the sum of the resources, actual or virtual, that accrue to an individual or a group by virtue of possessing a durable network of more or less institutionalized relationships of mutual acquaintance and recognition" (1992, p. 119).

In this way, Bourdieu presents a methodology that differs from neoclassical economics. Rather than limiting it to economic capital as that which defines the living conditions of particular people, he broadens the scope to include cultural and social capital.

Furthermore, Coleman (1990, p. 652) defines social capital as the ability of people to cooperate in achieving a common goal. He also described social capital as a "variety of entities that all consist of some aspect of social structures and facilitate certain actions of actors." Furthermore, he argued that social capital was productive and not completely fungible, and that a given form of social capital which is valuable in facilitating certain actions

may not only be useless but even harmful to others. Moreover, Coleman argued that unlike other forms of capital, social capital inheres in the structure of relations between actors and does not reside either in the actors themselves or in physical implements of production. In his argument, he goes on to give some examples of forms of social capital such as confidential study circles in student activism, the relationship of trust between a doctor and patient, differences from city to city in the population's sense of security, and networks among merchants in Cairo.

Putnam (2000) basically viewed social capital as social networks and referred to these as "connections among individuals." He stated that the norms of reciprocity, sincerity and trustworthiness, which networks generate, are also expressed in terms of social capital, and that this is clearly different from physical capital or human capital, which pertained to individual abilities and qualifications. Rather, he claimed that these two forms of capital in combination with social capital were capable of demonstrating significant productivity.

In recent years, there have been numerous attempts to apply these concepts of social capital internally in management organizations. For example, in a business-related treatise, Cohen and Prusak, citing some of the results of social science stated above, define social capital from the perspective of investment within a company, as "the stock of active connections among people: the trust, mutual understanding, shared values and behaviors that bind the members of human networks and communities and make cooperative action possible" (Cohen and Prusak 2001, p. 7). Moreover, they suggest that social capital can have the following benefits for companies:

- Better knowledge sharing due to established trust relationships, common frames of reference and shared goals;
- Lower transaction costs, due to a high level of trust and cooperative spirit (both within the organization and between the organization and its customers and partners);
- Lower turnover rates, reducing severance costs and hiring and training expenses, avoiding discontinuities associated with frequent personnel changes, and maintaining valuable organizational knowledge;
- Greater coherence of action due to organizational stability and shared understanding (Cohen and Prusak 2001, p. 18).

The high-trust society and low-trust society of Fukuyama (1995) comprehensively considered the functions and characteristics of social capital at the corporate unit from the level of corporate organizations to the entire economy of a country. According to Fukuyama, in societies where a high degree of trust among people is evident, productivity is high, while the opposite is true in societies where there is a low level of trust. As examples where the former applies, he cites countries like Germany, Japan and the United States, and for the latter cites countries like China, France and southern Italy as examples. Fukuyama sought to explain differences in the prosperity of a country as differences in the level of "spontaneous sociability" (Fukuyama 1995, p. 4), which created not only social capital in the form of trust but also diverse social communities.

As the above summary shows, there is multiplicity in the concept of social capital and there has been progress in research on the subject from multifaceted perspectives. While further follow-up on this research is of considerable interest, it diverges from the objective of this chapter and therefore the author will limit discussion to its relevance with financial cooperatives.

6.2.2   Concept of Social Capital from the Perspective of Financial Cooperatives

Social capital in financial cooperatives refers to the occurrence of cooperation accompanying the development of trust arising from connections between people (members) based on common characteristics of the members in spatial Ma and relational Ma. Moreover, social capital in financial cooperatives refers to the external use of the internal accumulation of social capital formed by the grammar of a cooperative organization that is not clearly stated through a historical process, or that may later be clearly stated and formally established as rules.

To be specific, first and foremost the definition here can be understood as connections (relational Ma) among members in relation to a financial cooperative. These connections within the said organization inevitably become manifest only through the group rather than through personally owned capital or material capital. Moreover, these connections are never inherent in a single personal quality. This is why, as traditionally recognized, these connections are said to be a union of people whose purpose is to create credit in a joint financial cooperative organization for a capital

group. Furthermore, only when this happens that connections promote within said organization "cooperation" and "mutuality," which are the key elements of the organization.

Cooperation and mutuality, which are social capital essential to a financial cooperative based on connections, which are relational Ma, may be defined as stated below. To be specific, they may be defined as cooperative action where members attempt to resolve certain economic and social problems through connections by setting common goals. In such cases, cooperation is deemed to be material, monetary and utilitarian, and to be entail actions that include a time axis. In Denmark, cooperation through connotative networks was based on trust and regular face-to-face interaction, in other words, active social capital where very civic-minded people met regularly, got to know and trust each other, and frequently participated in myriad cooperative associations. In Japan too, it is possible to confirm a form of mutual financing prior to the formation of joint organizations, where relational Ma and chronological Ma accumulate with frameworks of spatial Ma in a Japanese cultural climate.

What is basically evident here are activities where depositors and borrowers provide each other with funds through mutual cooperation, and some examples of these are private mutual aid organizations such as *mujinko* and *tanomoshiko* in Japan and rotating savings and credit associations (ROSCAs) seen in various parts of the world. Furthermore, systems where members share interests in a long-term ongoing relationship do not require transaction conditions of individual economic entities based on short-term economic rationality in relation to funding as seen in the formation of loan portfolios; rather, the transaction conditions are determined by the portfolio of the organization as a whole. Such arrangements are related to the chronological Ma of the financial cooperative itself, where there is a sense of time that differs from that of other financial institutions. In this regard, there is a mutuality that the members are almost seemingly unaware of, and members engage in various cooperative activities governed by the mechanisms of the portfolio. To cite some of these, there is, first of all, the priority of overall income generated as a result of restrictions on investment dividends and the accumulation of retained earnings. In other words, the accumulation of retained earnings is a result of accumulation over generations made possible through denial of the benefits of investment results from time to time. Therefore, the portfolio assets are assets shared across generations, and can be described as the true results of joint social capital. Next is cooperation and mutuality arising

from joint liability. However, these are limited to historical experience and geographical area. These demonstrate results when the organization procures funding from an external source. In other words, by creating joint credit, the organization fulfills a guarantee function to external entities. A guarantor system prevents moral hazards of the borrower and fulfills the rational function of covering any shortfall in the security of the borrower, but this is based on the accumulation of social capital within that organization. There are also places that have introduced a mutual guarantee system between certain organizations that transcend arrangements between members. This is the result of the accumulation of bridging social capital. Furthermore, the existence of a central organization in cooperative financial institutions can be said to be an extended system of cooperation and mutuality in a different form.

In addition to the practices mentioned above, the term "reciprocity" is sometimes used to explain practices that promote the accumulation of relational Ma.

In such cases, reciprocity is cited as a phenomenon observed experientially in continuous exchanges of goods between individuals or organizations. According to French sociologist Marcel Mauss, reciprocity observed in countless exchanges of goods draws upon these societies, creates common norms, a common identity, trust and solidarity, and it creates strong economic links (Svendsen and Svendsen 2004, p. 38). Furthermore, according to Coleman, reciprocity in the sense of social capital is defined as the ability of people to cooperate for the sake of a common goal. Reciprocity accumulates in masses in local social networks, and through this reciprocity, social networks enable the bottom-up creation of social controls where social integration can be ensured through commitments any person makes to any other person. However, while Coleman clarifies the functions of reciprocity in society as a whole, he fails to clarify the subject and frequency of exchanges in relation to the financial cooperative organization. The differences in behavior inserted in the time axis as described in mutuality are also unclear. This is a matter for discussion on another occasion.

Alongside cooperation and mutuality, the concept of trust may be considered as one element of social capital. If we defer discussion of Guinnane (2001), trust is often mentioned as an element of success in financial cooperative organizations. Like the other elements mentioned, a psychological attitude of trust is also based on connections. It is believed that the borrowing and lending of money occurs as a result of trust between

members. Conversely, distrust does not engender financial transactions. This logic also applies to other economic transactions. When there is mutual trust between participants in transactions or general trust in public bodies, transactions of goods and services are established, and the settlement of matters relating to debts and credits that arise at that time may also be deferred.

In cooperative financial organizations this concept of trust functions as trust in the borrower in loan arrangements and as trust in the organization itself in the entrustment of deposits. Guinnane rejects the view that transactions are based on trust. He believes it does not matter whether or not a borrower is a person that can be trusted; what matters is that a mechanism for executing repayment exists, and this is irrelevant to trust and success of an organization.

Needless to say, it is difficult to consider the execution of a loan relying on trust alone. In arrangements based on Raffeisen principles, there were mechanisms for the repayment of loans, mechanisms particularly for preventing moral hazards, and mechanisms for handling remaining assets after a default. However, the existence of such mechanisms and the notion that trust is unnecessary in financial transactions are not necessarily relevant. In the history of financial cooperatives, differences in cognitive social capital (trust, solidarity, cooperation, etc.) have had an impact on the performance of organizations even in cooperatives with the same mechanisms (Quality-of-Life Policy Bureau, Cabinet Office, Japan 2003). Financial cooperatives made up of persons full of mutual distrust have been shown to perform poorly, and in some cases this poor performance has led to the demise of the organization. Even today, from time to time systems that are transplanted from other countries to developing countries appear in an incompatible form.

In loan transactions, the expectation of repayment is synonymous with trust, and it goes without saying that there would be obvious differences in the default rate in cases where repayment was not expected and the only recourse was material or human security. From the perspective of transaction costs and reputation risk, systems that rely on security to allow for this difference are most likely subordinate to systems where there is trust.

The establishment of the organization as a whole is centered on the social capital of cooperation, mutuality and trust. Furthermore, cooperative organizations have traditionally had norms and values as well as sanctions for deviating from these norms and values. In many cooperative financial organizations, values and norms were created among members in the early stages, and these were mutually communicated and shared

through common experiences. These values and norms were then passed on across generations by word of mouth and through behaviors. Norms eventually became enshrined in formal rules, and in some cases as laws that were generally accepted. The rest remained as internal rules of the organization. These rules prescribed the behavior of members and at times functioned as disciplinary measures for those who diverged from the rules. As a result, informal rules did not cease to exist but existed alongside formal rules and served to reinforce formal rules. Self-reinforcing organizations and informal organizations with rules that are not clearly stated stand in contrast to formal organizations, which are constrained by mandatory cooperation, and the ongoing production of informal rules is one factor contributing to the development of autonomous organizations.

Compared with communication of rules, communication of values was difficult, and this was particularly so at the time values were clearly stated. Nevertheless, efforts were made over a long period to have these understood through education, experience and tradition. Rules and values are essentially cognitive social capital and it should be obvious that they exist to make the organization function effectively.

As explained above, social capital in financial cooperatives is a mechanism for promoting cooperation and mutuality based on "connections" among members. It was also noted that values and rules that have an impact on the behavior and actions of members accumulated as social capital. It can be said that financial cooperatives, while utilizing social capital external to the organization, had a mechanism for reproducing social capital within its organization (Hooghe and Stolle 2003; Field 2003). In that regard, it has a mechanism that differs from organizations that simply use social capital or only reproduce social capital.

6.2.3   Functions of Ma: Significance in Financial Cooperatives

As stated above, social capital in financial cooperatives was viewed as connections as well as cooperation, mutuality, values and the norms that these connections engendered. In financial cooperatives, social capital must by necessity contribute to the common purposes of the members and therefore bring about some form of economic and social satisfaction through the accumulation of such capital. The importance of monetary and material capital already speaks for itself, and the human capital of each and every individual was also made evident. The following generalizations can be made about social capital.

In addition to creating transaction opportunities, the accumulation of this capital reinforces risk management capability in financial cooperative organizations. This enhances the production of information by deepening mutual cognition through connections. Nevertheless, it does not completely eliminate the asymmetrical nature of information. When monetary transactions take place in such cases, the social capital of trust along with the guarantee function of security facilitates transactions. In addition, rules regarding sanctions also function as a deterrent against moral hazards (Bastelaer and Leathers 2006). While terms and conditions include various rules, these serve simply to prevent so-called "free riding" and the formation of exclusive negative capital. For example, social capital prevents an individual from being the one party in the group proffering goods of poor quality, or proffering poor goods with a number of parties.

Likewise, social capital leads to reducing the cost of transactions (Hall and Jones 1999). This is because, in addition to the above factors, members can be expected to participate. As the group's aspirations for joint production in regard to monetary transactions between the organization and members increases, the relationship between the two grows stronger, and this can become a factor contributing to the group's competitive advantage.

At the same time, in addition to economic satisfaction, the members can expect to derive social satisfaction from the group. In regions or within groups that have a common bond based on spatial Ma and relational Ma, social capital creates stability and order. These provide members and stakeholders who are not members with a psychological sense of relief. Furthermore, they may also contribute to the reproduction of human resources.

For the above reasons, it is clear that along with monetary capital, material capital and human capital, social capital is an important element in economic outcomes and social satisfaction in financial cooperatives. Moreover, it can also perhaps be assumed that the integration of these forms of capital will demonstrate synergistic results and achieve excellent performance. It is in these areas that the economic and social functions of Ma can be seen.

6.3   Substratum of Financial Cooperatives in Japan

Various cooperative activities observed in Japan since ancient times accumulated Japanese Ma and formed an under layer for financial cooperatives as organizations introduced in Japan from the Meiji Period onwards. It

was because of this very under layer that financial cooperative organizations took root in Japan.

6.3.1　*Moyai*

Moyai (舫), which literally means "tied" or "fastened," is perhaps a word one does not often encounter today. Words such as moyai net, moyai boat, moyai mountain and moyai field were used in various economic contexts in the past. For example, a moyai net (seine) refers to group activities where villagers who voluntarily banded together, jointly purchased or produced a net to engage in cooperative fishing, and equally shared the catch. A moyai mountain refers to a mountain jointly owned by a village or a settlement of a smaller unit. A mountain like this was generally used for cultivating thatch for roofs, forage for animals and grass for fertilizer and was jointly managed by the owners. While admission to the group was generally restricted, people who required the above would receive permission to harvest through a lottery or other method, and at such times the village people sometimes cooperated in helping with the work. Moyai fields also operated on the same principle and on occasion were appropriated to pay for customary rituals at shrines, for example.

In this way, moyai has until modern times referred to group activities in farming and mountain villages. The nature of these activities could be seen in joint investment, joint ownership, joint management or joint labor of townspeople. Therefore, the word came to be used on occasion as a verb and at other times as a term denoting activities conducted cooperatively. In this way, joint activities that amassed relational Ma were repeatedly performed based on spatial Ma regulated in a natural environment (climate).

6.3.2　*Yui*

Yui (結) is a word that means "connection" or "tie." One derivative of the word that is easily understood even today is *yuino* (結納, betrothal gift). A betrothal gift signified the establishment of "ties" between families and a commitment to assist each other.

In this way, yui came to mean the provision of mutual labor. The provision of labor had to then be reciprocated in labor but reciprocation did not have to take place immediately. Reciprocating by another means was generally met with severe criticism, and sanctions would sometimes be imposed on those who failed to reciprocate or reciprocate commensurately. The exchange of manpower was in principle meant to be an

equivalent exchange, and the further one goes back in time, the more this was the case. As a money economy began to spread, and accounting became customary in various areas of everyday life, reciprocation became more exacting. Even in the initial stages, a person who continued to engage in unequal exchanges would have become the subject of sanctions including ostracism by the village people.

Although words used to express the concept of yui vary according to region, as a phenomenon it can be observed relatively frequently even today. Some examples of this are the provision of reciprocal labor in farming such as rice planting or rice harvesting, or assistance in building a house or the provision of labor for ceremonial functions. A person who has others help with a funeral will at some time complete the exchange by reciprocating through the provision of assistance at another funeral.

Unpaid exchanges of labor that had a certain interval were premised on fixed spatial Ma, and the period for fulfillment of the exchange had a particular chronological Ma.

This is different from *tetsudai*, unpaid labor when one person gives a hand to another.

6.3.3   *Tanomoshiko and Mujinko (Najita 2009)*

Tanomoshiko (頼母子) and *mujinko* (無尽講), private mutual aid associations, are said to date back to the Kamakura Period (Mori 1982). Customary practices supporting moyai and yui are common to these as well. However, the tanomoshiko were organized in financial areas and differed significantly in their function as a method of financing for ordinary people. The purpose and forms of tanomoshiko were diverse and the titles of the members who played a part in these structures varied according to era and region. The founder was generally referred to as the *oya* (parent, head) while participants were referred to as *kokata* (followers); the associations themselves were referred to as *kokai* and personal guarantors as *sewanin* or *oyauke-nin* (facilitators or parent/head consignees).

The purpose of these private mutual aid associations was to create an organization to provide natural disaster relief, assist people in times of personal misfortune, purchase goods jointly purchase equipment for shrine festivals, and so on. In the first two cases, there was a strong leaning toward charity, which in some cases might be a one-off event. In other words, this involved donations, which differs from the general provisions of organizations to be discussed from this stage onwards.

In ordinary private mutual aid associations, members convened in organizational meetings, and funds were provided on the first occasion. A lottery was held or the persons most in need would receive the money collected. Meetings would be held two or three times as required according to the number of association members who contributed funds at the meeting and who received funds in turn. Once all the members had received funds in turn, the association disbanded.

Needless to say, people in these associations basically had to know each other, and mutual trust was a requirement. Associations where such a mindset was lacking often failed prematurely. Therefore, laws were put in place and requirements for guarantors were established to prevent organizations from collapsing before it was time to disband. Of course, reputation and informal disciplinary measures were also probably effective. However, because there was little possibility that members of the organization would include complete strangers, it can be assumed that the functions of various Ma described thus far existed as preconditions.

Whatever the case, it is certain that private mutual aid associations are operated on the basis of mutuality and cooperation. Although the role of these organizations has decreased in importance, in Okinawa even at present this method of financing is practiced by ordinary people in a framework known as *moai* (模合).

6.4   Theory of Membership Banking and Relational Ma

Examples of Japan's financial cooperative organizations indicate a business model that uses relational Ma and captures customers by granting membership status. From the perspective of characteristics of financial cooperatives, the author will now discuss membership banking that goes beyond relationship banking, and reveal an inherent hidden novelty.

6.4.1   *Characteristic Features of Financial Cooperatives*

A financial cooperative can be interpreted literally as financing provided by an organization that conducts cooperative financing activities. Nevertheless, it cannot be said that clarifying the concept of "cooperative" in the area of financing is easy today. It is also a word that is widely misunderstood. Therefore, the author will revise the term describing this concept to "independent mutual assistance" and reconsider the meaning.

This concept forms the foundation of financial cooperatives and becomes the core of strategies. Independent mutual assistance is a concept whereby an economic entity that has more difficulty than other entities in borrowing under advantageous conditions—or who has difficulty receiving provision of financial products or financial services due to economic and social reasons—endeavors to receive financial services through mutual cooperation under conditions that are even slightly more advantageous than prior to cooperation. This is not an indication that the economic entity is weak, or that it is a group where members are mutually dependent on each other for economic strength. First of all, it is a condition that the entity be either self-supporting or have the latent potential to become self-supporting. Therefore, it is neither an organization that gives grants nor an organization that provides volunteer services to third parties. This is the demarcation between financial cooperatives and other non-profit organizations. If the organization is not currently independent or has no future prospects of becoming independent, it does not come under the category of financial cooperatives but is an entity in the area of grant economics or public financing.

With this understanding, an entity in a financial cooperative organization initiates action in an attempt to reduce transaction costs, distribute risk and obtain better services by cooperating in services that it cannot obtain singlehandedly, and this is the driving force in forming such an organization. Hence, if an economic entity can procure funds on its own at low transaction costs, there is no need for cooperation. In theory, it is in this regard that a cooperative differs significantly from a join-stock organization. Cooperation among shareholders in regard to their own profits as shareholders generally does not occur except when it is in regard to increasing the value of their shares, nor does cooperation occur in regard to loans or the receipt of other financial services.

There is, however, some difficulty in regard to the need for this cooperation. For each financial entity the decision as to whether cooperation in financing is necessary or not must be made while taking into consideration not only the cost of interest alone but also the transaction conditions, the assessment of other financial services in the mix, costs and so on of loans and opportunities for obtaining services. In reality, however, due to the large number of options, making choices is difficult for each economic entity, and it is not possible to pursue economic rationality endlessly. Therefore, for example, even though a loan in n periods may be advantageous from the viewpoint of interest, long-term irrationality and

inefficiency exist as seen in failures where loans in n + 1 periods are rejected. Consequently, the issue ceases to be one of price comparison, since a simple world that can be described in terms of price adjustment theory irrespective of time does not exist. This means the following: the nature of financial services must be assessed on a long-term time axis; such financial services are always accompanied by difficulties; and among economic entities there are some that make decisions only on the basis of short-term rationality. There is perhaps a need for comparison of cooperative and non-cooperative financing after excluding cases relating to short-term rationality.

If a financial cooperative organization is established on the condition of the certainty of cooperation, already three actors will be present. The author will refer to these as "the trinity."

"The trinity" implies that the roles of contributor, depositor and borrower of the financial cooperative are all performed by the same actor. If it were a stock-type financial institution, it would not matter if the shareholders (who are the investors), depositors and borrowers were completely different actors. In fact, this is generally the case. The characteristics above are what distinguish the two types of organizations and suggest important organizational characteristics in considering relational banking.

The income of financial institutions is generally derived from interest and fees which can be obtained from loans, management of other funds and other financial services, and these can be roughly divided into payment for the procurement of funds, personnel expenses, and non-personnel expenses that are business expenses, and profits. Furthermore, there are mechanisms whereby profits are appropriated to dividends and retained earnings. In this process in stock-type financial institutions, various stakeholders, who are different actors, receive a portion of this income commensurate with their holdings. Therefore, conflict over the portion they receive is inevitable. This is because shareholders demand high dividends, depositors demand high deposit interest, borrowers demand low interest on loans, and consumers of financial services demand low fees. Therefore, this distribution process is difficult, and the distribution takes place in a competitive environment through the bargaining power of the parties, and in a social context.

On the other hand, because the three parties are the same in financial cooperatives, conflicts of interest over shares of deposit interest, dividends and loan interest do not become pointed. This is because over a long span of time, costs and benefits eventually even out and approach a near-even

level. For example, the payment of interest on loans at some point will be offset by the receipt of partial dividends. Moreover, even those who are simply investors can have the right to expect not only dividends but also borrowing as consideration for their investment, and this arrangement promotes equalization.

At any rate, such a mechanism is one characteristic that exists only in the morphology of financial cooperatives, and it should be noted that this mechanism has the effect of mitigating conflicts of interest among the economic entities.

Let us next now take a look at the concept of participation. As mentioned earlier, the members of financial cooperatives are given the right or opportunity to participate in the financial organization from various channels.

As in a joint-stock company, general participation includes participation in the highest decision-making organ and, through these opportunities, participants decide on the details and authority to be entrusted to representatives in regard to decisions on important matters of management of the organization. As this aspect is often explained as basic theory, the author will refrain from elaborating further and move on to the next point of the discussion.

Another characteristic regarding participation in financial cooperative organizations is the provision of opportunities for members to take part in various instances of decision-making and management. These opportunities are diverse and range from the level of everyday business to the level of formulating strategy. Mentioning this aspect may seem odd from the viewpoint of the merits of professionalism and from the viewpoint of governance, but if we consider this aspect from the fact that financial cooperatives have a trinity structure consisting of owners, borrowers and depositors, it is worth noting that the members constantly have opportunities to make commitments. In contrast to being just investors in long-term capital, they have ample opportunities to be in contact with the main organization. Moreover, if "participation" is reflected in management rules, it can be said that such activity is recognized.

6.4.2   Membership Banking: Finance that Deepens Relational Ma

To eliminate the difficulty in transactions often seen between financial institutions and companies, that is, the gap in financing, a number of

methods have been considered to date. One of these is relationship banking, which is a method of the banking business where a long, ongoing relationship is established between the financial institution and the customer in order to facilitate transactions. The main purpose of this strategy is to contribute to the production of information and elimination of various difficulties associated with loans. However, the following points can be made regarding the membership banking practiced by financial cooperative organizations, which goes beyond this strategy. Moreover, these are characteristics where chronological Ma, spatial Ma and relational Ma are truly functioning.

Membership banking adopts a relational Ma structure where relationships seen in simple relationship banking are further deepened through an underlying spatial Ma, which is surrounded by common "ties" known as common bonds. In this process, a unique chronological Ma becomes evident.

In light of this view, the author would now like to look closely at relational Ma between members and the organization.

For a retail financial institution, general relationship banking, irrespective of the form of ownership of the organization, is one strategy it can execute. Furthermore, much prior literature focuses discussion on the relationship between a stock-type bank and the customer, and fails to take note of the form of ownership. The majority of this literature pertains to relationship banking for the resolution of problems that arise due to asymmetry in information, and the discussion, in line with this, centers on what should be done in the areas of marketing and economic policy. Bearing in mind such discussion, the author would like to explore the nature of relationship banking in financial cooperatives. In this case, to avoid confusion in concepts that would arise from using the same terms, the author will use the term "membership banking" here.

Use of this term will prevent confusion with conventional relationships between customers and financial institutions, and may clarify the relationship of financial institutions and customers as the embodiment of both owner and user. In this sense, it can be considered an appropriate term for expressing that it is a membership-type financial institution and has member-centered management. Here, the author would like to discuss member relations as the basis of this concept.

The differences between relationship banking and membership banking encompass both qualitative and quantitative aspects. Membership banking at a glance appears to be a convergence of relations consisting of

relations between the organization and fund providers, the organization and fund consumers, and the organization and capital providers. In this context, at least three traffic channels of information and emotion are formed between the organization and its members, and the volume of traffic increases more than if it were a single channel. On the other hand, relationship banking in the generally assumed narrow sense is a single channel. On occasion it may become multichanneled under a strategy to diversify services, but there are few cases where such relationships constitute three channels. Moreover, in many cases, the channels are one-way. In such cases, information flows in one direction from the customer to the financial institution with both parties rarely making mutual business commitments and little ongoing emotional traffic occurring between the two. In other words, there is an absence of empathy.

The phenomenon evident here is not simply an issue of quantity. A qualitative change in, and deepening of, information and emotion occur. For example, when it comes to a sense of ownership, governance and participation, it is not possible to receive all three from a joint stock-type financial organization. Only a financial cooperative system is capable of creating such a multifaceted relationship, which is inherent to the system. While appearing to be simply a matter of emotion, the multifaceted nature of the relationship also promotes improvement in earnings and cost efficiency in the organization as mutual trust and loyalty grow and mature. For example, not only do the types of information become more diverse, content of the respective types of information also increases in depth, making efficient transactions possible. Moreover, the same effects can be expected even through the formation of special Ma relating to place and time.

If the members and the business entity, which is their representative, actively and autonomously develop and maintain their relationship, this relationship based on a trinity structure comprising borrowers, depositors and owners, which goes beyond individual lending relationships and individual product relationships, will continue to strengthen while becoming more complex.

As a result, the following characteristics will become evident in membership banking:

1. It becomes easy to identify the needs of members, and this reduces development costs of financial products and services.
2. Membership banking promotes diversification of financial products and services. In other words, it makes a comprehensive financial

services relationship possible. This signifies a diversion from simple relationship banking involving lending.

3. Segmentation in the relevant financial market will occur.
4. Trust and loyalty in financial institutions will comparatively increase more than that seen in general relationship banking. This will ultimately lead to an increase in customer retention.
5. Motivation in information production and member signaling functions of financial institutions will increase.
6. Long-term and multifaceted assessment of organizational management will be conducted. This is because members will calculate their interests in the course of diverse transactions in relation to dividends on investment, deposit interest, loan interest and fees on other financial services. Moreover, they will also have vested emotions outside of economic accounting.
7. Development of member relationships from economic transactions to exchanges of emotion will proceed with relative ease, and the time required will decrease. This does not mean, however, that all members will follow this path of development to the final stage of mutual exchange of emotions.
8. The commitment of the financial institution to the members will increase.

In summary, membership banking is essentially the creation of specific relationships in relation to spatial and locational Ma, which are forms of social capital that already exist. In other words, financial cooperatives are created on the basis of a common bond[2] where certain networks already exist. Therefore, new relationships formed between an organization and its members will reflect the nature of their common bond. Moreover, the common bond will strengthen their relationship, irrespective of the form. The extent of this strengthening will depend on the solidarity of the common bond. Furthermore, the greater the number of common bonds among the members, the more the solidarity among members will increase. Therefore, there is a strong likelihood that the relationship between members and the organization will increase. Furthermore, due to its fixed, adhesive nature, the common bond will inevitably eliminate short-term accounting from membership banking and provide long-term chronological Ma.

In summary, it has been clarified that relationship banking in financial cooperative organizations is different in nature from that of financial institutions of other organizational types. It was also revealed that even general

relationship banking that goes through a joint organization system undergoes qualitative and quantitative changes and appears as a different institution. This means the similarities of a joint-stock company and cooperative organization are merely superficial, and the two internally produce and utilize completely different things. Therefore, rather than present the cooperative organization simply as a complex entity of relationship banking, the author used the term "membership banking" to highlight the differences.

6.5   Conclusion

The use of the social capital of Ma along with other social capital made it possible to introduce financial cooperatives in Japan from abroad during the Meiji Period, and through their operation and the reproduction of Ma internally these organizations contributed to the overall accumulation of social capital. The trajectory of development of Japan's financial cooperatives would be difficult to explain without including the functions of Ma or their accumulation and use. Therefore, Ma is one analytical tool that must be included in explaining this organization, and at the same time, the need to understand Ma as a principle in the operation of organizations is seen. At the same time, however, there are still many remaining issues regarding Ma, including the negative aspects of Ma which were not discussed in this paper. These remain a subject for future research.

Notes

1. Even in English-speaking spheres, there is discussion of the relationship between chronological Ma and spatial Ma. But, they are independent in linguistic expression.
2. For example, a common bond may be a geographical area, occupation, industrial sector, religion or race.

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Green Innovation Based on Ma Thinking: The Lessons of the Japanese Smart City Vision

Nobuyuki Tokoro

7.1 The Role of Smart Cities in Health Support Services

The building of smart cities has been attracting considerable attention in recent years. A smart city is an environmentally friendly city aimed at optimizing social infrastructure such as electric power, water, communications and transport systems that support urban life through the use of information and communication technology (ICT) to reduce energy consumption and CO_2 emissions. It is hoped that the construction of smart cities will resolve various issues endemic to cities such as burgeoning and aging populations, traffic congestion and security problems.

In this chapter we will take a look at smart cities from the perspective of innovation in the provision of health support services. As stated above, smart cities have the ability to resolve various problems endemic to today's cities, and it can be said that the building of smart cities has the potential to create diverse values and innovation. Innovation in health care is one

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example. For example, the utilization of ICT in smart cities to connect people's homes with medical facilities including hospitals via networks will make it possible for the aged to receive services such as home medical care, health management and catering in their own homes. It is believed that in the future this technology will be instrumental in achieving autonomous, comfortable living arrangements for the aged and high quality healthcare services and in the creation of innovation in health support in aging societies.

Throughout this chapter, we will look at the example of the Yokohama Smart City Project (YSCP), a smart city demonstration project currently in progress in the city of Yokohama in Japan. Implemented as a Next-Generation Energy and Social Systems Demonstration Project led by the Ministry of Economy, Trade and Industry, a Japanese government organization, this project is entirely the initiative of the government. In addition to the project in the city of Yokohama, similar projects are underway in Toyota City, Keihanna Science City and the city of Kita Kyushu. The YSCP is the largest of these projects. A city with a population of 3.7 million people, Yokohama is renowned as one of the world's most thriving metropolises. It also has an international trade port, the Port of Yokohama, which is one of Japan's largest commercial and industrial hubs. The city of Yokohama aims to transform its existing metropolis into a smart city, and the main objective of the YSCP is to obtain various kinds of data through demonstration experiments. Major companies representative of Japan such as Toshiba, Hitachi, Panasonic, Nissan Motor, TEPCO and Orix are participating in the YSCP and there are expectations that new value will be created through the integration and resonance of the respective companies' technologies and know-how.

7.2   STATUS OF SMART CITY CONSTRUCTION PROJECTS

Before commencing the main discussion, we would like to give a brief overview of the current status of smart city construction projects. In various regions across the world, a large number of smart city construction projects are underway not only in developed countries but also in developing countries. These projects can be seen as indicative of the increasing gravity of the problems cities in both developed and developing countries face and the extent to which countries are turning to smart city technologies to resolve these problems.

According to existing survey research on smart cities (e.g., Smart City Report 2013), as many as 608 smart city projects were underway in various regions of the world as of 2013. A look at the countries and regions where these projects are located shows that 225 are in China, followed by 124 in North America, 91 in Europe, 78 in various Asian countries excluding Japan, 63 in Japan, 17 in Africa and 10 in Latin America.

The content of these 608 projects is varied, but those with elements of urban development account for about 315 projects, or roughly half of all projects. If we divide the countries where these projects are being implemented according to developed and developing countries, 232—or two-thirds—of these projects are in developing countries. Among these, in China 143 projects are engaged in urban development, outnumbering by far other types of smart city projects. China is currently undergoing urbanization at an extremely rapid rate, with approximately 12 million people migrating to cities from farming villages every year. Consequently, China's cities must contend with a range of problems including significant growth in population, atmospheric pollution and traffic congestion. It is against this backdrop that the country as a whole is turning its attention to urban development. The concentration of population in major cities is also a problem in Southeast Asia, the Middle East and various countries in Africa, where new urban development projects are being launched one after another.

In developing countries, urban development in many cases is taking place alongside industrial development in urban development projects. In other words, in addition to the creation of new residential areas on vacant land such as fields or landfill, many plans drafted for the development of large cities encompass the creation of industrial zones with comprehensive infrastructure aimed at enticing industry. The objective here is to secure employment for people who flock to urban areas by encouraging businesses to set up their operations there. For example, the Sino-Singapore Tianjin Eco-city project plans to build a new city on vacant salt fields on the Hai Bo coast in China for a population of approximately 400,000. In addition to the construction of residential areas, the project intends to attract the outsourcing service industry in sectors such as the environment, energy, research and development, and finance. In India too, the Delhi Mumbai Industrial Corridor Project between the capital Delhi and the commercial hub Mumbai has similar objectives. There are plans to lay a 1500-kilometer dedicated freight railway between the two cities and to

develop to the left and right of the tracks an expansive area of approximately 150 square kilometers. In addition to creating residential areas that will include housing and commercial areas, the project will establish social infrastructure such as industrial zones, logistics centers, electric power plants, roads and a harbor.

In developed countries, on the other hand, many of the projects are aimed at redevelopment in mature, existing cities where infrastructure development in industrial zones has already been established, to address urban problems such as carbon dioxide emissions, traffic congestion and a worsening of the living environment. In developed countries in North America and Europe and in Japan, smart grid projects account for the majority of smart city projects. In the United States, for example, the introduction of smart grids is being promoted as a national strategy for modernizing aging power grid systems. President Obama viewed the American Recovery and Reinvestment Act (ARRA) established in February 2009 as legislation for primarily supporting smart grids, and a large number of smart grid projects were launched to obtain funding under this legislation.

The circumstances in Europe and Japan are somewhat different. In many cases, the motivation for introducing smart grids in Europe and Japan is to facilitate the incorporation of unstable electricity generated through renewable energy into system networks as a global warming countermeasure. In Europe in particular, the EU has made a commitment to introduce 20% of renewable energy as one of its energy saving goals, and smart grid projects are being implemented to achieve this. In Japan, on the other hand, the impact of the Great East Japan Earthquake disaster of March 11, 2011, was significant. After instituting planned power outages, 15% mandatory energy reductions and other stopgap measures to address the energy shortage following the disaster, the government reviewed the country's electric power supply and energy planning and made plans to introduce smart grids as part of its energy measures.

While in many cases projects are being implemented in developed countries to introduce renewable energy or demonstrate technologies, in developing countries there are also a number of large-scale projects that are worthy of attention. For example, the Masdar City project underway in Abu Dhabi will build an artificial city for a population of approximately 50,000 in the desert near Abu Dhabi, and the city will be powered entirely by solar power and other renewable energies.

On the other hand, projects for providing infrastructure and services for the aged and health and welfare projects are relatively small in number but their latent potential is quite significant. Almost all of these projects are concentrated in developed countries. For example, a breakdown of 35 projects for infrastructure and services for the aged shows that 16 of these are in Japan, 11 are in Europe and 8 are in the United States. In the future, however, demand for measures for the aged and health and welfare services are expected to increase in developing countries, and at that time it is likely that developing countries will draw on the experience of developed countries.

7.3   REVIEW OF PRECEDENT RESEARCH ON SMART CITIES

Due to the recent increase in social interest in smart cities, smart cities as a subject of research is also increasing in importance, as researchers make efforts to analyze smart cities from various perspectives. Therefore, we next take a look at some representative research to date, presenting a summary review of research in this area. The analytical approach adopted most frequently in research focusing on smart cities is analysis from the perspective of "urban planning."

For example, Pardalos and Rassia (2014), who conducted research across a wide range of elements including architecture, engineering and related areas, analyzed smart cities mainly from the perspective of urban engineering in regard to sustainable technology and alternative energy for creating smart cities as well as energy systems for future cities. Ercoskum (2012) examined technological and social issues encountered in structuring smart urban plans and designs. She focuses on resilience, discussing it in various scenarios centered on the use of eco technology.

Among approaches from the perspective of urban planning are studies whose main emphasis is on urban administration. For example, Herrschel (2013) examines the construction of smart cities from the perspective of regionalism. Focusing on the mechanism of policy decisions in the processes of creating smart cities, he discusses the impact particular regional circumstances have on those processes and cites the examples of smart city creation in Vancouver and Seattle. In a similar manner, Gibbs, Krueger and MacLeod (2013) analyze the construction of smart cities from the perspective of urban administration. They argue that the urban planning of smart cities should be based on the three visions— economic growth,

the connectivity of ecosystems and social fairness—and they discuss the impact urban spatial development has on the existing urban social strata, political culture and economic infrastructure.

In addition, Shaw (2013) looks at the case of Docklands in Melbourne, and through analyses of a range of scenarios regarding the project over a 20-year period presents a positive assessment of the project's sustainable development. On the other hand, Tretter (2013) takes a negative view of smart cities. While conceding that they are environmentally friendly, he believes they are not capable of resolving many endemic urban problems such as homelessness, citing the example of Austin, Texas, as a case in point.

From a historical viewpoint, Townsend (2013) examines the forces that have shaped urban planning, design and information technology from the rise of industrial cities in the nineteenth century to the present. In addition, he analyzes how the two global trends of rapid urbanization and spreading ubiquity will clash with each other and the impact that technology will have on future cities. His analytical approach incorporates a viewpoint of "urban civilization theory."

As an approach from the perspective of innovation and competitiveness, Deakin (2014) focuses on governance and modeling in the transitional process of a city as it goes from being an intelligent city to a smart city. He develops the argument that a smart city in the true sense of the term is not just a digital city or an intelligent city: it is a city where innovation networks and creative partnerships are built within the city and where learning, the transfer of knowledge, and the development of capabilities take place.

Likewise, Campbell (2012) views smart cities from the viewpoint of "learning cities" and examines the correlation of a city's learning process with innovation and competitiveness. According to Campbell, continuous learning and the creation of innovation are necessary to build a true smart city. Citing specific examples of cities such as Amman, Barcelona, Portland and Seattle, he analyzes the mechanisms of how networks function and how breakthroughs in learning and innovation occur in cities.

However, existing research fails to discuss in depth the strategic management of the formation of smart cities ("learning cities") through continuous learning and innovation. Focusing particularly on a project initiated by government at the national and municipal level, we now consider and analyze an innovation process where a group of companies from different industries create new knowledge through their realization of a smart city vision.

7.4   THEORETICAL FRAMEWORK OF ANALYSIS

We will analyze the Yokohama Smart City Project (YSCP), taken up in this chapter from the viewpoint of "strategy-making processes" (e.g., Chakravarthy and Doz 1992; Mintzberg et al. 1998). The strategy-making processes of companies can be roughly divided into two: "deliberate strategy" and "emergent strategy" (e.g., Mintzberg 1978; Mintzberg and Waters 1985). A deliberate strategy is the result of intentional choices, and in many cases it is both logical and analytical. Unlike deliberate strategy, which is decided and executed by the top level of corporate management, an emergent strategy is a pattern of actions that occurs in a manner independent of the specific intentions of the organization or decision-making of central administration and originates at the work site or from proposals of middle management.

Intel's shift in strategy is one example of an emergent strategy. When Intel withdrew from dynamic random-access memory (DRAM), its withdrawal had not been part of the strategy of management at the time. Two to three years after middle management began to shift investment to logic integrated circuits (IC), the company's executives acknowledged the need to withdraw from the DRAM business and gave priority to logic IC. Allocation of the company's budget, which was based on profitability, then automatically shifted resources from DRAM with low profitability to highly profitable logic IC (Burgelman 2002).

An example of an emergent strategy at Toyota is also worthy of mention (Fujimoto 1999). At the time Toyota developed its unique production system, it was adopting ad hoc procedures in response to the environment. For example, despite the limitations of its production capacity, it established affiliations with suppliers to accommodate its rapidly expanding market. To provide for the domestic market that was small in scale but with elaborate needs, it increased the number of models but needed the capability to efficiently manufacture a wide range of products in limited quantities. This need became the basis of the development of its capability. These activities were clearly not part of its deliberate strategy.

In reality, however, there are few examples of emergent strategies that simply develop spontaneously. The vast majority of strategies that are proposed in a bottom-up manner and are said to be emergent are also generally strategies that are consistent with the company's overall missions and direction (e.g., Kodama 2007). In this sense, emergent strategies are rarely strategies from ideas that spontaneously emerge as the ideas of the proposers; more often they are the outcomes of the continuous honing of the

skills of staff on a daily basis over time as a signature process (Gratton and Ghoshal 2005) of the organization or improvisation (e.g., Kodama 2005).

As mentioned earlier in Chap. 2, Ma thinking of practitioners synthesizes deliberate strategy with emergent strategy. Emergent strategy is formed through concept creation based on abduction, which is the foundation of resonance achieved through the introspection and the sharing of tacit knowledge of individuals. In organizational and corporate networks where collaboration is encouraged, practitioners share various dynamic contexts and create new knowledge in an improvised manner (e.g., Kodama 2005). Furthermore, concepts that are actualized become embodied in products and services as explicit knowledge, and a deliberate strategy is implemented through decision-making of the company as a whole. One pattern of synthesis of the dissimilar paradoxical strategies of emergent strategy and deliberate strategy is the emergent development of creativity and imagination through dialectical dialogue of members based on deep collaboration, repeated self-correction of the hypothesis formed, and ultimately the certain, deliberate, planned realization of the hypothesis (Kodama 2006). In time-space, Ma thinking repeatedly moves from such emergent strategy processes to deliberate strategy processes in a spiral-like manner. Another pattern of synthesis is one in which success from an emergent strategy born from improvisation in response to circumstances at the front line of operations (such as the ability to recognize potential technology, as in the case of Intel, or in response to customer needs, as in the case of Toyota) redefines the company's own strategy, which incorporates such success as deliberate (planned) strategy of the company thereafter.

The YSCP is a project that was initiated by the government and executed according to a master plan prepared by the government, which established clear provisions regarding the project budget, project period, objectives of the various demonstration experiments to be conducted during the project implementation period, and the respective roles of the participating companies. The companies participating in the project were to conduct their activities within the framework of their predetermined roles based on the principles of the master plan established beforehand. Nevertheless, although at the macro level participants were able to exercise discretion to a limited extent only, at the micro level participants were encouraged to exercise autonomous behavior in solving technical and social problems involving practical matters. Therefore, it can be inferred that actions based on Ma thinking initiated by the respective participants in the space between the boundaries of "discipline and

control vs. autonomy and dispersion" and "planning and analysis vs. creation and imagination" steered the project to success.

The strategy-making process based on Ma thinking established as the theoretical framework for the case analysis of smart cities in this chapter will be an analytical framework consisting of the synthesis of two dissimilar paradoxical strategy-making processes, the first being a process executed in a top-down manner according to systematic, rational, planned procedures based on the traditional strategic planning school of thought (Ansoff 1965; Steiner 1969; Andrews 1971), and the second being an emergent and autonomous process executed in a highly autonomous bottom-up manner.

It can be assumed that the analytical framework of the YSCP was the execution of a strategy-making process based on Ma thinking. Projects where plans are prepared by government administration and the role of each company is clearly stated are generally based on a deliberate strategy, and the processes rely on particular characteristics such as the drafting of plans by those in charge at the top, top-down implementation of a systematic, rational plan, and clarification of the individual roles of those involved in the project. In such cases, the autonomy of the individual participants in the project is restricted to a certain extent, and the intended values are manifest at the planning stage. In other words, the deliberate strategy determines how value intended at the planning stages will be manifested in the course of the top-down execution of the project. On the other hand, in the case of the Yokohama Smart City Project, there was an understanding that even if the project progressed systematically in a reasonable manner according to the master plan where individual companies had predetermined roles, some form of emergence would occur in the process and the creation of value not initially intended would result in development of an "emergent strategy" of the individual participants and among the participants. Co-creation is generally manifested through the synthesis of dissimilar strategy-making processes as stated above through Ma thinking of "emergence amid order" (see Chap. 2, Fig. 2.1).

7.5   YOKOHAMA SMART CITY PROJECT (YSCP)

7.5.1   *Project Missions and Basic Principles*

In January 2010, the Ministry of Economy, Trade and Industry (METI) selected four regions as demonstration areas for its Next-Generation Energy and Social Systems Demonstration Projects, and the Yokohama

Smart City Project was selected as one of these. Accordingly, the YSCP subsequently conducted demonstration experiments in technology, systems and a business model for building a smart city in Yokohama. The project implementation period was a five-year period from 2010 to 2014.

The missions of the YSCP can be roughly divided into two areas. The first, needless to say, was to establish a low-carbon society. Therefore, the first mission was to realize in the city of Yokohama, one of Japan's leading metropolises, a low-carbon society with reduced carbon dioxide emissions. This was to be achieved by using the latest technologies to transform on a large scale the city's social infrastructure in areas such as electric power generation and transportation, among others. The second was to establish a smart city model of the world's highest level based on various data obtained from the demonstration experiments in Yokohama and to capture overseas demand and increase the national wealth through participation in the construction of social infrastructure overseas, particularly in developing countries of Asia where growth is significant. The Yokohama Smart City Project is an initiative aimed at transforming a large metropolis with a population of 3.7 million people to a smart city. However, transforming an existing social infrastructure, where residents already live, is no easy task. Campbell (2012) argues that continual learning and the creation of innovation are essential when building a smart city, and this viewpoint is all the more applicable when an existing city is to be transformed into a smart city. At the same time, knowledge gained from the accumulation of such experience becomes a valuable asset and may be able to offer advantageous solutions for building social infrastructure in developing countries in Asia that suffer from various urban problems. China in particular, which suffers from population migration to cities and environmental pollution, has shown strong interest in the building of smart cities and is a promising candidate as an export destination for Yokohama-type solutions.

To achieve the above missions, the YSCP identified four elements as requirements for a smart city: scalable, speedy, sophisticated and satisfying.

"Scalable," the first of the elements, takes into account the size of cities in emerging countries of Asia, which are assumed to be the future export destinations of Yokohama-type solutions. Asian countries such as China and India have enormous populations and numerous cities of a significant size. Therefore, it is likely that data obtained from demonstrations of small-scale smart cities may not be applicable to such large cities. The demonstration experiments in Yokohama were of the largest scale in the

world, and one of the requirements of this project was to verify that findings from the demonstrations were sufficiently applicable to other large cities in the world in terms of size.

"Speedy," the second element, means the project aims for the rapid development of smart cities. If smart city know-how and technology were to be deployed to fast-growing developing countries, rapid construction would be essential. Therefore, the YSCP was to consider accelerating the launch of smart cities by introducing integrated "urban package solutions," which would include both the construction and operation of facilities and maximize the utilization of existing urban infrastructure.

"Sophisticated," the third element, refers to the fact that the project would aim for a smart city that achieved both excellent cost performance and high quality by not only promoting the latest technologies that Japan has to offer but also integrating this technology with inexpensive mature technologies. Furthermore, an objective of the project was also to transform large cities to smart cities that have a spirit of innovation by encouraging people to be more forward-looking in their everyday lives. This was to be achieved not only by changing urban infrastructure but also encouraging changes in people's lifestyles through incentives and other means.

"Satisfying," the last of the four elements, means an awareness of smart city solutions among residents who would participate in and derive satisfaction from achieving an environmentally friendly city. This would require the realization of an environmentally friendly lifestyle that neither compromised convenience nor imposed restraints.

The above are the basic principles of the project, but in addition to these, the city of Yokohama established the Yokohama Climate Change Action Policy, which committed to the following goals:

1. Reduce per capita greenhouse gas emissions to at least 60% of the fiscal 2004 level by 2050.
2. To achieve the above target, first reduce per capita greenhouse gas emissions to at least 30% of the fiscal 2004 level by 2025, and then introduce renewable energy at a level equal to ten-fold the level in fiscal 2004.

To achieve these ambitious targets to reduce carbon dioxide, the project committed to the basic principle of developing social systems that utilize low-carbon technologies in the three areas of energy, buildings, and

transport and transportation. To achieve these goals, the city also made a commitment to promote efforts based on the following three steps:

1. Demonstrate "technologies" by actively adopting technologies in an integrated platform ahead of their practical application.
2. Demonstrate the "economic efficiency" of technologies through the trial introduction of service systems and new business for promoting the dissemination of validated technologies.
3. Demonstrate the "effects of dissemination" of technologies as a social system through the broad dissemination of services that have been established (including linking these with system design).

In other words, the city of Yokohama made a commitment to proceed with the project to achieve the above goals while establishing systematic, rational demonstration processes for technologies, economic efficiency and dissemination effects, and while bearing in mind the four requirements of a smart city mentioned earlier: scalable, speedy, sophisticated and satisfying. As indicated earlier, transforming an existing city with social infrastructure already in place to a smart city is no easy task. Unlike building a new city on vacant land where nothing exists, in this case the project had to take into consideration the impact work would have on the activities of residents already living in the city as well as companies engaging in economic activities there. Therefore, as indicated by Hollands (2008), the transformation of an existing city to a smart city was not only a process involving the "hard" aspects of introducing smart infrastructure using ICT but also a process requiring the establishment of "soft" aspects such as the building of creative partnerships, the transfer of knowledge and the development of capabilities, among others. Furthermore, as an existing city makes the transition to a smart city, the issue of governance of the city must also be taken into consideration (Deakin 2014).

The Yokohama Smart City Project demonstration experiments were to be implemented in three areas: the Minato Mirai 21 area, the Kohoku New Town area and the Yokohama Green Valley area. Of these, the Minato Mirai 21 area has a population of approximately 7000 and approximately 3600 households, and it is a large commercial district with high-rise buildings and commercial facilities. During the demonstration, building energy management systems (BEMS) were to be introduced in ultra high-rise office buildings in the area, and the project was to achieve management of

a group of existing and new BEMS by constructing an integrated BEMS to control the BEMS in the individual buildings. Moreover, the "visualization" of energy used in the buildings and optimization of energy management in the office buildings, including heating and air conditioning, were to be verified. Furthermore, to address inadequacies in the transportation system infrastructure for providing prompt transfer services, the project was to develop low-carbon mobility infrastructure through the introduction of electric vehicle (EV) circuit buses as well as EV car sharing and recharging stations for business purposes. The project was also to verify the efficiency of this transportation system with a low environmental load.

Kohoku New Town area is a bed town (bedroom community) of the city of Yokohama with a population of approximately 200,000 and 75,000 households. Capitalizing on the characteristics of the area, the project was to tap into demand for home improvements by providing low-carbon improvements such as insulation retrofitting, home energy management systems (HEMS) and residential photovoltaic (PV) systems, and verify these in demonstration experiments. Other areas to be verified in the experiments included the introduction of renewable energy at public facilities and parks, the introduction of BEMS when supply-side equipment and demand-side equipment were renovated in district heating and cooling (DHC) in the area in front of the railway station, and the integration of the transport of high-temperature waste heat from a waste treatment plant and a DHC system.

With a population of approximately 210,000 and approximately 87,000 households, the Kohoku Green Valley area is a compact area along the waterfront with housing complexes, industrial estates and public facilities including schools and hospitals. This area has an aging population and a declining birthrate. Therefore, with the cooperation of industry, government, the academic community and local residents, the project was to promote the revitalization of the local economy as well as the introduction of smart technologies in housing complexes and industrial estates through the introduction of renewable energy and highly efficient equipment. In addition to introducing smart technology, the project was also to work towards the establishment of a low-carbon model area by raising awareness of the environment among local residents and businesses to ensure that proactive energy-saving activities would be widely practiced.

Details of the seven demonstration experiments implemented in the YSCP are given below.

7.5.2   Seven Demonstration Experiments

Large-Scale Introduction of Renewable Energy
This demonstration was to verify the hypothesis that the intensive installation of renewable energy equipment in a specific area and the establishment of an energy management system in that area using a community energy management system (CEMS) combined with storage batteries, etc., would achieve both a stable power supply and quality of life for the residents, thereby paving the way for the large-scale introduction of renewable energy. In specific terms, this meant the introduction of a solar power system into three areas—Minato Mirai 21 area, Kohoku New Town area, and Yokohama Green Valley area—with residential PV systems totaling about 13 MW (about 4200 households × approx. 3 kW). The goal was to introduce renewable energy with a total capacity of about 27 MW including about 13 MW (about 4200 households × approx. 3 kW) of residential PV systems and approx. 14 MW of medium and large-size PV systems, based on the assumption that this would bring the percentage of power generated by residential PV systems to more than 5% of the final energy consumption by households in the demonstration area.

Furthermore, the project was also to install solar thermal panels, solar thermal absorption water heater/cooling systems for air conditioning, and gas engine water heaters, etc. in buildings in the three areas and to conduct demonstrations to verify technologies and carbon dioxide reduction effects. Demonstration experiments were also to be conducted on the introduction of river water source heat pumps to verify their effect on carbon dioxide reduction. The river water heat source pump is a highly efficient heat source system for air conditioning. It utilizes river water with a stable temperature throughout the year (i.e., the water stays cool in the summer and is warm in the winter relative to the air temperature) as a source of heat or cooling to provide heating or cooling for buildings. This experiment was to verify the hypothesis that the introduction of river water source heat pumps in new buildings to be constructed in the area around Yokohama Station where abundant river water is available would contribute to a significant reduction in CO_2 emissions by replacing fossil fuel (used in boilers).

Home Energy Management Systems (HEMS)
This demonstration was to verify the hypothesis that both quality of life (QOL) of residents and a reduction in household CO_2 emissions could be

achieved through (1) the demonstration (at a certain level) of the effects of load creation and load-shifting through the streamlining and visualization of household power consumption using HEMS; (2) the introduction of economic incentives contributing to the introduction of a large number of solar power systems; and (3) the utilization of highly efficient energy systems that are effective in reducing CO_2 emissions.

Appropriate methods for approaching potential users with a strong environmental awareness were also to be considered in the widespread deployment of HEMS. Participation of owners of detached homes in the demonstration experiment was to be by public invitation. As incentives for introducing HEMS, introduction of the system was to be combined with the provision of equipment that could be efficiently used on its own such as PV systems or solar water heaters, and an additional subsidy was to be provided by the city of Yokohama for the installation of a PV system if users agreed to participate in the demonstration experiment and connect their systems to community energy management systems. For new detached houses, houses equipped with HEMS were to be offered through collaboration between home builders and HEMS manufacturers.

In housing complexes, solar thermal energy systems, PV systems, fuel cells and storage batteries were to be installed, and a demonstration experiment was to be conducted on the optimal control of multiple decentralized power supply systems and energy-consuming equipment located in between houses.

Building Energy Management Systems (BEMS)
The demonstration was to verify the hypothesis that the use of BEMS could be promoted to reduce CO_2 emissions from business and commercial buildings through (1) the provision of various combinations of BEMS and highly efficient energy systems; (2) the rating of buildings according to environmental performance; and (3) the combination of these with services to reduce building owners' initial costs and maintenance costs.

The functions of "coordination with CEMS and integrated BEMS" and "visualization of CO_2 emissions" were to be added to BEMS as standard functions for newly installed BEMS and as additional functions for existing conventional BEMS to verify CO_2 emission reduction effects at each building, at each group of buildings, and in the area as a whole. At the time of the introduction of BEMS, highly efficient energy systems and storage cell systems were to be introduced in some buildings. Further reductions in CO_2 emissions reduction were to be achieved through optimum operation

of these systems with BEMS connected to CEMS. Furthermore, service models and measures for promoting the dissemination of BEMS were also to be verified. The project was also to consider schemes for reducing the users' initial investment costs for the introduction of BEMS as well as the creation of mechanisms that would enable comparative assessments of the environmental performance of buildings through visualization, based on final utility, and the rating of buildings. Moreover, the experiment was to consider the creation of solutions that would contribute to reduction in building management and operating costs.

Thermal Energy Management at the Local Level

Four waste treatment plants are currently in operation in the city of Yokohama. Each plant recovers thermal energy from incinerated waste by converting it into steam, which is then used in steam turbine generators or for the supply of heat to nearby facilities. However, the supply of this waste heat was being provided to nearby public amenity facilities only and not to other areas. Therefore, the demonstration experiment was to conduct feasibility studies to examine the environmental efficiency, technical feasibility and project profitability of the construction of supply pipelines from the respective treatment plants to neighboring heat demand areas and to verify the hypothesis that CO_2 emissions could be cut significantly by utilizing this high-temperature underutilized energy.

Furthermore, in the Minato Mirai 21 area, heat generation units were to be installed, a district energy management system was to be established, and the effective system with the expansion and increase in plant facilities was to be verified. In the Kohoku New Town area, a building energy management system was to be installed at the district heating and cooling (DHC) facilities (the supply side) and at the facilities receiving the district heating and cooling facilities (the demand side); technical verification and verification of the effect on CO_2 emissions reduction were then to be conducted.

Mutual Complementarity Between Community Energy Management Systems (CEMS) and Large-Scale Power System Networks

A demonstration experiment was to be conducted for connecting within the area CEMS to (1) HEMS to be introduced in detached houses and housing complexes; (2) BEMS to be introduced in office buildings; and (3) car sharing facilities utilizing fast charging stations and chargeable/dischargeable EVs. CEMS send commands to HEMS, BEMS and car

sharing facilities and collects energy management data. In areas where PV systems had been introduced in a concentrated manner, an operational plan was to be established for PV output and storage batteries, and in cases where it was assumed there would be mass introduction of PV facilities, CEMS was to indirectly control supply and demand through HEMS and BEMS to coordinate demand with PV output within the area on the day.

Next-Generation Transport Systems
For the large-scale introduction of EVs, this demonstration was to verify the hypothesis that faster introduction of EVs would be achieved by reducing initial costs for users through various promotional measures, providing incentives to use EVs and improving services for users, in addition to establishing charging infrastructure in preparation. Above all, the installation of charging stations was needed to promote widespread use of EVs. A service model was to be established by investigating town planning arrangements that would be conducive to the widespread use of EVs and eliminate users' anxiety over the possibility of "a flat EV battery" and by installing charging stations in the three areas in stages. This experiment was also to examine the status of the installation of charging stations utilizing the current subsidy schemes; mechanisms used in other cities and countries; the establishment of charging stations at public facilities, commercial facilities, business facilities, residences, etc.; the processes until installation; and the status of utilization of charging stations. Moreover, after the introduction of EV in stages in the three areas, the experiment was to consider a service model that would contribute to the reduction of initial costs and maintenance costs for EV users and the improvement of user comfort and convenience. Such consideration was to include measures for checking remaining battery power and for managing vehicle conditions using navigation systems and intelligent transportation systems (ITS).

This demonstration was also to verify the hypothesis that EVs can be used as social infrastructure for power storage in a power supply system where PV generation has been introduced on a large scale. During the demonstration experiment, a chargeable/dischargeable EV was to be developed and the experiment was to verify the hypothesis that the use of this EV as a facility for storing renewable clean electric power such as PV generation would result in (1) the reduction of EV well-to-wheel CO_2 emissions and improvement in the utilization rate of PV generation and (2) minimizing the social cost of EV introduction while maintaining user satisfaction.

Lifestyle Reforms

In this demonstration experiment, the following three hypotheses were to be verified:

1. Changes in behavior regarding reduction of CO_2 emissions can be encouraged through the introduction of HEMS and BEMS and the visualization of energy consumption, power output and volume of CO_2 emissions.
2. Visualization and sharing of information at the community level about household energy usage (including electricity and gas) through the introduction of social networks in which citizens can participate will foster an awareness of the environment and accelerate activities to reduce CO_2 emissions.
3. To realize a mutually complementary relationship between the energy supply side and the energy demand side, economic incentives and other measures will contribute to the establishment of a lifestyle where citizens use energy efficiently.

7.5.3   *Demonstration Results*

The implementation period of the Yokohama Smart City Project was the five-year period from 2010 to 2014, and partial results of the project have already been made public.[1] The demonstrations were diverse; verifying their results in detail will take a certain amount of time. Nevertheless, some tangible results have already been announced in areas such as comparisons of target figures with actual results and the development of technology and systems.

First of all, in targets for the development of a low-carbon city, a big goal of this project, results exceeded targets. At the outset of the project, the goal for CO_2 emission reductions was 30,000 tons, but the actual reduction was 39,000 tons. As a result, the project also exceeded the CO_2 target reduction rate of 4%. Likewise, figures exceeding targets in the number of installations of PV and HEMS systems and the number of EVs introduced were achieved. In addition to these results, results as of the present in the area of demonstrations for CEMS, HEMS, BEMS and next-generation transportation systems are described below.

Results for CEMS
1. Maximum reduction of 22.8% in electric power consumption achieved through the integration of BEMS (FY2013, figure disclosed by the City of Yokohama);
2. Maximum reduction of 15.2% in electric power consumption through HEMS (FY 2013, figure disclosed by the City of Yokohama);
3. Up to 5% improvement in accuracy of electric power demand forecast (FY 2013);
4. Successful development of a system where a number of storage cells together can be virtually deemed to be one storage cell, and storage battery SCADA (supervisory control and data acquisition);
5. Successful development of a storage battery system with an interface that allows for consolidation (storage battery for home use, business use and grid power use).

Results for HEMS (Examples of Success in Multiple Dwellings)
1. 12% energy saving, 45% CO_2 reduction and maximum of 58% peak cuts in performance figures for FY 2013 in an initiative for total management of improvement measures for housing development, facility development and lifestyle.

Results for BEMS
1. Development of an integrated BEMS with a function for compiling demand response distribution plans based on negawatt power deal and demand response substitute functions;
2. Development of a smart BEMS for optimal operation through coordination between heat storage, power generation and battery storage;
3. Development of a compound energy system through smart BEMS and large-scale stationary lithium ion storage battery systems;
4. Development of a hybrid storage system that utilizes the advantages of a lithium ion capacitor and lithium ion battery;
5. Development of a BEMS that enables autonomous energy saving control based on the tenants' discretion;
6. Achievement of an overall maximum of 22% reduction and summer maximum reduction of 22.78% in peak demand in a demand response demonstration.

Next-Generation Transport Systems

1. Development of functions for chargeable/dischargeable PCS and EVs and communications for storing and effectively using photovoltaic power in EVs by connecting EVs with various energy management systems;

2. Development of an EV car sharing service that appropriately manages and controls storage batteries placed at charging stations, photovoltaic power generation systems, eco recharging stations that use rechargers and EMS installation and devices;

3. Development of an integrated storage and charging system that enables multiple EVs to be recharged simultaneously in a short time.

7.6   Analysis and Review: Value Co-Creation in the Yokohama Smart City Project

Through what processes, then, did companies that participated in the Yokohama Smart City Project implement a strategy of co-creation with other companies? As stated earlier, this project was initiated by the government and the roles of the respective companies were clearly stated in a master plan that had been prepared in advance. In this environment, the creation of new value unintended at the time of the drafting of the master plan explains the execution of two dissimilar paradoxical strategy-making processes based on Ma thinking by organizations in highly autonomous partner companies.

7.6.1   Toshiba's Commitment to the Project

As a core member of the YSCP, Toshiba participated in a large number of demonstrations including CEMS, BEMS and HEMS, and played a leading role in these. For example, various companies including Toshiba, Panasonic, Meidensha, TEPCO, Tokyo Gas, Accenture and the city of Yokohama participated in the demonstration experiments for the introduction of renewable energy in three targeted areas. The division of responsibilities of the respective members in the demonstrations was roughly as follows. Three companies, Toshiba, Panasonic and Meidensha, were in charge of measuring distributed power sources and developing various systems (HEMS, BEMS, CEMS) for controlling generated output. Two companies, TEPCO and Tokyo Gas, provided their own buildings and company housing for the introduction of photovoltaic generation

(PV) systems, solar heating systems and heat pumps. Accenture was to verify the effects of CO_2 reduction and economic efficiency assessments while the city of Yokohama was to promote the penetration and expansion of PV generation. According to Toshiba, the demonstrations proceeded with each company performing its role "at its own post," and data obtained from the results of the demonstrations were to be compared with values predicted beforehand and the effects of the demonstrations examined. In other words, in each of the demonstration experiments a hypothesis was established beforehand in regard to numerical figures and values to be obtained during the experiment, and the experiment was conducted to verify that hypothesis. During the demonstration experiment processes a number of new technologies and systems were developed, but in these cases, too, nothing was created through emergence in the course of trial and error in the demonstration experiment processes, and the developments proceeded as intended in the planning stages beforehand through the execution of deliberate strategies through a R&D program beforehand.

Next, we will introduce the kinds of emergent strategies implemented in the Yokohama Smart City Project that encouraged co-creation among companies through trial and error. An organization called the YSCP Promotional Council was formed by the Yokohama Smart City Project, and this council held joint meetings and organized working groups in which the respective companies participated. A framework was also established for deliberating on various matters including how the project was proceeding and coordination of the interests of the companies. If the joint meetings and working groups established in the YSCP Deliberation Council served as dynamic Ba (or strategic business communities) (Kodama 2005) that promoted the exchange and integration of technologies and know-how which the respective companies possessed, there was a possibility that new ideas and values would be created one after another in the process of the demonstration experiments or based on the results of the experiments. In reality, however, in the name of confidentiality, the technologies and know-how the respective companies possessed were considered mutually off-limits. Consequently, there was no deepening of exchanges or integration in these areas. According to Toshiba, the only area in which efforts were made by the respective companies to integrate technologies was the standardization of the demand response interface. In collaboration among companies, the issue as to how open a company should be in regard to its proprietary technology and know-how is always

a problem. In other words, individual companies have difficulties in determining how to create innovation while at the same time protecting their proprietary intellectual assets (Teece 2000).

In the demonstrations in which Toshiba participated, the companies did not engage in the exchange or integration of their companies' knowledge resources in technology or know-how at a deep level. In this regard, had the companies that participated in the demonstration projects engaged in more exchanges among their group, there is a possibility new behaviors and collaborations beyond the framework of the project might have occurred. Moreover, a company that will serve as a "facilitator" is necessary in projects involving a number of businesses. In the YSCP's individual projects, however, the presence of such a facilitator was lacking and this at times impeded the progress of the overall project. In other words, no clear leader company existed. As a result, while all of the companies worked enthusiastically at the technology and systems demonstration experiments in each of the HEMS and BEMS projects, some companies did not show much interest in the CEMS demonstration experiment that integrated the other two systems. Reasons given for this were: the members' perceived need for coordination among CEMS businesses and the view that CEMS in its current state would be hard to develop as a business. Consequently, a kind of game-theory bargaining among the participating companies over which company would take on the volunteer role of coordinating CEMS (Brandenburger and Nalebuff 1996; Ghemawat 1997; McAfee 2002) was observed.

This is not to say, however, that no co-creation of values occurred through the implementation of emergent strategies in the YSCP. In fact, certain indications of value co-creation generated through deep collaboration between government and companies were observed. These can be considered initiatives in government-private sector collaboration for the implementation of operations (YSCP implementation operations) for business creation based on demonstration experiments (YSCP demonstrations). Capitalizing on the results of the YSCP demonstrations, YSCP implementation operations aimed to make "an energy-circulating city" a reality, and the Yokohama Smart Business Council was established as a government-private sector organization. Furthermore, the Energy Solution Center Yokohama was established as an organization for promoting business creation through cooperation of companies participating in the YSCP. As stated earlier, one of the objectives of the YSCP was to link

results of the demonstration experiments to the expansion of business. Society's interest in smart cities is growing, and the development of smart cities into business is an issue that must be urgently addressed.

On the other hand, in the case of the domestic market in Japan, it will be difficult to establish this area as a business unless legislation concerning matters such as the separation of power generation and transmission is put in place. Furthermore, in areas such as CEMS where returns cannot be expected at present (as explained earlier), government and corporate collaboration is necessary to establish the area as a viable business. The Yokohama Smart Business Council and the Energy Solution Center Yokohama are organizations established through the cooperative efforts of the city of Yokohama and companies participating in the YSCP. There is a need for initiatives in business creation where government and companies collaborate through organizations such as these.

Initiatives of this nature have already been launched through the projects. One of these is the creation of demand response business based on incentives. An incentive-based demand response scheme was conducted as a cooperative demonstration experiment by Toshiba and TEPCO. Under this scheme, efforts were made to achieve reductions in electric power consumption in peak demand and electric power saving by providing rewards to customers who complied with requests from electric power companies to engage in energy saving. Acting as a "negawatt aggregator" in this demonstration experiment, Toshiba bundled customers into groups and engaged in transactions with electric companies. With the intention of turning incentive-based demand response into a business with the cooperation of electric companies and electronics manufacturers, the Yokohama Smart Business Council aims to develop business that will achieve energy cost optimization for customers. To facilitate this, the city of Yokohama is also participating in the council, and the collaboration of this municipal government and the companies is achieving value co-creation in the electric power business.

According to research to date, if companies go into a deliberate strategy mode from an emergent strategy mode, once a business model proves to be successful they have a lapse of memory and are lulled into the illusion that they have "deliberately executed a successful strategy." Furthermore, companies that are always successful with deliberate strategies lack an organizational culture for activating emergent strategies. As a result, it is always difficult for them to create new business (develop new products

and services, etc.) based on the notion and execution of an emergent strategy (either recurring or for the first time) (Christensen and Raynor 2003).

In the case of Toshiba, even when the members of the participating companies produced relative results in the demonstration project through planned, analytical deliberate strategies, it can be assumed that in the next implementation project for business creation, members participating in the business council led by Toshiba returned to the starting point to reflect on what had transpired. Furthermore, in the implementation project, they again made efforts at deep interaction with the market (customers and the relevant municipal government bodies) and investigated and explored all practical possibilities such as potential and new development and methods of use including disruptive technology (Christensen 1997). Aiming for value creation in products and services, the members also implemented emergent strategies for new concept creation based on self-questioning and reflection.

As stated above, based on the results of top-down, planned deliberate strategies it implemented, the YSCP Promotion Council, initiated by the private sector and led mainly by Toshiba, thereafter established government-private sector collaborative organizations such as the Yokohama Smart Business Council and the Energy Solution Center Yokohama. Through collaboration and trial and error, YSCP companies also demonstrated emergent strategies in regard to specific implementation operations for creating business. In other words, in terms of a time axis, it can be said that the respective companies led by Toshiba caused a significant shift from deliberate strategies to emergent strategies based on Ma thinking.

7.6.2   Hitachi's Commitment to the Project

In the YSCP, Hitachi participated in the demonstration for next-generation transport systems together with Nissan Motor, Orix and Orix Auto Corporation. The objective of this demonstration was to establish an energy management system using chargeable/dischargeable EVs (EV-EMS) and to achieve reductions in electric power consumption in peak demand and demand shifts through the combined use of renewable energy, EV storage batteries and stationary storage batteries. In this demonstration experiment, the roles of each company were clearly established. Hitachi was in charge of the overall operation of the EV-EMS system,

Nissan Motor the development of the chargeable/dischargeable EV system, and Orix and Orix Auto Corporation the development of an EV car sharing management system. The demonstration experiment projects promoted through the roles of the respective companies were as follows:

1. Reservation information on car sharing and EV battery information was obtained from data centers.
2. For the EV-EMS, an EV recharging schedule was drawn up taking into consideration the time of commencement of use based on PV generation forecast data and storage battery information within facilities.
3. Charging was initiated to coincide with reservation conditions by dividing charging operations into two modes—a mode that would maximize use of photovoltaic power generation and a rapid mode for charging in a short period.
4. The above arrangement provided for EV charging that was both convenient for users and efficient.
5. The system is to be connected to homes, buildings and community energy management systems.
6. This system operates efficiently for storage batteries of stationary EVs connected to eco chargers and stationary storage batteries and improves the availability of renewable energy.
7. This system contributes to the energy management of the community as a whole.

In regard to collaboration with other companies in the demonstration experiments, Hitachi stated the following:

> The four companies formed a consortium in the course of the demonstration and on a regular basis exchanged opinions and shared know-how. This cooperation was ongoing from the planning stage to development and throughout the demonstration. For example, the demonstration for the "Vehicle to Home" was originally Nissan Motor's role but Nissan went beyond its assigned role to actively offer proposals to all companies regarding energy management systems for the efficient use of renewable energy using EV car sharing[2].

In regard to the significance that collaboration with companies of other industries had for Hitachi, a representative from Hitachi stated the following:

> Through collaboration with a car company, credit card company and car sharing company, we were able to share know-how that is difficult to obtain in the course of ordinary business activities, and through that we were able to gain the opportunity to accumulate high-quality knowledge across broad areas including not only system provision but also operation. This is a very valuable resource for Hitachi[2].

From these comments it can be understood that, despite the constraints of the YSCP's deliberate strategies, the demonstration experiments for the next-generation transport systems in which Hitachi was a participant created meaningful value through the activation of emergent strategies based on collaboration with various companies. The demonstration for the next-generation transport systems was one of seven demonstrations conducted by the YSCP and, as a demonstration for verifying a hypothesis that was established beforehand according to a deliberate strategy prepared by the government, it was analytical and rational in nature. On the other hand, however, the execution of these demonstration experiments was not just the implementation of a formal deliberate strategy where the respective companies confirmed and executed their roles; the demonstration experiments had elements of emergent strategies based on actual trial and error for deepening discussion and collaboration among the companies. Moreover, there were indications that companies went beyond their predetermined roles to actively present proposals. In other words, on the time and space axes they demonstrated the implementation of two dissimilar paradoxical strategy-making processes based on Ma thinking among partner companies led by Hitachi.

Research on Japanese companies (Nonaka and Takeuchi 1995) indicates that "middle-up-down" management is a characteristic of Japanese companies. "Middle-up-down" means neither top-down nor bottom-up, but occupies a place somewhere in the middle between these two, and it is in this place between top and bottom that various adjustments are made. As a project initiated under a master plan prepared by the government where each company was to execute a given role, this case, based on a deliberate strategy, comes under the category of top-down. On the other hand, the occurrence of various activities and the presentation of ideas not intended in the master plan, from the front line of operations in the course of executing the demonstration experiments, can be said to be bottom-up based on an emergent strategy. In this context, then, "middle-up-down" refers to activities that also take into account bottom-up activities resulting

from "emergence" at the level of front line operations in the course of faithfully executing the master plan. In specific terms, the consortium that was formed in the course of the demonstration experiments performed the role of the middle (middle managers participating in the consortium), and actions such as regular exchanges of opinions in the consortium for collaborating and sharing know-how and proposals beyond the framework of the master plan to make the demonstration results more productive can be considered middle-up-down actions. In other words, middle managers in the partner companies assumed the role of implementing two dissimilar paradoxical strategy-making processes based on Ma thinking.

7.7   Implications

Finally, we would like to summarize implications obtained from observations in this chapter. The YSCP was a government-initiated project with a prescribed project budget, project period, method of implementation and roles of the participating companies clearly defined under a master plan prepared by the government, and deliberate strategies for verifying hypotheses established beforehand were implemented. In each of the demonstration experiments conducted by the YSCP, Toshiba was the company with the highest level of involvement and also served as the head of the YSCP Promotion Council. Without a doubt, Toshiba played a core role in the YSCP. In the early stages of the YSCP demonstrations, the only aspect that could be called a "project outcome" from the exchanges and integration of technologies among companies was the standardization of a demand-response interface. Later, however, government-private sector collaborative organizations were formed, such as the Yokohama Smart Business Council and the Energy Solutions Center Yokohama, and within these the companies participating in the YSCP demonstrated emergent strategies through cooperation in the course of trial and error of specific implementation operations aimed at creating business. In other words, in terms of the time axis, it can be said that there was a shift in strategy from deliberate strategies to emergent strategies based on Ma thinking.

At the same time, like Toshiba, Hitachi was also a core member of the YSCP and took part in the demonstration experiment for the Next-generation Transport Systems. In this demonstration experiment where four companies including Hitachi participated, a consortium was formed, opinions were regularly exchanged, and know-how was shared as the demonstration proceeded with the collaboration of the four members.

During that process, the four companies not only executed the master plan created by the YSCP Promotion Council as planned but also actively made proposals beyond the framework of roles assigned to the companies. As a result, it was possible to accumulate know-how in broad areas and obtain valuable knowledge assets through the demonstration experiments. This essentially indicates that on the time axis and space axis, the two dissimilar paradoxical strategy-making processes—that is, a deliberate strategy and emergent strategy—were executed through Ma thinking among partner companies led by Hitachi.

As in the cases of Toshiba and Hitachi, individual contradictory characteristics of a strategy-making process paradox exist in business activities as strategy contexts. Outstanding practitioners, however, always perceive and acknowledge these contradictions as they repeatedly perform their daily practice activities. Moreover, practitioners repeatedly make dynamic transitions as they synthesize various contradictions that arise between deliberate strategies and emergent strategies in the course of their practice activities. The time-space for resolving these contradictions through such transitions is the Ma of space-time, which is a third area (see Fig. 2.1, Chap. 2).

A characteristic of this kind of Ma is a phenomenon ("event" or "thing") that can always be observed in the course of daily practice activities in business and management. Not only in the world of business and management but also in various creative activities at the front line of innovation, outstanding practitioners either consciously or unconsciously demonstrate Ma thinking to achieve innovation. The theoretical and practical importance of the concept of Ma lies in the "thoughts and activities" of the inventive practitioners at Toshiba and Hitachi as described in the above cases. However, characteristics such as the dynamic "transition mechanism" and the "synthesis of diverse paradoxes," which achieve two dissimilar paradoxical strategy-making processes, have hardly received a mention in academic research to date. This is because research focusing on characteristics of invisible boundaries that exist between formal organizations (which are structured time-spaces) and informal organizations (which are unstructured time-spaces) has not yet been attempted. In reality, however, the world's leading innovative companies and outstanding practitioners unconsciously (or consciously) understand and apply the concept of Ma thinking to the characteristics of these invisible boundaries to facilitate the dynamic "synthesis of diverse paradoxes" (in this case, two dissimilar paradoxical strategy-making processes). As stated in Chap. 2,

practitioners who are driving business and R&D activities on a daily basis directly face not only the paradoxes of formal and informal organizations (which have not been taken up in this chapter) but also strategy-making paradoxes (deliberate vs. emergent, intentional and planned vs. incidental and emergent) as discussed in this chapter as well as innovation process paradoxes (principled, regulated and managed for the short term vs. trial and error, learning from failure and challenges for the long-term), and they dynamically synthesize these dissimilar elements as they repeatedly engage in dynamic practice activities in organizational forms with dissimilar formal and informal characteristics. In other words, Ma thinking synthesizes a wide range of paradoxes and leads to the realization of intended strategies through superior methods.

Notes

1. Specific details of project results stated in this chapter are based on the Materials for the Next-Generation Energy and Social System Council Meeting, compiled in May 2014.
2. The author conducted a question survey to Hitachi, Ltd., Solution Division. This is a response from the company to that. (The author received a response on April 14, 2015).
3. Same as above.

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The Ma of Maeterlinck and Ma of Japanese Maeterlinckians

Mariko Anazawa

8.1   Introduction

Few people would be unfamiliar with *The Blue Bird* (1960), a play based on a nursery tale. The author of the play and recipient of the Nobel Prize for Literature, Maurice Maeterlinck, was born in Ghent, Belgium, in 1862 and died at the age of 87, at his château Orlamonde in Nice in southern France. Focusing on his symbolist plays from his early period, the author has been researching Maeterlinck for many years and at present is writing a thesis entitled "Maeterlinck and the Japanese," which discusses Japanese writers of the same era who were influenced by Maeterlinck.

It is difficult to sum up the appeal of Maeterlinck. The late Martine de Rougemont, editorial supervisor of the 1979 edition of a collection of Maeterlinck's plays, describes his writing in the preface by saying, "Concisely and vividly, Maeterlinck's early period plays reach out directly to the 20th century consciousness and spirit of tragedy. His words overflow and vanish in silence."[1] In contrast to the theory of great tragedy described by Aristotle, Nietzsche and Hegel, which established the roots of Western theatre, Maeterlinck spoke about the "every day tragedy."

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While writing one symbolist play after another in his home country of Belgium, Maeterlinck in his collection of essays *The Treasure of the Humble* remarked, "There is a tragic element in the life of every day that is far more real, far more penetrating, far more akin to the true self that is in us than the tragedy that lies in great adventure." His plays, particularly his works from the early period, which can be called works of pure symbolism, are neither complicated stories nor impressive monumental works. No hero appears among the characters, who are people that simply carry on with their daily lives, making efforts to cope with their difficulties in one way or another. Maeterlinck based his plays on circumstances any person could understand and on words and thoughts that people carefully keep at the back of their minds. The words he uses and the stories he tells are simple, transient and beautiful.

Rivers, springs, seas, tears, as well as long, overflowing hair are among the many references to water in his plays, which have earned him the nickname "writer of water." A typical work of Maeterlinck demonstrating this is the opera *Pélleas and Mélisande* (1892), which became well-known as an opera by Debussy as well. (In fact, Debussy drew his inspiration for his composition "The Sea," a symphonic poem, from a woodcut print by Katsushika Hokusai.) Debussy too was a writer of water, who was influenced by Japonisme, a popular trend in Europe at the time.

Maeterlinck believed in the miraculous power of language, emulated clarity in stating the facts, and made efforts to call forth what he himself described as "la grande vérité immobile" (the great inalterable truth), which lay concealed beneath language and expression. His unique outlook on the world, which fascinated the prodigy Antonin Artaud, transformed the world of the theater, which had been dominated by bourgeois and naturalist dramas. The symbolist theater, which sought truth in the invisible and intangible, immediately attracted audiences, and Maeterlinck earned a reputation as an avant-garde writer and founder of contemporary theater.

At one time Maeterlinck also had a tremendous following in Japan, and Yoshio Ozasa in his book *The History of Contemporary Japanese Theater* indicates that a period which could be described as "the season of Maeterlinck" existed in Japan prior to the rise of naturalism (Ozasa 1985).

In this discussion the author compares the works of Maeterlinck with the works of Japanese playwrights who were influenced by Maeterlinck, looking particularly at the Ma in his plays and in theirs. The status of the "theater of today," which is in a constant state of evolution, is examined.

In Japanese, the representation of Maeterlinck's name has at least four variations, and even in Maeterlinck's country of birth it is pronounced differently depending on whether it is written in French or Flemish. While his name is more frequently pronounced differently in Japan nowadays, for the sake of consistency here and with the approval of Fabrice Van de Kerckhove from the Royal Library of Belgium, the author will adhere to the representation in Japanese that has generally been in use since his works were first translated by Horiguchi Daigaku.

8.2   Ma in Japanese Theater

The term "Ma" is frequently used in Japanese theater. Some comments one might come across are: "an actor with a poor sense of Ma," "a theater performance with poor Ma," or "a play with poor Ma". Here, the reader is spared a fundamental explanation of Ma; instead, the focus is on Ma in the context of Japanese theater and the stage.

At the Institute for Theatre Studies at the University of Paris III: Sorbonne Nouvelle in France, Aesthetics of the Theater (Esthétique théâtrale) was a compulsory subject in the 1990s. The course was a survey of views of the theater encompassing practitioners of different eras and countries from Plato in ancient Greece to Brecht. Lecturers Martine de Rougemont and Monique Borie covered the material over a two-year period, using for the textbook *Esthétique théâtrale* by themselves and Scherer (1986). An outstanding aspect of the class was how the lecturers enhanced students' awareness of the theater not only as a study of performing arts but also as a study of philosophy, politics and, ultimately, human beings. This approach may not be extraordinary in France, where philosophy is included in the Baccalaureate exam. However, for those who mainly associated the theater with traditional Kabuki theater, the all-female Takarazuka revue, or musicals, the notion of equating theater with philosophy was shocking. For the author in particular, theater simply represented entertainment, but in the course, the depth of Western theater and its ethnocentrism was presented.

The course covered *Hana kagami* by Zeami. As a small country in the Far East, Japan may be a subject of interest and study for a small number of intellectuals, but the average French person's image of Japan is much more insignificant than we Japanese can imagine. So there pride and delight upon hearing the professor claim that "Zeami succeeded in establishing an excellent balance between practice and theory, and he embodied

the aesthetics of theater in an outstanding manner, unprecedented in the world." In the course, Zeami was taught as the predecessor and master of theater to whom the French students were most attracted.

Zeami also was a master of Ma. The idea that "inaction is interesting" as stated by Zeami is an aspect uniformly viewed as Ma in theater by many researchers of Ma. However, what exactly is meant by this phrase? In "Hana kagami," Zeami explains:

> "The comment some critics make, "The inaction was interesting," when referring to the highlights of a play represent the peace of mind concealed by the shite [protagonist]. This inaction is in fact a space." (XXXX)

Zeami said that it was important for Noh actors to have intervals "without acting." By this he meant that pauses between gestures or movements, or the total absence of gestures and movements, was important in Noh. In other words, "space (隙)" and "intervals (間)" were important. He also said that these were elements left to actors to decide. In his work "Ma—Fundamental Philosophy in Japanese Culture", Shigekazu Fujiwara explains these as follows:

> "An actor, in an unassuming state, had to devise a method of concealing his thoughts even from himself and connect the before and after of the blank space in a performance. Unceremonious acts of 'non-performance' unacknowledged by the actor himself or others were 'non-performing gaps' and 'non-performing spaces'." (Fujiwara 2005, p. 77)

Impeccable acting and powerful performances are exhausting to both performer and the audience. To quote Zeami, "In such cases, if the actor holds back in the performance a little, gives the audience's eyes and minds a moment to rest, and creates a space by allowing an interlude where they can watch the interesting part quietly … the actor's emotive appearance should not fade away." In other words, it was necessary at times to give the audience some space by restraining the acting a little.

Fujiwara stated that this theory of acting of Zeami's was a fundamental concept in Japanese performing arts that also applied to other genres of acting, and he continues by saying (a lengthy but important quote):

> "As Masakatsu Gunji, researcher of Kabuki and dance, points out, 'The "sense of life" in dance, for example, essentially means a sense of rhythm. In Japan, this is called "Ma" (Theory of dance).' In dance, meaningful gestures

are choreographed following the song from a Noh play so that the meaning of the song is expressed with gestures following the song. When transitioning from meaningful gestures from one song to the next, meaningless gestures are inserted. These meaningless gestures, in other words, connecting poses, are 'Ma' in dance. These are connecting intervals not expressed in the song. This is what Zeami meant by 'connecting the before and after of non-acting intervals.' This is where the performer has to stop and think in dance, and apply 'technique.' These are what create the meaning of the dance. In dance too, Ma was a key aspect in achieving impact in a performance. The life of a performance existed in playful, meaningless Ma." (Fujiwara 2005, p. 78)

This Ma in dance and performance applies in the same way to the world of musical performances, and the performance of accompanists on stage. In his discussion, Fujiwara includes a quotation from "The Japanese Ear," by composer Akira Ogura. As the author has not come across any explanation superior to this in excellence, it is quoted here in full:

"The sense of 'Ma' unique to Japanese music is one form of embodying the tension achieved by economizing as an intense and soundless time. The breathing of Ma also varies, and in popular music, this is the silence of breathing in air following exhalation during singing, and it takes the very form of breathing to the letter, which occurs according to certain cycles. On the other hand, in sophisticated music, it appears in a very subtle form that transcends such cycles. For example, the hand drum player in Noh theater makes punctuated exclamatory sounds such as 'Yah!' 'Hoh!' or 'Ha-h!' as he exhales. He hits the drum at the moment of exhalation, and then stops exhaling. The tension of the musician holding his breath also makes the listeners hold their breath. Therefore, to create tension-filled absolute silence, even the sound of breathing is considered superfluous. During this interval, a sensation of beating the audience had felt until then begins to resound as a psychological beating the moment the drum player holds his breath. However, even this sense of beating will eventually begin to fade from the audience's mind as if the lingering sound of the drum is about to disappear into the distance. Then, aiming for the exact moment that they are about to cease, the drum player gives out the next sound, brilliantly creating a Ma." (Fujiwara 2005, p. 78)

This makes us aware of the close relationship between Ma and breathing. In Noh theater, there are no repeat performances. All are one-off performances where the principal *shite* and supporting *waki* performers as well as the accompanist *hayashikata* (and their respective Noh styles), who

support the performance of the principal and supporting actors with their exquisite Ma (breathing), are different in each performance. These performers do not rehearse beforehand. Each performance is a uniquely one-off event to the letter. This is the very reason Ma play a significant role: Ma between performers and Ma between performers and audience. While Ma is an important aspect of any performing art, it is particularly so in Noh theater where each performance is a unique event.

The legendary band "Tsukusuma" first comes to mind when we consider what Ma means in terms of theatrical performance. It was founded in 1980 by Shonosuke Okura, a Noh drum musician renowned for his virtuosity and bold performances, was born into a family of Noh musicians as almost all practitioners of traditional performing arts in Japan. He was the eldest son of Chojuro Okura, 15th-generation head of the Okura school of Noh musical accompaniment. (Shonosuke's younger brother Genjiro succeeded to the position of 16th-generation head of the current Okura school.) The name "Tsukusuma" means a Ma that is drawn out for the longest amount of time in the rhythm of Noh chants. The longer the Ma is drawn out, the harder for the work of the accompanist, but the most dramatic moment is created for the audience at this point of a performance. All four members of Tsukusuma band were sons of distinguished families like the family of Okura. Live performances by a band consisting solely of Noh accompanists were unprecedented. In addition their talent, the members had pride and passion as the successors of traditional performing arts, and they attracted a large number of fans.

This culture of Ma is observed not only in Noh but in Japanese theater, art, language, human relationships and even daily life. The question here, however, is it truly unique to Japan? The reaction of in the students of the author's experience in Aesthetics of the Theater seems to indicate that it is indeed unique to Japan.

8.3   DRAMA OF MAETERLINCK

For a number of years in his early period as a writer in Belgium, Maeterlinck wrote purely as a symbolist playwright. This was from the time of the spectacular début of *La Princess Maleine* in 1889 until the appearance in 1894 of *Alladine and Palomides. Interior* and *The Death of Tintagiles*, said to be a trilogy for the puppet theater. In 1897, a year before his departure for Paris, he wrote *Aglavaine and Sélysette*. As Maeterlinck himself stated in the preface of a collection of his plays, the style of this play was clearly

different from his works until then. Death is a theme common to the plays he wrote during this period in Belgium.

The symbolism Maeterlinck is known for had its roots in late nineteenth-century France. Pioneered by Arthur Rimbaud and led by Stephane Mallarmé, symbolism was a literary and philosophical trend that spread across Europe. The development of industry and natural science had completely transformed the living environment of that time. Steam trains were running, the telegraph and telephone had been invented, and photography and even movies had appeared on the scene. International expositions and the development of transportation and communications had also reduced spatial and chronological distance in the world, and knowledge suddenly increased. During this period when people were full of hope and confidence about the future, amid a material optimism there was also an increasing psychological anxiety about the dangers of civilization and, thus, symbolist poetry and literature were born. In contrast to the objective descriptions of realism and naturalism, symbolism in poetry and literature attempted to intimate an imaginary world through symbolic effects and decorative form. Painting in the nineteenth century was initially dominated by realism but was subsequently dominated by the Impressionists, who sought to transcend realism. While realist painters attempted to portray what they saw with their eyes, Impressionist painters sought to depict that which was not visible to the naked eye.

Similarly, in the theater, naturalist drama aspired to qualities of verisimilitude and naturalness in plays like those produced by the Théâtre Libre, founded by André Antoine in 1887. In contrast to this, symbolist writers, who rejected realism in plays and insisted on the superiority of imagination, played a major role in defining theater from the 1880s to 1890s. The Théâtre d'Art, launched by poet Paul Fort in 1890 and followed by the Théâtre de l'Œuvre established by Lugné-Poe, who trained under André Antoine and Paul Fort, played key roles. The Theatre de l'Œuvre, which is still going strong today, opened in 1893 with Maeterlinck's "Pelleas and Melisande."

Symbolist drama appeared significantly later than symbolist poetry and literature. The disregard of symbolist drama by mystic and naturalist writer Joris-Karl Huysmans along with Mallarmé's subdued stance were contributing factors no less impactful than the general lack of understanding of symbolism demonstrated by theater managers and critics, resulting in the general view that the symbolist theater was a "theater of absence, which dreams the ideal audience, where performances took place free of the

worry of representing reality, and free of the material restraint of directors and actors."

Maeterlinck's maiden work, which seemed to appear like a comet, created a major sensation. Octave Mirbeau raved about the emergence of a "new Shakespeare"; in 1890, Adolphe Retté published a definitive review of it in "Art et Critique," exclaiming, "Symbolist drama is present here!" In this way, symbolist drama was born and Maeterlinck met with success every time he released a new play. Maeterlinck himself, however, was very philosophical about the theater, believing more in books as a superior medium and rejecting actors who overacted on stage by simply following their feelings. He questioned whether it was even possible to stage the majority of great poems, saying, "Superior plays are symbolic, and symbolism can never withstand the presence of humans brimming with a sense of being alive."

Like many other symbolist writers, Maeterlinck viewed actors as "uninvited guests" and, to take the place of actors, proposed the projection of shadows, reflected light, symbolic forms or persons that possessed a semblance of life rather than life itself. Even 17 years before Gordon Craig, the first person to be mentioned in discussions of the theory of twentieth-century drama, wrote "The Actor and the Über-Marionette" (1907), Maeterlinck in his brief essay "Menus propos: le théâtre" (1890) expressed the same view, citing the same quotation.

Maeterlinck was also skeptical about the very words "symbol" and "symbolism." For him, the symbol was not the objective; it was merely one phenomenon created from unconsciousness and nature. Throughout his life, Maeterlinck cherished his relationship with nature and saw it as the fountain of creation.

Shortly after, Maeterlinck's thinking and style of writing began to change after meeting an intelligent young French actress named Georgette Leblanc, and this was also a decisive factor in his leaving Belgium. After moving to France with Georgette, Maeterlinck was to develop as a symbolist poet, playwright and excellent essayist, who left behind a number of significant works including *Wisdom and Destiny* (1898) following *The Treasure of the Humble* (written in 1896 while still living in Belgium), the insect (observation) trilogy including *The Life of the Bee* (1901) and *The Intelligence of Flowers* (1907), which were deeply influenced by mysticism.

Maeterlinck is also renowned for his work as the translator of *L'Ornement des noces spirituelles* (translated in 1891) by Flemish mystic Jan van

Ruusbroec, and *Die Lehrlinge zu Sais* and *Blüthenstaub* by German romanticist Novalis, and as the writer of the preface (1894) of the translation of *Seven Essays* (Sept Essais) by American poet and philosopher Ralph Waldo Emerson. There is no doubt that a number of these works, at a glance and spanning different fields, played a role in determining the future direction of the young Maeterlinck as a writer.

Although not as prolific as he was during his period as a writer in Belgium, Maeterlinck produced a number of masterpieces as a playwright after moving to France, including *The Blue Bird*, which would be remembered by generations to come. While retaining strong vestiges of his symbolist period, in content Maeterlinck's work clearly shifted themes from death to life and from darkness to light. For example, he abandoned the darker side of fate featuring death as a theme around the time he published his collection of essays, *The Treasure of the Humble* and instead embraced the superiority of human wisdom in the face of death and destiny believed to be beyond human control. He also expanded his discussion of fatalism, which can also be seen as a more optimistic viewpoint. It was in this frame of mind that he wrote *Ariane et Barbe-bleue* (1899), *Monna Vanna* (1902) and *The Blue Bird* (1906). Ogai Mori, a Maeterlinckian[2] in Japan, was strongly drawn to *Monna Vanna* and Maeterlinck's ideas, and wrote the play *Ikutagawa* (The Ikuta River, 1910) as a result. This work is looked at later in the chapter.

While many writers have agreed on the merit of acknowledging the beauty and richness of Maeterlinck's style of writing, they argue that the characters in his plays are unrealistic and that the roles are impossible to perform or direct. In other words, Maeterlinck's works differ from traditional theater and, therefore, it is perhaps undeniable that his plays demand viewing from a particular perspective in order to stage them successfully.

With the exception of *The Blue Bird* and *Pelléas and Mélisande*, there were fears for a long time that Maeterlinck's plays had fallen into oblivion. In the last several years, however, they have made an unexpected comeback, and new productions have resulted in reappraisals by audiences. Besides a need stemming from the desire to create something new, one wonders how this phenomenon, which is gradually occurring in various places throughout the world, can be explained. Could the reason be that demand arising from a desire to find new models in communication that transcend words?[3] How should we consider this trend?

8.4   Maeterlinckians in Japan and the Theater of that Day

The literati in Japan of that period thought very highly of Maeterlinck. As previously mentioned, it is said that a "season of Maeterlinck" existed in Japan prior to the rise of naturalism. Without a doubt, the direct cause of this interesting phenomenon was the impact of performances staged by directors whom people in the Japanese theater held in awe, such as the two Russians Constantin Stanislavski (1863–1938), and Vsevolod Meyerhold (1874–1940) and Max Reinhardt (1873–1943) of Germany.

In 1895 in his essay "Belgian Literature," Bin Ueda (1874–1916) introduced Maeterlinck for the first time in Japan. Interested in Western literature from his youth, Ueda translated and published numerous English, German and Italian works as well as French and Belgian works. His most famous work was a collection of masterpieces of European poets, which he translated and adapted to suit Japanese culture. This collection was published under the title *The Sound of the Tide* (Kaicho-on) in 1905. Ueda presented a copy of this to Ogai Mori (1862–1922), novelist and pioneer in the translation of poetry. Seven years later an essay by Mori on the plays of Maeterlinck was published in the journal *Kokoro no Hana* (Flower of the Heart), in which he expressed particular interest in the play *Monna Vanna*. In 1910, Mori published the play *Ikutagawa*, influenced as he was by the Noh play *Motomeduka* and the works of Maeterlinck. According to Yoshio Ozasa, who was mentioned earlier, "This work was strongly influenced by Maeterlinck's concept of resignation." Many plays were written in the style of Maeterlinck in Japan around 1905 by numerous writers profoundly influenced by his works. These include *Three O'clock in the Afternoon* (Gogo Sanji, 1909) by Isamu Yoshii, *The Night Before the Memorial Service* (Kinenkai Zenya, 1909) by Ujaku Akita, and *In Front of the Gate of Nanzenji Temple* (Nanzenji Monzen, 1909) by Mokutaro Kinoshita, as well as works by Mantaro Kubota, Saneatsu Mushanokoji and Naoya Shiga. Ozasa noted that while his work was not a pervasive as that of Ibsen, Maeterlinck truly left a long-term impression on literature and the arts of Japan.

Saneatsu Mushanokoji (1885–1976), one of the Japanese Maeterlinckian writers, remarked in an essay:

> "As a person suffering difficulty in breathing due to Tolstoy, I believe I can say that Maeterlinck has relieved me of this feeling of suffocation. What I mean by this is that Tolstoy thrusts the truth under a person's nose irrespective of

age or capability. Although that person indeed may believe that what is presented is the truth, it is like forcing someone to get things done without the appropriate ability, or to make someone not ready to graduate to take one giant leap to graduate. There is a degree of unreasonableness here. On the other hand, I felt as if Maeterlinck personally taught me the truth about people creating their own destinies. It may be oversimplistic to say it in this way but I began to think about making the most of my own life for the first time. (From "Jibun no Aruita Michi" [The Road I Took]

The young Mushanokoji was initially fascinated by what he perceived as Tolstoy's magnanimity (selfless altruism) but gradually started to feel suffocated by the Russian writer's stubbornness. It was at that time he discovered Maeterlinck, thanks to Bin Ueda. This was a decisive encounter. Maeterlinck made it possible for Mushanokoji to have confidence in himself once more and no longer felt the need to put others before himself. On the contrary, he was convinced he should lead a prosperous life in order to share with others what he experienced. Therefore, he dedicated himself to the pursuit of harmony among individuals and groups. Learning not only from Maeterlinck but also from the late Impressionist painters including Cézanne, Gauguin, van Gogh and Matisse, Mushanokoji became aware of "things" that existed behind the obvious truth. After leaving the Naturalist Movement of the Meiji Period, he became a central figure of the Shirakaba-ha (White Birch School), which set the stage for a new era in Japanese literature.

With an understanding of the significant impact Maeterlinck's plays, poetry and ideas had on cultured people in Japan at that time as described above, we now consider the theater in Japan at that time. In his "Introduction to the Theater" (Engeki Gairon, 1978), Kawatake noted:

Summed up in a few words, the history of the theater for about one century from the Meiji Restoration to the present can be described as a history of anguish as well as contradiction and trial and error in how to transplant and sublate the tradition and current conditions of Western theater in Japan, where the history, climate, and tradition are completely different. From a general perspective, from the Meiji Restoration to about 1887, it was a period during which attempts were made to improve Kabuki theater for a new era, followed by a period of setbacks, then, from 1888 to about 1907, during which new genres ("shinpa") of drama emerged and developed, and the period from 1907 onwards during which development of the so-called New Drama movement (Shingeki-undo) developed based on contemporary Western theater." (in Kawatake 1978, p. 215)

The author ventures to say that the question of what to do with Kabuki theater, which dominated the minds of people during the Edo period at a time referred to as the period of cultural enlightenment, was an issue for modern Japanese theater. This is still a highly valid issue. For example, while various forms of drama have emerged over the years up to the present, including a new school of Japanese drama (*shingeki*) that appeared towards the end of the Meiji Period, and underground theater, there remains the question as to whether a form of Japanese drama that has gone beyond Kabuki theater has ever emerged in Japan.

Maeterlinck appeared on the scene at the time the shingeki movement, the third of Kawatake's explanations about Japanese theater. Ma in the plays of Maeterlinck and the Maeterlinckians is considered next.

8.5   Ma in the Plays of Maeterlinck and the Maeterlinckians in Japan

As noted at the beginning of this discussion, the dialogue in Maeterlinck's plays is very short and is presented without explanation. In contrast to the verbosity of his essays, particularly his works in the early period of his career, his plays have an air of reticence, and it is interesting to observe the quite opposite styles. As Gou Yamazaki notes in the translator's postscript in the collection of essays *The Treasure of the Humble* (Maeterlinck 1995), Maeterlinck's plays reveal "the life of a human being on a higher plane that expands in the background of the external appearance of an anguished life, and suggests the tragic absurdity of the situations human beings find themselves in" (p. XXX). At the same time, the essays show the way to liberation and teach people how to escape from the hand of fate. Yamazaki's analysis indicates that these conflicting deeds arising from a spirit at odds with itself resulted in creating a means for Maeterlinck to restore the balance essential for himself. Just as one reason for the reticent passion and a kind of "harmony" found in Maeterlinck's' work is elucidated, one can sympathize with Yamazaki's analysis.

"The Four Major Elements of Maeterlinck's Symbolist Plays" (Anazawa 1996), in which the author extracted and analyzed all words that evoke the four major elements (fire, water, air and earth) in all of Maeterlinck's plays, and discovered the purer, holier "air" beyond "water" (with keywords soul, silence and death consistently appearing as underlying themes in his plays). In this challenging task, the author noticed the words "water," "moon" and "woman" appeared as symbols common to the

plays, and compared Noh drama with works of Maeterlinck believed impossible to produce or be acted out, doing so with a view to discovering possibilities for a new production.

Maeterlinck's plays, which shun ornamental elements, incorporate considerable moments of silence (Ma), pare dialogue to a minimum and include symbolic details that transcend space and time, are reminiscent of the Noh stage. Not only the plays (Noh songs), but also the quiet, sacred movements only the trained bodies of Noh actors are seemingly capable of demonstrating that which would also befit the characters in Maeterlinck's plays, who conceal their passion within them.

It might be seen as reckless to compare Maeterlinck's work with Noh theater that has 650 years of history. However, a prominent writer was quick to point out its similarities: Ogai Mori, the aforementioned Maeterlinckian in Japan. The novelist, critic, translator and surgeon-general was born in Tsuwano in 1862, the same year as Maeterlinck, and died in Tokyo at the age of 60, in 1922. After graduating from Tokyo University's School of Medicine, Mori became an army surgeon and in 1884 went to Germany to study. After returning to Japan in 1888, he engaged in various literary activities as he continued to work as an army surgeon. Translating and introducing numerous works from the West, he established a reputation as an erudite person in the Japanese literary world. In 1910 his own work (as touched upon earlier in the chapter) *Ikutagawa* (The Ikuta River) appeared in the literary journal *Chuo Koron*. It was subsequently produced as one of the programs of a second trial public performance at the *jiyu gekijo* (free theater) at the Yurakucho-za Theater from May 28 to 29 in the same year. *Ikutagawa* is said to influenced by *Yamato Monogatari* (The Story of Yamato), written in the middle period of the Heian Period, by the Noh play *Motomeduka* and by works of Maeterlinck. Both Yamato Monogatari and Motomezuka are based on the *Legend of Ashiya Otome* and the *Legend of Tsunokuni Otome*, the latter of which also appears in the long poems of the *Manyoshu* (Collection of Ten Thousand Leaves).

According to the above legends, in the village of Ashiya there lived a young woman who spent her days weaving cloth at a loom. Known as the maiden of Ashiya, she was supposed to have had two suitors and was unable to choose between them. She was distressed that if she were to choose one, the other would choose to die for certain. One day, as spring was approaching, the two young men came to visit the young woman. On that day a swan appeared in the Ikuta River. The mother of the young

woman told the young men, "I shall choose as the groom for my daughter the person who can shoot an arrow into that swan," and both men agreed to her proposition. From the house the young woman watched the two young men, who became speechless and unable to move when they saw between them the swan pierced by two arrows. A mendicant monk appeared in front of the house, chanting a Buddhist sutra. "The swan is dead now, and today I no longer have anywhere for my fate to turn to," said the maiden and left her house.

Human beings cannot go against their fate. In the above works from which Mori drew inspiration, the maiden commits suicide by drowning herself, and the two young men follow her in death, also committing suicide. As the act of suicide is forbidden, the maiden must bear the burden of eternal austerities for her act. Everyone in all the works above is miserable. From Maeterlinck's *Monna Vanna*, Mori learned the power of carving out an irrepressible destiny through the power of one's own wisdom, and he bestowed such power on this maiden. He also succeeded in creating a superb world by frequently inserting Ma in the stage directions.

While the works of other Maeterlinckian writers, including Gogo Sanji (*Three in the Afternoon*) by Isamu Yoshii, renowned for his *Kibun Geki* (Mood Drama)[4] and *Kinenkai Zenya* (Night Before the Commemorative Party) by Ujaku Akita, also have appeal, Ogai's *Ikutagawa* was not simply a work written in the Maeterlinckian style but a peerless work that creates synergistic effects through its masterful integration of Noh-like drama. This can also be considered a triumph of the power of Ma.

While the author cannot detect a direct relationship between Maeterlinck and Japanese literature, the influence of Japonisme in *Carnets de travail* (Maeterlinck 2002) can be discerned, thanks to the research of Fabrice Van de Kerckhove. Van de Kerckhove's process report, which represents only a small part of his research, was printed in a special issue entitled "Le monde dans Maeterlinck, Maeterlinck dans le monde" (Otten and Van de Kerckhove 2011) published by the Royal Library of Belgium.

It is also possible that Japanese theater has influenced in no small part what is defined as Western contemporary performing arts. This perhaps could be attributed to a Western sense of respect in the past for Japanese traditional performing arts, represented by Noh and Kabuki drama, which have been handed down from generation to generation in an unbroken tradition, or the avant-garde aspect of Japanese culture which Westerners have a tendency to want to contrast with "tradition" and "the classics," as

well as the refined aesthetic sense observed in Japanese architecture, design and fashion; similarly, this could have been Butoh dance in a kind of sub-culture style tie-up, similar to the Japanese animation and manga boom, or an homage to the underground theater.

In recent years, however, the influence of the underground theater in Japan has declined, and young people who from birth grew up with post-drama theater tend to express their stories at their own pace, in what may not necessarily be elaborate stories. In line with the development of social networks, this approach transcends the boundaries of language and countries and can be felt no matter where one goes in the world. It may be that even the culture of Ma, perceived to be unique to Japan, is used instinctively by people around the world. If such an optimistic observation is correct, the words of Maeterlinck[5] may be realized in the near future. Nevertheless, many issues still remain before the acquisition of communication that "truly" transcends words becomes plausible.

NOTES

1. Maurice Maeterlinck, *Théâtre complet*, presenté par Martine de Rougemont, Slatkin, Collection Ressources, Paris, Genève, p. 1.
2. In the same way as followers of Richard Wagner are referred to as Wagnerians, the followers of Maeterlinck are referred to as Maeterlinckians.
3. " Countless things are telling us that such an era is approaching. Perhaps such an era shall arrive soon. An era when our souls can directly understand each other without relying on our senses." (Maurice Maeterlinck, Go Yamazaki, *The Treasure of the Humble,* Hirakawa edition, Tokyo, p. 18)
4. Mood drama, emotional drama, symbolist drama, while nuances are slightly different and overlap, have been used in the history of contemporary plays. At that time, Maeterlinckian one-act plays were referred to as "mood dramas" or "emotional dramas."
5. Op.cit., 3.

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Ma in Traditional Japanese Theater: The Ma of Space and Ma of Time

Shozo Motosugi

9.1 Space and Time in Traditional Japanese Performing Arts

Looking at the history of Japanese theater, Shigetoshi Kawatake identifies four major trends. Kawatake believes that *Bugaku* (traditional court dance and music), *Noh* theater, Japanese puppet shows (*Jōruri*) and *Kabuki* are the four major forms of traditional Japanese performing arts (Kawatake 1959). Each of these art forms was born at a different time in history and developed into original performing arts despite being influenced by preceding forms of Japanese performing arts. This is the greatest characteristic of each of these art forms. Whether the influence was direct or indirect, it is believed that Bugaku influenced Noh theater, and in turn Noh theater and Noh-Kyogen influenced both Japanese puppet shows and Kabuki.

Kawatake likened these four forms of traditional performing arts to a mountain range. Underneath this mountain range lies the groundwater springs of Japanese folk art. He maintained that one may find the groundwater springs of Japanese folk art wherever one digs, like a well; performing arts that represent the times were created by developing and refining the relationship between mountains and groundwater, a consequence of

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the circle of life. This is not only easy to put into words, but it is also an understandable and agreeable concept. The performing arts of the masses have formed a foundation for people to create on, and various performing arts have sprouted out from underneath this foundation. It is much like the relationship of groundwater as connected to the mountains that lie above them. The uniqueness of Japanese performing arts appears to have been born out of this relationship. At a glance, the respective stages for these arts are different. However, they share the same roots and were nurtured by the same fluidity of art forms of the past; the history of Japanese theater can therefore be traced to the same roots.

It is believed that one of the factors that have been instrumental in supporting the growth of these characteristic performing arts is the distinct trait shared by the Japanese people to both accept and embrace foreign cultures and differences while at the same time respecting tradition and humbly preserving their own culture. This did not change after aggressive exchanges with continental Chinese culture in ancient times nor with the attitude Japan took after the Meiji Restoration regarding adoption of Western culture. It is well known that as a result of events of history, these elements came to bear fruit in a wide range of areas including social systems, technical know-how and art.

9.2   Creation and Transformation of the Stage

Now let us focus on the medieval period to contemplate the emergence of stage space elements in performing arts. Bugaku is believed to have originated from the style of music of continental China and the Korean peninsula. Prince Shotoku is believed to have introduced Bugaku to Japan through his envoys who were dispatched to and/or had exchanges overseas, as a form of performing art indispensable to Buddhist ritual. As a matter of fact, the stage on which the Shoryoe Bugaku Rite[1] has been performed at Shitenno-ji Temple for well over 1000 years is a simple rectangular platform that is just one step higher than its surroundings. It is a simple stage without much character. The inner gate, five-stage pagoda, Kondo and Kodo lecture hall are all in a straight line. A hallway surrounds this line in a *garan* layout[2] in an axis, and the Ishibutai stage is placed behind, at the center of the axis. Shoryoe is believed to be an ancient religious ceremony that continues to this day, bringing Buddhist memorial service and Bugaku together. From the Shishi lion to the Bodhisattva, to the lyrics composed by travelling musicians, Mainin dancers, monks who

wore the headgear and costumes— all produced the Gagaku court music on the way to the Bugaku stage. This leads to the Ishibutai stone stage of Bugaku. One can imagine that these ceremonial arts also created the unique elements of space and time of the Noh stage and the Hashigakari leading to the stage.

Like the Shitenno-ji temple, there is also an Ishibutai stage located in the middle of a lake at the Sumiyoshi Taisha shrine. The Unoha Shinji,[3] performed at Sumiyoshi Taisha in May every year, is a famous traditional Shinto rite representative of Bugaku. In this ceremony, the Mainin dancers appear from the back of the stage. This is reminiscent of the "Stage of Tadasugawara Kanjin[4] Sarugaku[5]" (Kanze Bunko Archives). This occurred in the fifth year of the Kansho era in Japan (1464) with the support of Yoshimasa Ashikaga,[6] the eighth Ashikaga Shogun; it is considered one of the earliest instances in which the Noh stage was painted. Directly behind that stage one can see that there is a Hashigakari.[7] There are two special box seats directly facing center stage, and Daimyo and court nobles schematically surrounded the stage in order of hierarchy. This had a deeper meaning than Sarugaku theater, and the formation is believed to have been systematically put in place.

Before the Kansho era, in the fifth year of the Eikyo era (1433), Tadasugawara Kanjin Sarugaku was held under orders of the sixth Ashikaga Shogun Yoshinori.[8] In the backdrop of this, the third Ashikaga Shogun Yoshimitsu Ashikaga was said to have favored Zeami[9] who made Noh a success. In a hidden move, Yoshinori kept his distance from Zeami, who wanted his child Motomasa to succeed him, and instead promoted Motoshige (Onami)[10] to Zeami's position. With no more support for Zeami and with the death of Motomasa while on regional tour, Tadasugawara Kanjin Sarugaku was held in the fifth year of the Eikyo era, and Motoshige's art was performed and enjoyed on a grand scale. Indeed, Yoshinori even went as far as to exile the 70-year old Zeami to Sado Island. Tadasugawara Kanjin Sarugaku was held in the fifth year of the Kansho era with all of this history as a backdrop. At the same time that the leader of performing arts was made known to the public, it is believed that the power structures were publicly displayed by Yoshinori at the top of the political and cultural totem poles to indicate the artists he supported. This was three years before Kyoto became a war zone in the Onin War (1467–1477). Taking this into consideration makes it easy to understand why the spatial construct of the stage and Hashigakari were in a direct line. Simplifying the axis made it easy for anyone to see what the power structure was.

9.3   THE CONCEPT OF TIME ON THE HASHIGAKARI

A structure developed on an axis may be effective in political strategy like that outlined in the previous section, but it lacks the three-dimensional element as a performing art. Zeami is quoted as saying, "one should give a cry first after crossing two-thirds of the Hashigakari. Then, the second cry should come at the end of the bridge when one is nearing the border with the stage." (Zeami 1987). He also says the timing of these cries should be in accord with the audience's breathing. In addition, he stated, "[W]hat shall be highlighted in my appearance is my objectivity." From this quote, we observe that seeing oneself objectively without focusing solely on oneself was important for Zeami; so was the length of the Hashigakari and distance from the audience. In Mugen Noh, Zeami created the foundations of Noh that restores life to the dead and transcends time to go between Higan and this life, between truth and lies, and between the past and present. By representing life and death on the stage, Zeami pursued lustrous beauty through deep and insightful mystery but was not able to effectively create a space for this.

However, his successors studied methods to portray ways to effectively visualize the transition of time and spatial movements of the performance and bring the Noh chorus into the mix. As a result, it is believed that the Hashigakari was placed at an angle at stage right, to change the distance and visual axis between actors and each member of the audience. In this format, the performance begins when the curtains are drawn, and the actor is shown through a gap in the curtains. The actor slowly and quietly approaches the stage and therefore changes the sense of space with the audience as the performance begins. This mechanism stresses the importance of time and space through the process of transition. As a result, the border between illusion and the real world crosses inside each audience member as they experience the space-time of the stage. The audience sees actors on the Hashigakari from diagonally, and this allows for them to see the actors' facial expressions of masks more clearly depending on the lighting and where they are standing. As a result, mysterious shadows are cast on masks of actors depending on their movements and angles, when in reality the masks only show one expression. In other words, the audience is better able to witness expressions of the actors. The spirituality that was previously hidden inside the actors was visualized due to their movement in space and transitions in time. Because the stage was outside, the Shirasu around the stage created a different lighting for each performance. Each

step the actors took on the Hashigakari created a subtle change in the visual field of the audience, and slow movement made the visual of the whole stage seem blurred.

There is yet one more axis: the Noh chorus. Where the musical accompaniments face the guests of honor from the rear of the stage, the Noh chorus is placed at a 90-degree angle as if to focus their attention on the actors. The Noh chorus includes a choral group, and is mainly in charge of expressing the psychology and scenery from the point of view of the actors. At times the chorus would express the emotions of the actors, and at times it would call out to the actors in song, and vice versa. For this reason, it is believed there is a logical reason behind the placement of the Noh chorus, as if it were communicating with the actors to bring out the best of a performance. However, it seems to have taken a long time for this to take shape to where we see the Noh stage today.

If the Hashigakari were spread diagonally downward from stage right in order for the audience to correctly recognize the actors who were approaching and receding from them, it is not in agreement with the logic of the placement of the chorus in the Tadasugawara Kanjin Sarugaku. Some time later, around the early sixteenth century, the Hashigakari would be connected to the stage from around the center of stage right, as pictured in "Rakuchu Rakugai Zu Views Around the City of Kyoto (Machida Book)."[11] However, there is a theory that the Noh chorus was placed behind the musical accompaniment at the rear of the stage, so this diagram does not provide proof (Fujioka 2009). The middle of the Hashigakari would (mysteriously) be placed a bit higher, and a Shimoya was annexed to the rear part of the stage. This arrangement should be highlighted as the blossoming of the rear part of the Noh stage.

In fact, the structure in which actors appear and recede from the rear of the stage is similar in Takigi-go-Noh.[12] The actors and musical accompaniment approach the stage from the left of the Honden (main hall) and enter the stage from the rear during Shushi Hashiri-no-Gi, performed at Kasuga Taisha Buden (Heiden). In this ceremony dedicated to Shinto gods, the Shinto priests are positioned to the side, and nobody is directly in front. Ordinary people may observe this event but only from behind the Shinto priests or on the wooden floor of the Naoraiden, lateral to the stage. Performers of the Nan Daimon-no-Gi (so-called Takigi Noh), which begins in the afternoon, also approach and recede from the stage, doing so from the rear. The stage is placed in front of the Kohfukuji Temple Nan Daimon Remains (southern gate),[13] and there is a space

closed off by curtains and leading to a dressing room located at stage left. The Gosha Nobori-no Gi that takes place on the second day of Takigi Noh is said to be the oldest form of Houraku Renga, or Shihou-shomen Shinto ritual. The spatial relation for that ritual is similar.

Stage structure was loose and flexible as described above, from the beginnings of theater (when the structure of the Noh stage was not fixed) until the era after Zeami. However, the number of works increased and various effects were discovered and shaped as the art form progressed, along with improvements in technology. The time in which the performing art was most creative and the time of architectural completion never seem to overlap.

9.4   Boundary and Time

There is no stage that is more uneven in quality and conscious of boundaries as the Noh stage. The stage is a square measuring 5.4 meters on each side, but it is divided into nine domains (Joza, Sumi, Wakiza and so on), and each of the four pillars in the corners of the stage have different names. There are also Atoza, Jiutaiza, Hashigakari and Kagami-no Ma that connect to the stage, and they are all different in size and face different directions. The method of fitting floorboards of the stage and Jiutaiza (seating area for Noh chorus) faces them in the same direction, but each of the other areas is different. The stage is made up of independent areas characterized by their names, yet the space to which each element belongs is unified. When compared to the homogeneity and symmetry found in Western-style stages (which is the foundation of modern theater) the difference is obvious. There is no attachment to realistic expression or transition of scenes.

The symbolism of each element is highlighted by of the emptiness of the space. By a deliberate separation of the Kensho (audience area) and the stage of the outdoor performance, not only was a sense of objectivity born, but meaning was also brought to the spirituality of the performance. It is believed that a strong emphasis was placed on boundaries and the time-axis in order for living humans to transcend time and space and so to act as incarnations of the gods. Furthermore, there was an unnatural element of seeing the stage in a shadow, through a thick screen created by the reflection of outside light on the Shirasu from the Kensho, which is in a shadow under the eaves. The pillars of the Noh stage and Hashigakari and Shirasu all keep the audience away from the performance or block their

view. None of these elements would survive the modern concept of what a stage should embody.

The most noticeable of these obstacles to the audience are the four pillars at the corners of the stage then. There are no pillars at the four corners of temporary stages such as the Takigi Sarugaku-zu at Kofukuji Nandaimon (Eisei Bunko Archives) and Hokoku Sairei-zu Byobu (Tokugawa Art Museum Archives). They are not present in the current Shushi Hashiri-no-Gi either. It may be that constructing a roof over a stage that did not before have a roof inevitably led to the use of pillars. Either way, having a predetermined format and spatial area makes it easier for actors to grasp the sense of the space. One imagines it might even help them to improve their acting abilities, to reach a higher level of their craft.

Compared to the Kabuki stage that used the Noh stage as a foundation and changed it dramatically, the Noh stage seems frozen in time from the Muromachi era; it is fundamentally simple. However, there is more to this simplicity than meets the eye. Because the basic appearance of the space has not changed, the fine details that are developed are highly accented. In modern stage-making, which allows the audience to surround the stage and the performance, bringing them closer to the performance. However, the borders created by the Noh stage hinder this close proximity. The rough space of the Noh stage seems to create freedom and communicates a sense of spirituality that defies the use of props and theatrical instruments.

These characteristics remind one of the sensibilities found in the world of Japanese tea ceremony. Both were chosen to let participants temporarily forget social and financial standing. Guests get dressed at Yoritsuki, pass through the Chumon, a simple door that acts as a border to enter through the Roji passageway to reach the Nijiri-guchi. There, the guests crouch through a small door to enter the stage. This sequence of movements creates an arrangement that makes the guests conscious of the spatial borders and time. The Machiai (waiting room) in tearoom architecture corresponds to the Kagami-no Ma, and the Roji seems like the Hashigakari.

9.5 The Blanks in Time and Space

Noh is a masque and begins and ends with an empty stage. The Shite, or main actor, is surrounded by dance and Noh chanting. There is some storytelling involved, but this is unlike the drama that is written in today's world. The audience has to weave scenes into a story, and there is no real dramatic

development in the plot. The dance, Noh chanting and musical accompaniment all move forward simultaneously in small increments and at times are independently stacked upon each other. The Noh chorus sings in unison of the background of the story, and the actor often expresses his thoughts and actions and calls out to the audience to complete the picture. However, the acting is not always in line with the Noh chanting. The scheme is that the actor himself is also the commentator and master of ceremony at the same time. These multiple roles and layers[14] also create a sense of Ma.

Since the stage during the Muromachi era measured roughly 3.6 meters between short pillars, the movement of the dancers was shortened and simplified, and with the limited number of actors, the audience focused on each actor and the masks they wore. Decorations were used at time, but there were no such things as stage settings. That is why there is great meaning in the mask. One mask must create expressions that transcend both space and time in order to portray the feeling of godliness and spirituality. There are many masks that are very similar with slight differences, and at times the same mask would be used for a different song.

The actors can see only through pupil-sized holes in the masks, and their voices sound unnatural while wearing the masks. For this reason, the dance and Noh chanting are very slow, and there are many blanks in time. At times all movement stops. At times all sounds cease. From the audience's point of view, the Noh stage gives a feeling of blankness. This is probably what Zeami meant by "to say what one is not doing creates space for more" (Zeami 1987). The beauty lies in concentrating and paying attention more when doing nothing than when doing something, and doing this so nobody can find what is going on. The audience's imagination creates a story felt through this acting that includes many blanks.

This is when musical accompaniments become key. They do not merely provide music to go along with the Noh chanting. At times they lead the Shite, Noh chorus and chanting. At other times, they seem to compete with them. This is why they are facing the guests of honor; positioned at the rear of the Noh stage. This is not only true for the Noh chanting; the flutes and taiko drums, and the musical accompaniments also create a similar tension among themselves and ultimately bring the stage space together. The drummers call out to each other to synchronize their tempo and timing, and at the same time create music that other instruments cannot. Each individual in the blank/void creates this world and tells the story on the Noh stage.

9.6   The Ephemeral Element of Floors in Performing Arts

The floor is the most immediate connection performing artists have with a stage. Without this most basic element of a stage, an artist cannot perform; in a sense, it is an extension of the artist's body, what the artist yields to. The floor is equally important for stage director, stage designer and lighting technician, who each create the spatial construct of the stage. For them, rather than something that already exists under a predetermined set of rules, the floor is understood as an element that constructs space on the stage. This is why it is reconstructed as needed.

Historically, Japanese performing arts were heavily linked to annual events, festivals and ceremonies that are related to the seasons. It is no doubt why stages were originally provisional. In addition, although temporary many stages were used periodically for annual events and so on, so the not only stages but also accompanying parts of the performance were easy to assemble and prepare. The belief is that the term and concept of *butai*, or stage, was made clear through Bugaku. Before Bugaku, places to dance were merely called *maiba*. In other words, stages were persistently temporary.

The most primary structure was the maiba on dirt or grass. This can be seen today in Kasuga Wakamiya On Matsuri. The annual festival at Sessha Wakamiya Shrine of Kasuga Taisha is said to have started at Kofukuji in the late Heian era. One can see various elements of Bugaku and Noh in this On Matsuri. Within this festival, the Otabisho-no Gi is especially symbolic. The Otabisho greets deities in a temporary shrine made of fresh pine branches. In the front of this shrine is a square stage that is placed a bit higher. The so-called stage is all but a square mound of dirt, covered by a layer of grass.

The stage to please the gods is made of just grass, but the day after the festival when Wakamiya-sama is said to return, a stage with a wooden floor is built for humans to perform Goen-no Noh for humans, but for the gods, the simple and natural grass stage is prepared. The only lighting is generated by firewood burning at the four corners of the stage, and people continue to dance earnestly for eight hours straight. Wakamiya-sama is said to watch this from the darkness, and humans are allowed to watch this from a gap from the sides. This is one of the basic spacing structures of Japanese performing arts.

The Tohka-no Sechie Maikozu in "Nenju Gyoji Emaki" pictures women dancing the Toka[15] dance on a maiba covered by a layer of carpeting in the southern garden of Shishinden[16] on January 16 of each New Year. The details are unclear, but something similar to straw mats is spread in a square shape in front of the garden facing Shishinden, and the maiba seems flat. To the left of this figure, it seems like straw mats are spread in the area from which the apprentice Geisha enter. This is a so-called *Chido* (road exclusively reserved for the Emperor), and it is interestingly similar to a Hashigakari that would come about later in Japanese performing arts history, from which performers enter the stage.

Since this ceremony was held often, it is not surprising the format for the stage has been unchanged. The Ishibutai at Osaka Shitenno-ji realized this structure, and it is one example through the ages of a stage that was not dismantled and rebuilt for each ceremony or festival. The central Ishibutai measures 6.53 meters by 10.05 meters, and it is the main stage. A railing on the bridge is assembled when Bugaku is performed, and cloth covers the Ishibutai, and a further layer is placed on top of that. In the beginning this was most likely built as a stage, and it is believed that the bridge was added later, but this cannot be proved.

Considering traditional stages on which Japanese people performed, flooring was always replaceable and the earth was the foundation on which people danced for the gods. Earth was mounded to be placed higher, and wood was placed on top to create a stage. The basic thinking behind this construction is that space could be installed temporarily whenever needed.

In modern days, a stage for performing arts involves various technologies that one can barely imagine. Concrete takes the place of earth, space and buildings significantly. But it remains to this day that the roots of a stage are the bare earth, on top of which people are free to construct spaces as they please.

9.7   The Kabuki Goya: Birth of the Indoor Theater

The beginnings of both Kabuki and Noh spaces are extremely humble from a modern-day point of view. Although a permanent stage was established over the ages, one cannot say it has changed dramatically at all. Seen in a picture from the early seventeenth century is a humble playhouse theater built by Okuni to the south of Kitano Shrine looks almost like a temporary stage. However, one can see a scaffolding and taiko drums. The

audience is seated on straw mats placed on the ground, surrounding the stage, and a Yarai fence hides the stage from outside view. Both the "Kiyomizu Temple Folding Screen" (MOA Museum Archives, roughly 1610) and "Okuni Kabuki Zoshi" (Yamato Bunkakan Archives) are similar; neither one has balcony seats or Hanamichi and are extremely simple stages. However, the "Okuni Kabuki Zu" (Kyoto National Museum Archives), believed to be created towards the end of the Keicho era (1596–1615), shows balcony seating a bit higher than the stage, and therefore it is believed that play huts with balcony seating were built from an early period.

There are also versions of these huts ("Nihon Gekijoshi no Kenkyu") that Atsuo Suda and others presumed to exist, based on these antique figures. With these examples, a structure to be the foundations of a playhouse theater with the stage, dressing area and balcony seating covered by a simple roof and surrounded by Yarai fences and straw mats seems to have been generalized. Compared to performances that took place on dry riverbeds these playhouse theaters did have roofs over parts of the venue, but most of the seating was outdoors, and therefore was subject to the seasons and weather conditions and could not withstand strong winds and rain.

However, it is quite interesting that the basic structure of playhouse theaters was proposed at a relatively early period, including a Hashigakari that led to the main stage from directly behind and balcony seating to each side. Diagrams show that scaffolding[17] was in place from the beginnings, placed above the Nezumi Kido,[18] which was used as an entry and exit for audience members. The Noh stage and Miyaji Shibai took similar forms and can be further traced back to Kanjin Noh. However, it is difficult to determine exactly where the roots for this lie. What is clear, however, is that there is a great difference between the Kabuki and playhouse theaters we experience today and the playhouse theaters of the past.

The following points provide examples of how the origins of Kabuki differ from today's Kabuki theater.

1. There was no Hanamichi.[19]
2. The stage and balcony seating stand completely independent of each other.
3. The Doma seating was not covered.
4. There was no balcony seating facing the front of the stage, and there was only one level of seating.

5. The stage was surrounded by two sides of balcony seating, and the audience could observe from three perspectives (front and both sides).
6. The area for Geza Ongaku was located at the rear of the stage.
7. The Hashigakari was connected to the rear of the main stage and stretched past stage right.
8. There was no foyer (or the whole theater was unified).

Of these items mentioned above, the birth of the Hanamichi (and that becoming a permanent fixture) and the theater always being indoors were changes that occurred relatively quickly. The Hanamichi was still temporarily in the Tenna/Teikyo era (1681–1688) but was used for presentation, and almost at the same time the theater moved indoors. This had a greater significance than just putting a roof over the Doma seating that previously was exposed to outside weather. "Views Around the City of Kyoto" (Jyakouin Archives), which pictured the views of Kyoto Shijo Shibai district in the Empou era (1673–81) shows a roof over the Doma seating. In addition, it is noted in "Gekijou Zue" that the Nakamura-za and Ichimura-za, which were rebuilt after they burned down in fire, were permitted to have wooden roofs built over a part of the Doma seating in 1677 (Tsuchida 2003). However, there was no large-spanned roof that would cover both sides of the balcony seating at the time. Although the playhouse theater was not large by any means, the roof that was erected was quite large for the time (roughly 9 meters wide). However, the depth was only roughly 3 meters, so this was far from being a roof covering the full space.

By the early eighteenth century (Shotoku era; 1711–1715) it is believed that theater performances could be enjoyed without interruptions due to weather. But this was seen as too luxurious and promptly prohibited (fourth year of Shotoku era, 1714). Regulations were more lax in the next era, the Kyoho era, and by the 1720s it was general practice to have a format in which the whole Doma area was covered by a roof. In the "Nakamura-za Kabuki Shibaizu Byobu" (Idemitsu Museum), which is believed to have been created in the sixteenth year of the Kyoho era (1731), one can see that the Doma seating closest to the stage is fenced off from other Doma seating. One can also see there is some carpeting for the Doma seating closest to the stage. There may have been a roof covering these seats. Furthermore, in the "Ichimura-za Jounaizu Byobu," thought to have been created in the eighteenth year of the Kyoho era

(1733), the top part of the balcony seating has Shoji windows, serving as proof that the theater had a full roof at that time. This was 120 to 130 years after the Okuni era.

With this format not only was the performance more stable, but the Doma changed to having a wooden floor, and more expensive seats could be sold. There is no doubt that this increased profits greatly. Of course, natural lighting then became very limited. This was a new and serious problem at the time, but the stabilization of the show itself created an opportunity for Kabuki to further develop. In other words, by preventing weather conditions to affect the performance, there were more opportunities for show, and so more opportunities for people to enjoy the art. Therefore, income for Kabuki expanded greatly. Due to this prosperity each Kabuki theater competed to elaborately try new ideas, and new vectors were born to entice the crowds. With a playhouse theater being covered by a full roof motivated by paying audience members, the Kabuki format reached its apex in the Tenmei era (1781–1789).

These fortunate events were helped in large part by merchants in the city areas, and local merchants in regional farming areas who prospered greatly due to Japan's policy of national isolation. With peace and prosperity as a backdrop they controlled the markets, and their wealth and taste led to a blossoming of the culture. This coincided with the heresy and decorative nature of Kabuki. This expression of energy was born from the isolation of Japanese society and became a driving force for Kabuki as entertainment. The Genroku culture that was formed by new business opportunities for merchants made Kabuki blossom, but this overlapped with the architectural backdrop of bringing the theater indoors.

9.8   Normalization of the Hanamichi

Covering the playhouse theater by a full roof greatly sped up the popularity of Kabuki. However, the architectural aspects progressed forward quite slowly. The new architecture merely put a large roof over the stage and balcony seating, which did not change much, and the merging of the Hashigakari and main stage would come considerably later in time. However, there must be a reason for diagrams of Kabuki theater that show both the full roof covering and birth of the Hanamichi almost simultaneously. It is believed that a relationship exists between the full covering of the theater and the audience seating becoming dark due to lack of natural lighting.

Kabuki started out as an art performed outdoors, and with the full roof, the need for natural lighting limited performances to being held during the daytime. However, in the fourth year of the Shotoku era (1714), nighttime performances were prohibited. The reason the use of fire was prohibited most likely indicates some performances occurred before this year used fire. This serves to prove that performances were becoming unsatisfactory with just natural lighting by the time temporary roofs for the top parts of Doma seating were permitted, in the third year of the Kyoho era (1718). By the ninth year of the Kyoho era (1724), full roofing was permitted, leading to a larger change in consciousness for the show-business side of operating and producing Kabuki than consideration for architectural space. This provided an opportunity for the audience to change the way they saw performances, as well as a dramatic change in the playhouse theater.

From the audience's point of view, there were many negative aspects to this. Not only was natural lighting limited but problems with ventilation arose. In order to secure lighting via fire, there is no doubt that performances had to take the timing of ventilation into consideration. It can be imagined that much thought had to be put into the length of each act and how and when scenes changed. The initial costs and operational costs for the theater increased greatly, and there is no doubt that not only fumes from the fire but the risk of damage due to fire were great worries for all involved.

The stage was affected even more than the audience in this regard. Above the stage, which now protruded into the audience, was a roof. For this reason, there is no doubt the stage got increasingly darker. In order to counter this, it is known that candlesticks were used. Tools such as the *izari*, which was placed at the front of the stage to shine light throughout, the *hikkake*, which was basically a candle placed on top of a small wooden plank so that the equipment and space on stage would be highlighted, and the *sashidashi*, which highlighted the actors' expressions and silhouettes, were used. In addition, night scenes were lit up with lanterns for stage equipment, and paper lanterns were also used. Even then, there was a strong connection with weather conditions outside the theater, and the concept of time in how each day passed.

At the time of these new endeavors it can be seen through diagrams of the period that not only was the stage covered by a roof but the stage itself protruded into the audience, which made it easier for the audience to enjoy the performance. As noted, through these changes the main stage

got darker, but a new element in the acting was born as a response. On the other hand, the stage was rectangular and longer horizontally before a full roof covered the theater, but after the roof the stage became vertically rectangular. This was because it was difficult to create a roof that would cover the stage and all of the audience's seats. In fact, there is a few printings in which a pillar remains in the flat Doma seating area. As space for balcony seating was limited due to architectural reasons, it was difficult to expand the space for the audience other than away from the stage when the theater wanted to increase the number of audience members in attendance. It is believed this is why the stage protruded further into the crowd, in order for those seated far away to also enjoy the performance. By making the Hanamichi (which was until then placed temporarily) a fixture in Kabuki theater, depth was added to the spatial construct of the art.

9.9   The Relationship Between the Audience and the Hanamichi

When the Hanamichi became a fixture in Kabuki theater, it is believed that there was a re-recognition process of the relationship between the audience and the initial Kabuki stage. In other words, the focus was placed on the sides of the stage rather than the front. When looking back at the early days of Kabuki, two balconies were placed facing the center of the stage. There seems to be plenty of space between the stage and the balcony seating. There were no balconies in front, and Doma seating surrounded the stage from three sides; spreading almost equally. It was as if the actors were performing for the Gods who descended to the scaffolding, but the seating was dominantly placed to the sides, and the best seats in the house were also limited to the sides of the stage. In contrast, diagrams of the Edo Nakamura-za from the early Genroku era show that one side (stage left) had balcony seating that came very close to the stage. In addition to the elongation of the Hashigakari at stage right and the fact that the Wakiza was established, it does not seem as if the stage protruded towards the audience at all. Although there are no balcony seats facing the front of the stage, it can be determined that the theatrical space was clearly focused on the front of the stage.

However, a vastly different theatrical space is shown in a diagram of the Nakamura-za in the early Gembun era after a full roof covered the theater. In other words, additional parts of the stage were added to the front of the main stage, the Hanamichi stretched diagonally from stage right into the

audience, and there were balcony seats stretching from stage left to the side of the stage. There is also a small addition called the Nanori-dai, which branched off from the Hanamichi towards the center of the Doma seating area. By establishing second-story balcony seating not only on both sides of the stage, but also directly facing the stage, the space for the audience surrounded the stage completely for the first time. The scaffolding facing the front of the stage was placed on the balcony facing the front and also on top of the roof. In fact, there are balcony seats towards the front, but there was performance space that penetrated the Doma seating, so the focus that was placed on the sides of the stage in the past expanded vertically to meet the line of sight of the audience. This meant that the theatrical space moved yet another step forward, drawing back into the origins of space of Japanese performing art.

Concerning the Hanamichi, no theory has been established for certain, although many researchers have spent countless hours trying to define it. One aspect is the origin of the name Hanamichi, which literally means "flower or blossom path." Another aspect is the question of why the Hanamichi was incorporated to Kabuki and how it evolved to be what it is today.

There is a theory that the Hanamichi provided a place for the audience to gift their beloved actors with flowers or congratulatory gifts (Goto 1925; Shinmura 2008). Another theory states that it is a transformation of the staircase in the front of the Noh stage (Hakubutsukan 1953). Another theory claims it is just a more polite way of saying "path" (Toita 1950). Yet another claims the Hanamichi is the combination of two different characteristics of an addition to the stage and characteristics that trace back to imperial messengers. Another theory claims we should focus on the paths in Sumo, Ennen Dance and Hanamatsuri of the Mikawa region (the path that links the maido and chamber of gods is called Hanamichi) (Ikeda 1960). Yet another theory claims that not only is it a path on which audience members can give gifts (flowers) to actors, it is also a Hashigakari that is called Hanamichi because beautiful actors who can be likened to flowers enter and exit the stage (Nishiyama 1969). Another theory claims that nothing can be specified, but the concept of flowers and presentation of the theater were mixed together to bring the name Hanamichi about (Hattori 1996).

Each theory has something one may agree on and by which one may better understand the Hanamichi, but it is believed there is a connection

with the flowers that were gifted to actors, and the actors were "Hanagata," or stars of the show. At the same time, the Hanamichi brings to mind the concept of a path, without which Japan's festivals and performing arts and the creation of space within them are basic elements. The Michi, or path is the stage, the audience, and a place for people to interact. Both performers and audience can enjoy the space that is created in their own way and provide exchanges with each other. In this thinking, the balcony that was created for the path is the key to understanding the theatrical space.

Only now do we feel it is natural to be able to see the stage from the front, but we can see the Michi only from one side or the other. Even if the Michi is the Hashigakari of Noh, it is evidence of the focus placed on the sides of the stage, and this is apparent in the beginning of the playhouse theater. Perhaps it captured the spatial construct of a three-dimensional performing art. It can also be said that the balcony with a roof is what connected the stage with a roof and Doma seating with no roof. The balcony was not only positioned as the best seating in the theater due to the fact that the audience can see the stage and Doma from above, it is also an indispensable element of bringing a certain class to the theatrical space. In addition, the closest seats to the stage are called "Kiriotoshi," possibly because the stage did not protrude towards the audience as Hanamichi. Perhaps it receded backward in order to fit more audience members and create seating. When looking at Kabuki and its origins from this point of view, it is truly interesting to revisit the times and how the scenery changed.

Notes

1. The most important and largest Buddhist memorial service held at Shitenno-ji Temple in memory of Prince Shotoku on the anniversary of his death. It is believed this memorial service has one thousand and some hundreds of years of history, and it is reminiscent of truly grand services that used to take place in which Bugaku and Buddhist memorial services became one.
2. One of the most ancient spatial formations of a temple; called the Shitenno-ji style.
3. Ceremony held to commemorate the anniversary of the founding of Sumiyoshi Taisha. Bugaku is performed on a Ishibutai after a ceremony in which a Tamagushi made of leaves of Utsugi (Deutzia) is dedicated to the gods.
4. Matsuoka (2002) explains what role Kanjin performance had and how it developed during the medieval period.

5. This performance that brought together the Shogun, court nobles and Daimyo in lavish dress at the riverside where Kamogawa and Takanogawa meet (Tadasugawara) is brought up as the second lavish spending of the Shogun Yoshimasa in "Onin Ki" (the author and date of publication is unknown, but this document details the internal disputes of the Kanrei family and the family of Ashikaga Shogun in regard to the Onin War).

6. Yoshimasa Ashikaga (1436–1490): the sixth Shogun Yoshinori was aiming for autocracy when he was assassinated by guards who were trying to maintain the Shukuro system. Yoshikatsu, the next in line for Shogun, died suddenly at a tender age, so Yoshimasa, who was born to a different mother than Yoshikatsu, became Shogun. He pursued performing arts and garden-making as if to escape the confusion of politics, and at the same time as being the father of Higashiyama culture, he is believed to have been one of the reasons for the Onin War.

7. There are opposing view to this like that of Amano (2010).

8. See Taguchi (2005, 2006).

9. Zeami (1363–1443): Noh actor of early Muromachi era. He contributed to the progress in artistic quality of Noh with his father, Kanami, and the support of Shogun Yoshimitsu Ashikaga. He developed Noh that used to be primarily a form or impersonation into Mugen-Noh centered in song and dance, and left roughly 50 songs for Noh performance. He also left many writings of Noh including "Fushi Kaden (Kaden Sho)."

10. Shisei Kanze Daifu, son of Shiro who is young brother of Zeami, and split off from Kanzeza.

11. This is believed to be the oldest remaining folding screen of "Rakuchu Rakugai Zu Views Around the City of Kyoto", picturing the views in around 1520–1530. (National Museum of Japanese History archives)

12. The roots are said to go back to 869, eleventh year of Jogan in the Heian era. The performance used to last seven days, but today, there are two days. The first is for "Shushi Hashiri no Gi" and "Nandaimon no Gi". The second day is for "Gosha Nobori no Gi" and "Nandaimon no Gi".

13. The stage for Takigi Noh used to be coved in just grass. Currently, there is a Shosadai-style stage.

14. Yokomichi (1986) wrote about this in detail.

15. This was one of the Densha of the Dairi, which was the private residence of the Emperor. However, during and after the mid-Heian era, this main hall was used for important ceremonies such as Sokui no Rei and Sechie. The Shishinden had a stronger public importance when compared to the Seiryouden in which the Emperor lived.

16. Gunbu-style song and dance that was imported from China between the Nara and Heian eras. It merged with the Utagaki, which was present from ancient times, and became popular after being tailored to Japanese taste.

From the seventh year of the Jitou era (693) onwards, men and women who excelled at song and dance were invited to the Imperial court in order to celebrate New Year. Later, men and women performed separately, and eventually became Onna Toka (dance performed by women only).

17. A wooden framework on which one to two people would fit was placed on top of the Kido wicket door (entrance). A drape with the Zamon emblem dyed on it encircled this, and Gohei and spears were placed on top. This is where the taiko drummers performed to advertise the show. The scaffolding was proof that the playhouse theater was authorized by the authorities.

18. In modern times, this wicket door was created for audience members to crouch through, in order to prevent nonpaying individuals from enjoying performances held at the playhouse theater.

19. A passageway and performing space running from the stage through the audience.

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Ma Thinking in Architectural Space, Mentality and Action: The Impact of Ma Thinking on Lifestyle Design

Tomoyoshi Urabe

10.1   Introduction

"Places where Ma exists" can perhaps be thought of as places that offer an appropriate buffer between people, between people and spaces, or between spaces and spaces. Therefore, such places can perhaps be understood as places and spaces that have the potential to connect people with people, people with spaces, or spaces with spaces. For example, if we consider such Ma in houses, which are a typical example of an architectural space, the *genkan* (entryway) in Japan, where it is customary to change shoes, is a buffer-like space between the inside and the outside where it is assumed people of the household as well as visitors will spend a brief amount of time. It becomes a place and space with a slight sense of tension. In a similar way, the *engawa* (narrow wooden passageway along the edge of a Japanese house) is also a buffer-type space between the outside and the inside of the home and, as such, evokes the image of a pleasant place and space that provide a space for people to linger.

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In this chapter, like the *engawa* mentioned above, we will consider the possibilities of places and spaces such as the *ima* (living room) as spaces within the home that invite a pleasant change in mood. If we consider the *ima* as a pleasant Ma that has a homey atmosphere and as the place and space in the home that connects various rooms such as the kitchen and the bedrooms or the corridors, and at the same time causes a change in the people who move about in the home as well as allows for various activities that connect people in a manner appropriate for the diverse families found in such living spaces, this living room can be considered the place and space in the home with the most potential.

However, spaces that have such Ma exist not only in people's homes but also in various forms including facility-like buildings. While focusing on places of cultural creation in this chapter, we will consider places that become "places where Ma exists" and which also offer various possibilities that lead to innovation. We will do this by observing places and spaces that are relatively small intermediary spaces and collective entities between large-scale spaces such as facility structures in cities; and family unit spaces of houses, which are intentionally created for public purposes in a region or village.

10.2   Places of Cultural Creation with Ma in a Region or Village

It can easily be imagined that the approaches to generating places or spaces of cultural creativity including art in a region or village involve the interplay of various complex elements and that organizing them in a logical manner at the same time is no easy task. For example, in Japan various key words come to mind in the creation of places where Ma truly exists in communities and villages. Among these are: "familiarity," "connection with the region or town," the "development of people" (developing people), "a space where its public nature can be felt," a "homey feeling," "ability to accommodate various uses," "distinctive features as a facility" and "investment of necessary funds" (no superfluous spending). We believe that these elements are mutually related in subtle ways and that at times various contradictory elements are required.

However, there is no silver bullet for achieving a simple balance of these elements, and the only answer may be to decide on priorities based on the circumstances and proceed with a project for a long period while making adjustments along the way as required. When a place or space where activities and actions of individuals converge is to become such a facility,

however, it is our view that the foundation that enables the formation of a place of cultural creation or the motivation for developing such a foundation will have universal elements irrespective of the size of the facility. We also believe that when these universal elements are reconfirmed, there is a possibility that place of cultural creation where Ma exists and which also leads to innovation can be created in a region or village in the future.

Referring to projects and research in which the author was personally involved in regional areas, the author would now like to consider the role of places of cultural creation where Ma exists in a region or village. The author will do this by examining the development and continuity of relatively more facility-like spaces as an extension of familiar spaces, or spaces that ensure activities with greater public awareness as an extension of personal activities in light of the key words "familiarity," "connections," "development of people" and "public nature" mentioned above.

10.3   Creation of New Places with Ma with Familiarity and Connections

In projects participated in not long after taking up a position at College of Engineering, Nihon University in Koriyama, a typical regional city in Fukushima Prefecture, the author had a number of opportunities to work on the creation of small facilities where people could meet and interact at the village level in the region. Among these were the former Horikiri House, where we renovated the former home of a wealthy farmer of Iizaka Onsen in the northwestern part of Fukushima City, and Chieko's house (which our team referred to as "the geographical space"), where we renovated an old folk house in the village of Tenei located in the mountains between the Naka-dori region of southern Fukushima and Aizu. The objective of the former project was to create a facility in a town regeneration project by utilizing a historical resource after the once-prosperous hot spring town had gone into decline. The objective of the latter was to create a social center where local people living in a small village in which depopulation and aging had become serious issues could interact with people from outside their village.

The first topic taken up in discussions of the project teams when considering the implementation of such programs was loosely connecting the internal and external relationship of the building with the community through various activities by identifying and connecting local festivals during the year, irrespective of the scale of these events, with activities of the center we were planning to create. In an exaggerated sense, our objective

was to redefine the image of the area by preparing a schedule of regional festivals and re-establishing the place of activities of festivals and events, and to use the project as an opportunity to achieve this. In other words, our aim was to create a place or space with Ma that would connect various activities and people of the region or village.

Although there is a tendency in projects of this sort to consider a theater or hall as an option for achieving this aim, we were more in favor of a less ambitious plan that envisioned a place for various events that could be held in a community center as extensions of everyday activities. If we likened this place to functions of the home mentioned earlier, our aim was to achieve something similar to a large living room or hall where guests could be welcomed and social interchanges could take place. This place would at times spatially connect external spaces (in the former Horikiri House, the courtyard, and in Chieko's house, the rear garden) to more or less create a "stage" of a theater or hall. The "stage" that could be created through the renovation of a house of this nature could not be equated with what we refer to as a theater or hall. However, this "stage" (and "audience seats" in the garden) would perhaps be quite an extraordinary space for people outside the region to experience, and the appearance on this "stage" of something beyond the ordinary local festivals or events could also be an extraordinary experience for the local people. Our aim was to create such "place where Ma exists."

In our university laboratory, we have been studying traditional performing arts such as Jikabuki (regional Kabuki performed by regional amateurs), which exists in the Tohoku region, and how they are received in areas where they are staged. We felt that as an example this study could serve as a useful reference in the management and operation of a "stage" created in projects like the ones mentioned above. In small villages, for example, unless people in the local community share roles in the management of activities and unless the activities become part of everyday life, the objective of the project will not be realized. Conversely, there are also examples where such activities become events the people within the community look forward to, even when they are not widely promoted externally. In this way, for a village even a modest "stage" can provide a venue for very important events that are an extension of people's everyday lives, and for people outside the area who experience these events it serves as a place where they can experience somewhat extraordinary events (having people come from outside the area may also be an extraordinary experience for the local people).

Just as pleasant images of a place like Kyoto become established in the memories of visitors to the city as images of only the places they personally like, we felt that the plan to create a modest, small "stage" could result in that stage becoming one such memorable place of the region or village, not only imparting rich images to people outside the area but also serving as a pleasant place for the local people to get together. If it achieved these ends, it could very well become a notable "place-like presence where Ma exists" in the region or village where its small "stage" could prove to be an effective means of maintaining the local community and developing the local area.

In another initiative involving a museum, we created and have been privately managing for some years now an exhibition space in the Karato Museum in Teshima, which is one of the main venues of the Setouchi Triennale. The exhibit items were produced during various recovery activities in Fukushima following the major earthquake disaster in 2011, and local residents as well as staff on our team, including our universal laboratory during breaks in the academic year, take turns looking after the exhibition. When the museum is open, it is the kind of place where people in the neighborhood as well as tourists visiting the area make a point to visit, and they often have tea together. The museum serves as a kind of stopping place that is both relaxing and welcoming to both those visiting the island and those who live there. In this way, it can also be said that this a living art museum that continually communicates through connections between people.

This "small stage" or "congenial art museum" is a renovated and repurposed venue and because of its history remains a center of gravity that attracts people of the area and conveys a sense of "familiarity" and "connectedness" to them. As such, it afforded the opportunity to create a cultural facility with which the local people feel an affinity akin to a village festival, a rural theater stage or a lively community center.

10.4 Actual Creation of a Village Center in Depopulated Mountainous Areas with Ma that Connects People

Here the author would like to take a look at specific projects undertaken by our team to create regional or village centers with Ma where there was a definite awareness of connections between people.

The first center is the "geographic space" project mentioned previously. This is a center which was created from an old vacant thatched house more than a century old, located in the Yumoto district in the village of Tenei in a mountainous area of Fukushima. After renovation and repurposing the center was reborn as a place and stage where people of the village can come together in a casual manner, even on a daily basis. In the village, the house is referred to as "Chieko's house." It is a facility that consists of a "stage" formed by a slope and garden, which serve as background landscape and audience seating, a large, simple flat dirt floor area of about 10 tatami mats in size, from which the room partitions have been removed, and two comfortable Japanese-style drawing rooms that keep alive the memories of the former residents. In short, we designed the structure to incorporate the original beams and columns to create a pleasant space that would encourage informal gatherings and bring people together.

In this area there are still many houses with thatched roofs, and while thatching was an important element in the formation of the landscape, using and maintaining thatching on the entire roof would have been a burden on the people of the village. Therefore, we used thatching in the areas along the edges of the eaves only, so that it was visible to people at eye level and created a sense of thatching. The back garden adjoins land belonging to the neighboring inn, forming a "geographic space," which is the reason an integrated title exists between the public facility and the privately owned land of an individual. Possession of the land and buildings straddles both government and private sector ownership, and the author believes the creation of something for the good of the community through the cooperation of the public and private sector was a significant achievement in this project as an initiative that transcended existing frameworks. It perhaps can be said that the adoption of new methods of construction and a new program that at the same time respected the characteristics of Tohoku by highlighting the culture and customs are notable features of the project.

In relation to this, we have been receiving public funding for the past few years for a study of both hard and soft aspects, entitled "Study on outdoor theater structures and playhouses that exist in the Tohoku area and their role in the region"; and in activities of the Architectural Institute of Japan, we also participated in a study under the theme, "Public cultural facilities of the future in regional areas." It perhaps can be said that there is strong interest among stakeholders of cultural facilities, such as theaters and halls, in the value and roles as well as use of such regional culture (hard and soft).

One key issue in projects of this nature is determining how such facilities will be managed and used in the future in the context of everyday life. In relation to this issue, we received a review of the facility from an external person who stated, "It is a good example of passing on to future generations old folk houses in sparsely populated mountainous areas and keeping alive the memories of these places while demonstrating their potential for new uses." We hope that such use of these resources can be maintained as long as possible. As a center for local revitalization, we hope that the geographic space will not only be a place for people to get together casually on a daily basis but also become a new type of community facility that attracts a new population such as tourists and people from outside the area with whom the local population can interact through events such as performances of traditional performing arts like *rakugo* and Shinto music and dance and the holding of morning markets. At the same time, we hope the facility will function successfully as a center that communicates the attractiveness of the mountainous region.

We spent approximately four years on this project before and after the Great East Japan Earthquake Disaster. During that time we held a number of workshops with the people of the village. These workshops included planning to decide on how the refurbishments would proceed, and we forged ahead in a step-by-step manner. Many of the people who participated in these workshops were elderly villagers and we had to take time to explain matters carefully to them. Of course, it was not possible for them to gain an understanding from architectural drawings alone. It was necessary for us to prepare various large and small models and present detailed explanations on many occasions.

Furthermore, the old folk house was in the center of the village, which was a hundred and some decades old, and it was a building the village people were very fond of. To have them listen to our proposal, it was essential that we as people in the position of a third party showed an understanding attitude of the day-to-day life of the villagers. Therefore, we produced a movie that incorporated village festivals and scenes from daily life and studied the local environment and everyday life of the village as we communicated with people of the village.

In addition, we kept in mind the need to communicate the significance and purpose in creating such a community facility. Fortunately, we were able not only to deepen our mutual understanding but also during the many visits we made to the area, the universal laboratory members including the author had the opportunity to observe firsthand the situation of the elderly and depopulation in the area and to consider what was required

of the mountainous area with a sparse population and what kind of place should be created. From a different perspective, the students served as a young population with whom the villagers could interact. On occasion during the construction, the students gave impromptu performances on various instruments such as shamisen and guitar, and at times the people of the village gathered to listen. This made us think that even without a building or entertainment of particularly good quality, just having "something taking place" was perhaps important in generating even a small amount of vitality. In some cases, as was the case with this project, there are many issues that could not be resolved without actually delving deeply into soft areas. We realized that making efforts in these areas might also enhance the value of the building.

The second project was the Haryu Hoshippa House located in a sparsely populated mountainous area. This is a public facility where we aimed to create a village center while maintaining the image of a congenial house where people could casually gather. One of the main purposes was to make it a refuge facility during the winter period for elderly who live alone in the severe winter environment in southern Aizu, Fukushima prefecture, a region that gets heavy snowfalls. In addition, the idea was to open up the entire facility including the hall for interaction among local people on a daily basis and to have the facility used in the same manner as a community center where people could casually drop by and where various events could be held. Moreover, our aim was to create a facility that took into consideration current themes such as depopulation and local creation and that encouraged interaction with various people including people from urban areas.

For the building our team was to construct, we used a construction method that we referred to as "vertical logs" and adopted a uniform local area consumption system where local cedar was sawed and dried within the local area. Vertical log construction is an innovative method that changes flat piling, the general method of use of log material, and aims to create a panel effect by vertically joining spotless cedar material. This was the basic construction method for wooden panels that served as framework material, external cladding, interior material and insulation. We not only took into consideration the establishment of a system in the local economy through the use of local materials in large volume and prefabrication that enabled local carpenters to participate in the project but also aimed to achieve a pleasant space made of wood which, upon completion,

would add a special touch to both the interior and exterior by using thick cedar panels while considering future energy-saving standard values.

Through the planning and design of this facility, we pursued the potential of wood as a material and the expandability of the building, and we made efforts to establish a system that would take root in the local area. We also believe that we demonstrated the role architecture can play in issues of depopulation and local creation from both soft and hard aspects.

Our mission was to renovate an old folk house where the objective was not to restore it to its previous form but to transform it into a facility for the daily use of villagers by incorporating modern elements while at the same time maintaining certain traditional aspects and to create a social education center as a pleasant gathering place for local people and a haven for isolated people. In the planning and implementation of a recovery project, we believe the adoption of such an approach may be unavoidable. In certain parts of Japan, aging and depopulation are set to proceed at a rapid rate. Therefore, it cannot be said that the content of the two projects described above have no relevance with recovery developments following the earthquake disaster in 2011 in Japan. On the contrary, they may be seen as future models. We believe there is a need to undertake investigative research on facilities such as these.

10.5 Creating Opportunities for Attracting People from Wider Areas

In the past, the author had the opportunity to enter a competition on the theme "Possibilities for the Suburbs" sponsored by Koriyama Urban Design Center (UDCKo). This was a competition that really made the author aware of the potential of design in public spaces. The applicant's proposal was to address hard or soft areas, or something in between the two. Therefore, after carefully considering the current state of the local area (Koriyama: population of approximately 330,000) and the suburbs, which are typical examples of somewhat elusive issues, the author decided to focus on the potential of public spaces.

After establishing health as the theme and the element that would link schools, hospitals, companies and public hall activities in the surrounding area of the target area (which basically consisted of open areas by roadsides as well as vacant houses and vacant lots), the author decided to focus on contemporary festivals as annual events that take place in open, public

spaces as events in people's daily lives. Furthermore, the author decided to concentrate on existing activities, bearing in mind aspects such as sustainability and ease of participation. The author also considered approaches that would place little burden on various community organizations. In short, this was the main thrust of our proposal.

The aim of the proposal was to implement activities of various organizations that had been latent within facilities and buildings until then in open spaces of urban areas with a greater degree of freedom, and to have some form of mutual crossover in these activities. Also included in this proposal were: "alternative" uses of vacant spaces, possibilities for a new type of public activity based on collaboration between NPOs, and development of parks that exist everywhere. Before submitting our proposal, the author conducted detailed questionnaire and interview surveys with a large number of organizations and received positive comments during the planning stage. Our entry in the competition, however, resulted in a prize only, and the implementation of our proposal did not materialize. If our proposal were to be implemented, the author may have had to engage a capable so-called facilitator. Nevertheless, one positive outcome of our entry in this competition was the ability to feel the potential of being able to successfully create new public spaces even in suburbs and other areas (Koriyama) without particularly distinctive features. This proposal can be said as a project similar to activities in cultural facilities, which considers composite nature, continuity, and high public nature in which not only unspecified people but also people with various purposes gather and interact.

When a project reaches this stage, people may come together from a broader range at the urban level, but in reality (particularly in regional areas) the image is more one of people gathering a few at a time in smaller units that may increase little by little over time through people's connections. On the other hand, the frequency of such gatherings may engender in people a sense of comfort akin to habituation as the gatherings continue, and there is also a tendency to drift in a closed direction and come to an impasse before realizing it. At this stage, to maintain freshness, efforts may be required to continue gatherings in local areas while adjusting their frequency (periods), or it may be necessary to involve more people rather than persist with the same members or seek the cooperation of people outside the local area. Local festivals may also have a similar background.

10.6   Continuity from a Space with a Public Nature that Nurtures the Development of Actors to a "Box"

Perhaps it is during elementary school that children, in line with their age, go from instinctively to intentionally expressing themselves (or their ideas) skillfully among family members or friends while respecting the characters of others (people around them). Later in the classroom or during extracurricular activities, there will be some individuals who begin to become objectively conscious of their own characters and the role they play in their small world. This may be the beginning of their creativity and public awareness and also the foundation that enables them to manage rich public spaces. It seems that a condition for having so-called vibrant groups, organized classrooms and enjoyable extracurricular activities (even if energetic study or physical exercise are at the foundation of these) is the presence of actors with rich power of expression, who can link individuals in various ways. In today's younger generation such roles are said to be breaking down, but the author wonders if this is really the case (or whether perhaps only the methods have changed). Such schema is ongoing in adult society, and such actors frequently appear even in operas and Shakespearean plays as clowns to enhance the story. A clown who may sometimes turn into a charge commander, a bonding agent or sometimes the main character may be an essential presence to make the story more interesting (or to create it).

The three types of actors that are often considered essential for the success of town building or local revitalization are: (1) the "outsider," who has a perspective that comes from the outside and is free of constraints of the past, (2) the "young person," who has innovative and fresh ideas and is capable of taking action, and (3) the person who keeps following the road he believes in despite being laughed at by people around him at times and is considered to be a "fool." In addition to these types, the author personally believes there is a need for one more role: a clown-like "actor" (it will be fine if the "fool" evolves and also takes on this role as well). This actor may perhaps be the capable facilitator who will become the driving force in workshops and town building.

In the past, the author conducted a survey to investigate the state of daily use and user attitudes of both internal and external open spaces in facilities, particularly public cultural facilities in regional areas (Urabe 2010). Although it was not the main part of the study, the survey

happened to include a number of facilities where creative activities were flourishing. Upon careful observation, the author found that so-called (cultural) creative activities were being intentionally (or instinctively) promoted to create an impact on others. Amateur activities based on the world of personal hobbies involving others were transformed into activities with open, actor-like roles. They were a refreshing sight to behold, and the author somehow felt it was at moments like these that public spaces begin to develop in creative cities.

While the author felt that the availability of open spaces to enable activities to take place is naturally vital for such activities to develop, the author also felt it was important to skillfully produce receivers (with the potential for receivers also to become actors at times) who produce actors by making available to them the viewing freely of books and other media as well as providing access to other amenities such as desks and chairs and refreshments.

However, the author cannot help but wonder how the Japanese, who are considered to be shy and retiring, can present such personal activities out in the open. One reason may be that these activities are executed by a group consisting of a number of people and are confined to a relatively closed area like the local community, which may give the actors a sense of security and enable them to present their activities in the open to a certain extent. The framework of the latter seems to be similar, despite the differences between unspecified local residents and students of specified classes and extracurricular activities.

However, this sense of security also seems to simultaneously engender a lack of freshness and a closed atmosphere (Urabe 2014). Therefore, apart from spaces seen in open spaces within the facilities described above, the importance of the theater and hall in accepting outsiders and people different from the usual participants (professionals) becomes clear. At the same time, open spaces within the facility where amateur activities involve others in the creation of actor-like roles are important spaces for connecting the theater and hall, which ensures freshness to a certain extent through professional expertise and the daily lives of the local residents. In this context, the combination of the two may be essential in local areas.

In recent years, our team has had a number of opportunities to create some facility-like community buildings ("boxes") such as Kamaishi no Hako (Kamaishi Box) and Haryu Hoshippa no Ie (Haryuu Hoshippa House). The former, a house in the town, was developed as a town-building initiative while the latter is a local meeting facility in a small

village. Both buildings had clear purposes from the outset; the former was a recovery project following the earthquake disaster in 2011, while the latter was a social welfare initiative. Over time, the former facility has come to be used not only by victims of the earthquake disaster but also by people in the wider community, who often drop by on their way home from shopping to have a cup of coffee or tea or to let their children play there, or they may use the facility as a meeting place. The use of the latter has also expanded from its initial social welfare role to include various cultural activities, which are enthusiastically promoted at the facility.

The significance of a building ("box"), the author believes, lies not just in its background or why it was built; what makes it more interesting and may increase its longevity is when it develops into a venue beyond its original purpose. Even in an era where as a society we have a low birth rate, aging population, signs of degeneracy and people suffering from lack of space, rather than so-called multipurpose buildings, buildings created for specific people may have the potential to become buildings of a surprisingly different public nature. For example, the ability to experience something beyond a place of a public nature at a cultural facility where actors receive training, or the ability to experience more than just the cultural activities such as medical welfare and education offered there, may be a key to people living longer.

Spaces that can be managed or operated in this way and are places that people want to visit, spaces ("boxes") that can accept professionals such as the space nurturing actors described above, and spaces that can be used for different purposes as well as what they were prepared for may be also important. A cultural facility which is a structure that has been built in a relatively appropriate manner will play this role.

10.7 Conclusion

During discussions of the projects, various key words and phrases emerged in relation to the cultural activities which became the underlying reason for creating local cultural facilities. Among these were: "gathering of a public nature with a feeling of familiarity" and "sustainable festival-like events with contemporary themes, and the people who facilitate them"; as places and spaces: "places where gatherings familiar to people and the connecting of people can take place," "a space where actor-type persons develop," "combination of ordinary and extraordinary" and "space where facilitators become motivated."

While there are roles to be played in each stage of development as described above, human resources will also be required, particularly in soft areas from the running start to the hop, step and jump stages, where there is a high degree of difficulty and prior preparations are likely to be necessary. In hard areas, however, development does not necessarily have to proceed in that order, and perhaps the simultaneous development of soft and hard may work out just as well.

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Comparative Case Studies and New Implications

Mitsuru Kodama

11.1   Knowledge from Case Studies

In this section we present a number of comparative in-depth case studies in different specialized areas (business, management, art and architecture) as discussed in this book. Starting with the fields of art and architecture and proceeding to business and management (including industrial organizations and the area of finance and financial economics), we analyze and draw observations from common elements of Ma thinking in the respective areas.

11.1.1   Knowledge of Ma Thinking Observed in Art and Architecture

In Chap. 1, "Ma" and Innovation Management, we noted that Ma thinking was strongly reflected in the area of the arts. In several other chapters, we further discussed Ma thinking in the arts in detail through a number of case studies. In Chap. 8, in Anazawa's discussion of the Ma of Maeterlinck and the Ma of Maeterlinckians in Japan, it was noted that a culture of Ma was not unique to Japan but also existed in Western art including in the works of Maeterlinck. In Maeterlinck's plays, the dialogue is always brief

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and devoid of explanation, with frequent moments of silence (in other words, Ma), particularly in his early works. In his collection of essays *The Treasure of the Humble* he shows the reader the way to liberation and teaches the reader how to escape the hand of fate. It can be inferred that the conflict arising from the psychological Ma of a spirit at odds with itself brought about in Maeterlinck what Anazawa calls a "way of Ma thinking," one that allowed him to regain a sense of equilibrium. A reticent passion and the Ma thinking required for a degree of "harmony" exist in his works.

Anazawa makes the observation that Maeterlinck's works shun ornamental elements and through moments of silence frequently incorporate elements that Anazawa describes as Ma of context, Ma of space-time and mental Ma. He goes on to note that the dialogue in Maeterlinck's plays is pared to a minimum and that his plays include symbolic details that transcend space and time, reminiscent of the Noh stage in Japan's traditional culture of the arts. Ogai Mori, one of the most erudite writers in Japan's literary world at the time and a Maeterlinckian himself, noted early on common traits in Maeterlinck's works with Noh theater. Masterfully integrating the essence of the works of Maeterlinck and Noh theater through "Ma of dissimilars" in his own work, Mori further expanded and enhanced the notion of Ma thinking and created his outstanding work *Ikutagawa* (The Ikuta River).

In Chap. 9, Ma in Traditional Japanese Theater: The Ma of Space and Ma of Time, Motosugi, a specialist in architecture, notes that the Hashigakari (bridgeway connecting the stage to the backstage) in Noh theater and the Hanamichi (elevated walkway through the audience to the stage) in Kabuki theater are both distinctive characteristics of Japanese theater architecture and in traditional performing arts play an important role in the relationship between the actor and the audience and the relationship between time and space. On the Noh stage, the actor moving across the Hashigakari creates a Ma of space-time that transforms both the spatial and temporal relationship with the audience. In Chap. 8, The Ma of Maeterlinck and Ma of Japanese Maeterlinckians, Anazawa discusses Zeami (1363–1443), who was both an outstanding Noh actor and writer and who may be considered a "master of Ma" in traditional Japanese theater. Zeami was also an outstanding theorist, and in his work *Hana Kagami* he stresses that the "moments where there is no acting" are important for the Noh actor. Here he was referring to the importance of pauses between gestures or movement, or the total absence of any kind of gesture or movement. According to Zeami, the Ma or "gaps" in the actor's performance were vital, and decisions on when and how to make use of these were entrusted to the actor.

In describing the actor's comportment on the Hashigakari, Zeami is quoted as saying, "One should give a cry after crossing two-thirds of the way over the bridge. Then, the second cry should come at the end of the bridge when one is nearing the border of the stage" (Zeami 1987, p. 131). According to Motosugi, Zeami also advised that the timing of the cries must be in synchrony with the audience's breathing and that "what should be clearly evident in the actor's appearance is his objectivity" (Zeami 1987). Like this expectation for the actor to present himself objectively rather than be absorbed in his own personal view of the character's portrayal, Motosugi also noted that the length of the Hashigakari and its distance from the audience were extremely important aspects of the Noh stage. In Mugen Noh, Zeami created the basic structure in Noh theater, where life is restored to the dead who transcend time to go back and forth between the world of the afterlife and the world of the living, between truth and falsehoods, and between the past and present. Zeami's thinking and views of behavior have common aspects with the approach to business activities discussed in this book where a certain equilibrium is achieved in practice activities through recursive activities between formal and informal organizations and in balancing diverse paradoxes.

It can perhaps be said that there is no stage anywhere that is less consistent in design or more conscious of boundaries than the Noh stage. This strong awareness of boundaries and the time-axis served to portray living humans as incarnations of gods that had transcended time and space. The modest space of the Noh stage, which seems to give an impression of freedom, communicates a sense of mental Ma and Ma of the spirit that has no need for props. Motosugi notes that this aspect of Noh creates an effect not unlike that which one experiences in the world of tea described in Chap. 1, where one is made aware of the boundaries of space and time.

As Motosugi notes, this arrangement where Noh dancing, chanting and musical accompaniment, which all move forward simultaneously in small increments and at times are independently juxtaposed against each other and where the Noh actor is both commentator and master of ceremony, results in creating Ma thinking of multiplicity and multilayers. As Zeami professed, the power of acting where there is greater concentration and attentiveness on the part of the actor while doing nothing than when engaged in doing something (and an aesthetic consciousness without understanding), creates a Ma of context and mental Ma with the audience and enhances the imagination of the audience.

It can be assumed that one of the factors supporting the development of the literary works described above and Japan's distinctive performing

arts including Noh is the capacity of the Japanese people to accept foreign cultures and differences; at the same time the development of these works can perhaps be attributed to the existence in Japan of Ma of context and Ma of dissimilars that respect and preserve tradition in an unassuming manner. It is important to note, however, that this Ma thinking is not unique to Japan but can also be observed in the West as seen in the works of Maeterlinck. In the areas of the arts and architecture too, as was noted in the theoretical discussion in the first chapters, the interaction of people who share Ma thinking such as creators, viewers and spectators, as well actors and audiences focused on the stage, led to the creation of architect capabilities: context architect capability, Ba architect capability, human network architect capability, boundary linking capability and willpower architect capability based on Ma thinking.

Furthermore, in Chap. 10, Ma Thinking in Architectural Space, Mentality and Action: The Impact of Ma thinking on Lifestyle Design, Urabe, a specialist in urban planning and architecture, considered the meaning of the potential of spaces such as the *ima*, or living room, in Japanese houses as the space in the home where a change in the frame of mind of the family members occurs. Considering this pleasant space with a homey atmosphere as a Ma and space in the home that connects various rooms such as the kitchen and the bedrooms or corridors, Urabe indicates that the ima can be viewed as the space within the home that brings about changes in the people who move about in the space of the home, allows for various activities that connect people in the family and, as such, represents the space in the home with the most potential for generating creativity. At the same time, Urabe observes that spaces with this kind of Ma exist not only in residences but also in relatively small, intermediary, area-like collective entities between large-scale spaces such as facility structures in cities and family-unit spaces such as houses. These spaces are created with an awareness of the public of the local area or community and focus on the Ma of cultural creation.

Through multifaceted research on culture, healthcare, the theater, concert hall, rural theater stages and post-disaster recovery and town building projects (following the Great East Japan Earthquake disaster), including approaches to creating rural facilities with Ma that connect people in sparsely populated mountainous areas, Urabe indicates that architectural spaces and Ma thinking attitude and behavior have a significant impact on the life design of the people who live and engage in activities in those spaces, enhance their imagination and, in a broad sense, achieve design innovation.

11.1.2   Knowledge of Ma Thinking in the Areas of Business and Management, Industrial Organization Theory and Financial Economics

In Chap. 1 we noted that Ma thinking was strongly reflected in the activities of practitioners in the areas of business and management. In the case studies presented in subsequent chapters, we discussed in further depth Ma thinking in business and management including the theory of industrial organization and the area of financial economics.

In the first case studies presented by Kodama, Yasuda and Hirasawa in Chap. 3, Ma Thinking and Innovation in Global High Tech Companies: The Lessons of Business Model Innovation in Apple and Cisco Systems, it was shown that practitioners at Apple and Cisco established five types of Ma thinking (Ma of context, Ma of space-time, mental Ma, Ma of dissimilars and Ma of the spirit) not only through dynamic recursive practice activities between formal and informal organizations but also through paradoxical dynamic recursive activities in strategic thinking and innovation processes as a means of overcoming paradoxes in various elements. This Ma thinking synthesized diverse paradoxes and drove the five architect capabilities of context architect capability, Ba architect capability, human network architect capability, boundary linking capability and willpower architect capability in practitioners to achieve the desired strategy they by optimal methods. As in the cases of Apple and Cisco, such Ma thinking becomes the trigger that promotes a balance between creativity and efficiency in people and the organizations, and achieves business innovation.

In Chap. 4, Managing Serendipity Through Ma Thinking: Lessons of the Invention and Commercialization of Blue LED, in a detailed case analysis of the research and development process of blue LED from basic research to development for commercialization, Kodama and Yasuda indicated that the intentional integration of Nakamura's awareness of serendipity as a researcher and the serendipity of the deep understanding of serendipity by management promoted the dialectical process of dynamic recursive practice activities between management and Nakamura. They further indicated that underlying the achievement of this dialectical process was the existence of five types of Ma thinking that gave rise to the five architect capabilities in the company's management and in Nakamura, thereby paving the way for new innovation that resulted in the achievement of blue LED and ultimately the successful commercialization of this

technology, a feat believed impossible to achieve in the twentieth century.

In Yasuda's case study in Chap. 5, Industrial Innovation with Ma Thinking, the discussion centered on convergence of different industrial sectors rather than the development of individual industries as separate entities, which was driven by one country's enlightened industrial policy and which achieved synergistic effects among various industries and enhanced the country's potential for achieving significant economic growth. In his discussion of the economic development of Singapore, a country bereft of economic resources, Yasuda analyzed and considered the government-led process of promoting the IT industry along with the service industry and cultural industry. In this discussion Yasuda pointed to the existence of a highly developed information industry capable of creating high added value as an essential element contributing to resource-poor Singapore's significant leap ahead of many other countries in the world in development, and he noted that this industry became a creative industry integrating IT, the arts, culture and business. Yasuda also noted that the establishment of a creative cluster facilitated by Ma thinking of the government and business, which concentrated the service industry in a specific geographical area, was vital in achieving synergistic effects.

In the discussion in Chap. 6, Use and Reproduction of Ma in Financial Cooperative Organizations in Japan: With a Focus on Ma in Japan and Financial Cooperatives, Hasegawa argued that the use of diverse social capital by various stakeholders along with the social capital of Ma made it possible to transplant in Japan from overseas the concept of cooperative financing during the Meiji Period, and that the operation of cooperative financing organizations and the reproduction of Ma within them contributed to the overall accumulation of social capital. In this discussion, Hasegawa analyzed Ma thinking from three perspectives. The first was Ma in human relations, which in this case referred to person-to-person relations or organization-to-organization relations as the source of social capital. Second was the existence of temporal Ma, or a historically formed sense of time. The third was spatial Ma. The second and third of these were related to the Ma of space-time.

Furthermore, it is believed that underlying the sharing, use and creation of social capital in the first of these Ma was the existence of a Ma of context, mental Ma, Ma of dissimilars and Ma of the spirit. In cooperative financial institutions in Japan in particular, in addition to a sense of time based on rational Western-style economic accounting, it is believed that

Japanese Ma thinking was at work in various financial business scenes. As a result, conventions in Japan differ somewhat from those in the West in areas such as the stated timing of financial transactions or the duration of an agreement of a financial transaction, or amendment of an agreement midway through its term. Consequently, the anticipated outcomes will differ from those based on rational economic calculations premised on orthodox economics.

Cooperative financial institutions were introduced to Japan from Germany during the Meiji Period, but they were not simply transplanted in Japan in their original form. They were modified and established in a form consistent with conditions in Japan that would allow for their acceptance, and Ma thinking constituted one part of those conditions that allowed for their establishment. According to Hasegawa, while the structure of Japan's cooperative financial system was transplanted from overseas, Ma thinking was a factor that differentiated it from its overseas counterparts and allowed for its existence and development in Japan.

In the case study of a smart city introduced in Chap. 7, Green Innovation Based on Ma Thinking: The Lessons of the Japanese Smart City Vision, Tokoro presented a process of innovation where Ma thinking (Ma of context, Ma of space-time, mental Ma, Ma of dissimilars and Ma of the spirit) of an alliance of companies across different industries along with the support of national and local government created new knowledge in the course of building a smart city. Through analyses of their practical business activities, Japan's Toshiba and Hitachi engaged in recursive daily practice activities in strategy contexts, with an awareness and recognition of paradoxes in their strategy-making processes. After repeated dynamic transitions, the two companies synthesized various contradictions that arose between their deliberate strategies and emergent strategies in the course of their practice activities and succeeded in achieving innovation.

The time-space for resolving these contradictions in these transitions was the Ma of space-time, which is the third area. As noted in the discussion on theory in Chap. 2, as Toshiba and Hitachi came to terms with strategy-making paradoxes (e.g., deliberate vs. emergent, deliberate and planned vs. accidental and emergent) and innovation process paradoxes (principled, regulated and managed for the short term vs. trial and error, learning from failure and challenges for the long-term), they dynamically synthesized these dissimilar elements and achieved the strategy they were aiming for through the most outstanding methods.

A characteristic of their approach in these efforts was their application of Ma to overcome paradoxes in various elements in business and management areas like the above (including industrial organization and the area of financial economics), through dynamic, recursive practice activities in formal and informal organizations, and through paradoxical, dynamic recursion in strategic thinking and innovation processes. This manner of Ma thinking synthesizes diverse paradoxes and drives the five architect capabilities for practitioners to achieve the strategy they are aiming for through the most outstanding methods. Such Ma thinking also became the trigger for promoting a balance between creativity and efficiency in achieving business innovation from the micro to the macro level including individual levels, the organizational level, corporate level and industrial level.

11.1.3   The Five Types of Ma Thinking and Five Architect Capabilities

Table 11.1 presents a summary outline of the case studies and relevant details of the five types of Ma thinking and the five architect capabilities based on knowledge discussed thus far.

Context Architect Capability Through the Ma of Context
In business and management through the Ma of context people make others aware of and share with them contexts that dynamically change according to changes in circumstances in formal organizations and informal organizations, and they also induce and create new contexts. This behavior corresponds to "context architect capability" through the Ma of context. For example, in Chap. 4 context architect capability through the Ma of context was essential for inducing serendipity through a dialectic process. On the other hand, in Chaps. 8 and 9, in the areas of the arts and architecture, the behavior of sharing and inducing context that dynamically changes between work (performance) and the viewers (audience), and among people (the creator, actors, viewers and spectators) separated by physical space, corresponds to "context architecture capability" through the Ma of context. The "silence" in Maeterlinck's works and the "gaps" in Noh theater create new contexts for the viewers (audience).

Ba Architect Capability Through the Ma of Space-Time
The behavior of people engaging in the mobilization and support of people required for building Ba, which is the stage of space-time for dialogue

Table 11.1   Thinking and action in the Ma layer in case studies

Main issues in case studies	Thinking and action in the Ma layer *Five types of Ma thinking and five architect capabilities*
Chapter 3 Apple and Cisco Systems Balance between efficiency and creativity through Ma thinking	***Context architect capability through the Ma of context*** - People make others aware of and share with them contexts that dynamically change according to changes in circumstances in formal organizations and informal organizations, and they induce and create new contexts - "Silence" and "gaps" create new contexts for viewers (audience)
Chapter 4 Managing Serendipity through Ma Thinking Induction of serendipity through Ma thinking based on dialectical processes	***Ba architect capability through the Ma of space-time*** - People mobilize and support people required for building Ba, which is the stage of space-time for dialogue and practice to create new knowledge - Ba are developed as common sensitivities between artistic works (performances) and viewers (audience)
Chapter 5 Industrial Innovation Establishment of a creative cluster through the convergence of different industries through Ma thinking	
Chapter 6 Financial Innovation through Ma Thinking Ma thinking that promotes the sharing, use and creation of social capital	***Human network architect capability through the mental Ma*** - People induce new perspectives, dynamically share new contexts across organizational and knowledge boundaries and, as a result, form human networks that originate in the formation of Ba - Value sharing and trust development between artistic works (performances) and their viewers (audience).
Chapter 7 Green Innovation through Ma Thinking Achievement of synthesis of diverse paradoxes through Ma thinking based on corporate alliances across different industries	
Chapter 8 Innovation through Ma Thinking in The Arts Common Ma thinking observed in the works of Maeterlinck and Ogai Mori	***Boundary linking capability through the Ma of dissimilars*** - People promote the linking of knowledge boundaries to circulate necessary knowledge assets in different formal organizations and informal organizations, share these among people, and promote the integration of different knowledge -The integration of different cultures is promoted
Chapter 9 Design Innovation through Ma Thinking in Architecture Ma thinking centered on the stage supporting Noh and other traditional Japanese performing arts	
Chapter 10 Ma Thinking in Architectural Space, Mentality and Action Space-time for creating a culture based on Ma thinking in local areas and communities	***Willpower architect capability through the Ma of the spirit*** - People demonstrate willpower, exemplify energy and concentration for thinking and action with an awareness of purpose, and unite people to take action to achieve the strategy they are aiming for (artistic works, etc.) - People's identities balance different paradoxes

and practices for new knowledge creation, corresponds to "Ba architect capability" through the "Ma of space-time." Such behaviors require the Ma of space-time not only in various practice activities at a micro level (innovation in Chaps. 3 and 4) but also at a more macro level in activities between companies and industries such as in industrial organizations and financial economics (innovation in industrial policy in Chap. 5, innovation in financial economics in Chap. 6, innovation in new industries through alliances among different business sectors in Chap. 7, and innovation in local creation in Chap. 10) in business and management. At the same time, in the areas of the arts and architecture as described in Chaps. 8 and 9, the Ma of space-time created by artistic works (performances) draws viewers (audience) into their own world, and conversely instills in them a common sensitivity of Ba through a Ma of space-time, enabling them to objectively view themselves as third parties.

Human Network Architect Capability Through Mental Ma
Behavior where people inspire new perspectives, dynamically share new contexts across organizational and knowledge boundaries and, as a result, form human networks that originate in the formation of Ba corresponds to "human network architect capability" through "mental Ma." For example, the behavior of sharing values between key persons within the company in Chap. 4 and creating psychological connections between different people to form social capital in Chap. 5 were important elements in promoting practice activities in business. Even in the areas of art and architecture in Chaps. 8 and 9, the psychological bonding of different people was also important in engendering empathy of values and building trust between artistic works (performances) and their viewers (audience).

Boundary Linking Capability Through the Ma of Dissimilars
The behavior of people promoting the linking of knowledge boundaries to circulate necessary knowledge assets in different formal organizations and informal organizations to share these among people and to promote the integration of different knowledge corresponds to "boundary linking capability" through the "Ma of dissimilars." For example, the integration of different kinds of knowledge was critical in realizing innovation through new business creation described in innovation in industrial policy in Chap. 5 and the smart city concept in Chap. 7. Even in the areas of art and architecture, boundary linking capability through the Ma of dissimilars was required to facilitate the integration of Japan's own culture with Western and Eastern cultures.

Willpower Architect Capability Through the Ma of the Spirit
The behavior of people demonstrating willpower, exemplifying energy and concentration for thinking and acting with an awareness of purpose, and uniting people to take action to achieve the strategy they are aiming for (such as business, artistic works, performances) corresponds to "willpower architect capability" through the "Ma of the spirit." In Chaps. 3 and 4 outstanding companies and organizations such as Apple, Cisco and Nichia, and in Chaps. 8 and 9 the works (performances) of Maeterlinck and Zeami had their own unique identity for demonstrating consistent robust energy and concentration, and they demonstrated willpower architect capability in balancing diverse paradoxes for achieving remarkable innovation and creating artistic works (performances).

11.2   Dynamic Recursive Practice Activities Between Formal and Informal Organizations

In the areas of business and management, "dynamic recursive practice activities between formal organizations and informal organizations" are of particular importance for practitioners in their thinking and behavior with regard to Ma thinking. An important point to note here is that informal organizations (SCs and networked SCs) and formal organizations are not in opposition to each other. As discussed in Chap. 3, networked collaborative organizations like Apple and Cisco embrace not only management approaches to manage areas of practitioners in formal organization but also management approaches of informal organizations, where the sharing of different contexts and knowledge is promoted to resolve various issues and problems and to achieve new business development through the creation of ideas (which is work of an even higher level), and these approaches are in a mutually complementary relationship. The practice processes of practitioners in networked collaborative organizations are executed through recursive activities in formal organizations, which are centralized networks, and informal organizations, which are decentralized networks (distributed networks) in real and virtual spaces (using ICT). In other words, practitioners achieve the strategy they are aiming for as they move dynamically back and forth between formal and informal organizations within contexts and time-space that cross knowledge boundaries.

Practitioners in networked collaborative organizations not only comply with basic discipline and decision-making processes in formal organizations within the company but also manage challenging autonomous distributed

organizational behavior in informal organizations and at the same time coordinate, expand and develop informal organizations. Ma exist at the boundaries, which are intermediaries between such formal organizations and informal organizations (this boundary layer will be referred to as the "psychological layer"). The Ma have the function of coordinating and synthesizing dissimilar characteristics of formal organizations and informal organizations.

The formal organizations and informal organizations within a company are in a mutually complementary relationship, and practitioners, conscious of the strategy view and organization view (and at times not conscious of these) as shown in Table 11.2, proceed with their practice activities amid interaction between the formal organizations and informal organizations. A look at the daily schedule of practitioners clearly shows the practice activities of practitioners in the formal and informal organizations in the actual company. The first point of note is the practitioners' activities centered on the formal organizations, which include preparation of documents, contacting other parties by telephone or email at their desks, attending meetings that include their superiors in the departments they belong to, and participating in routine activities at their respective research labs, development rooms and factories. The second point is the schedule of practice activities in the informal organization that cuts across the formal organization. These activities include meetings and cooperative work with other departments (working groups, task forces, cross-functional teams, projects), meetings with other companies and customers and cooperative work related to these (such as joint development projects) as well as conferences, and forums, events, workshops, training and interaction with different business sectors.

The practice activities of practitioners in formal organizations and informal organizations are interactive and cyclical on a time axis (see Fig. 11.1). As stated earlier, practitioners share new contexts and knowledge through practice activities in informal organizations and induce and create new knowledge. Through contexts and knowledge newly induced and created (such as resolution of problems and issues, development of trial products) in informal organizations, practitioners create knowledge as new deliverables (completion of commercial products) through company-wide activities implemented through formal organizations.

As noted, informal and formal organizations are not organizations in opposition to each other: practitioners consciously (and at times unconsciously) mutually complement organizations' morphological duality by

Table 11.2 Strategy view and organization view in the formal organization and informal organization

Organization morphology / Characteristics		Formal Organization	Ma layer (Psychological boundary layer)	Informal organization
			Synthesizing paradoxes	
Strategy view	Decision making & strategy formation (metaphor)	- Analytical, rational processes (orchestrated) - Deliberate strategy		- Ad hoc processes & instantaneous decisions (jazz and drama) - Emergent strategy
	Time	Objectively predetermined time (Clock time)		Time subjectively and independently redefined by self Emergent time (Timely time)
	Strategic thinking	Efficiency		Creativity
Organization view	**Context**	Sharing of a fixed context in clock time		Dynamic context sharing and new generation in emergent time
	Morphology	Bureaucracy (structural)		Networks (changing dynamically)
	Practice behavior	Discipline and order		Spontaneity and autonomy
	Leadership	Centralized leadership		Distributed leadership
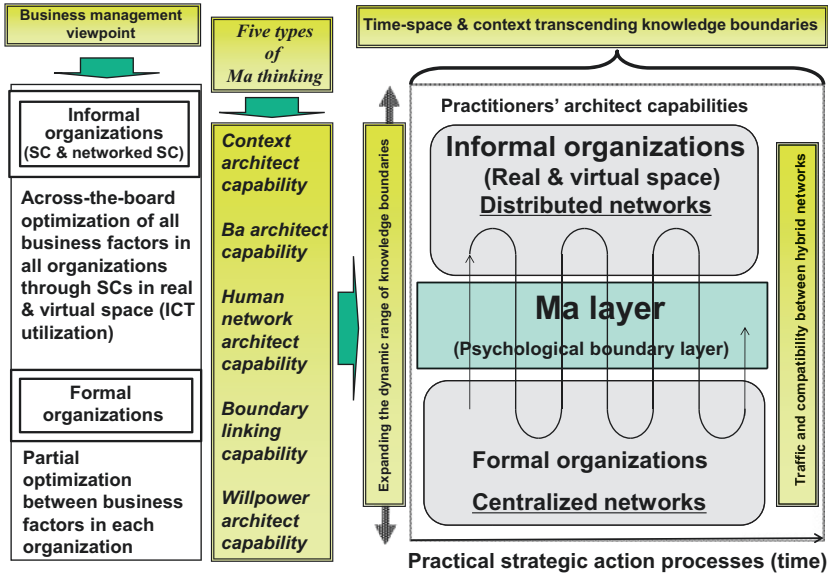
Fig. 11.1   Traffic and compatibility between hybrid networks

engaging in practice activities for knowledge creation. As a general rule, the greater the level of complexity of the business model and the greater the level of difficulty of the problems and issues in product development, the greater the need for both decentralization and integration of the informal organizations within and outside the company (e.g., Kodama 2009).

A condition of leadership of practitioners required by innovative companies in the twenty-first century is to synthesize bureaucracy (a characteristic of formal organizations) and networking elements (a characteristic of informal organizations) in complex adaptive leadership, as will be discussed in detail below. The distributed leadership of practitioners in networks (informal organizations) ensures creativity and flexibility in the externalization of the corporate vision in specific work duties. At the same time, the centralized leadership of practitioners in the bureaucracy of formal organizations guarantees efficiency and speed during the execution of work duties. How skillfully practitioners will be able to alternately make use of bureaucracy and networks to flexibly and spontaneously change organizational structure to adapt to uncertainty in the environment will depend on how they demonstrate dialectical leadership at the psychological

boundary layer mentioned earlier. In outstanding large corporations, networks and bureaucracy coexist within the same company and create distinctive, maximum synergies for both networks and bureaucracy through synthesis of the two. The dynamic fractal organization (Nonaka et al. 2014) is one example of an organizational design concept that encompasses within a dynamic structure the opposing natures of creativity and efficiency, and meaning formation and information processing.

However, the important point here lies in determining what kind of leadership and management are needed to create maximum characteristic synergies of bureaucracy and networks. Because the practice activities of practitioners in formal and informal organizations are interactive and cyclical on a time axis, to simultaneously manage the two, the existence of a psychological boundary layer is necessary (see Fig. 11.1) At the psychological boundary layer, leadership and management (elements of boundary negotiations, etc. between the two), which integrate characteristics of the bureaucracy of the formal and networks of the informal, are important for practitioners, while dialectical leadership of autonomous, decentralized leadership ("distributed leadership") and integrated, centralized leadership ("centralized leadership") are essential (discussed later). Furthermore, the five elements of architect capabilities based on Ma thinking (context architect capability, Ba architect capability, human network capability, boundary linking capability, willpower architect capability) that business persons have expand the dynamic range of their knowledge boundaries and establish hybrid networks that have the two different characteristics of centralized networks and distributed networks (see Fig. 11.1). The synthesis function of balancing and integrating the individual elements of management in the formal and the informal organizations is demonstrated at the Ma layer, which is the psychological boundary layer, as shown in Table 11.2.

At the same time, von Krogh, Nonaka and Rechsteiner (2012) in their recent discussion on knowledge creation activities and leadership in organizations indicate the importance of the three layers of the corporate organization (structural layer, core active layer, conditional layer) in promoting knowledge creation activities. They clarified the intersecting characteristics of these layers by introducing activities at the third layer (conditional layer) as the intersecting point connecting both the formal organizations (structural layer) and the informal organizations (core active layer). As a point of intersection, the conditional layer may also be considered as corresponding to the Ma layer discussed in this book (see Box 11.1).

Box 11.1 Ma on the Boundaries Between Formal and Informal Organizations

This book describes the concept of Ma and the characteristics of invisible boundaries between formal organizations with structured space-time and informal organizations with unstructured space-time. While the concept of boundaries of formal organizations is generally well known, there is not a lot in existing research on boundaries between formal and informal organizations in the fields of business and management, social sciences or other related fields. In recent years, however, von Krogh et al. (2012), who researched organizational knowledge creation activities and leadership, identified the importance of a three-layered corporate structure for driving knowledge creation activities (see Fig. 11.2).

While formal organizations are characterized by formal structures, management responsibility, administration and divisions of labor, informal organizations are characterized by autonomous and voluntary groups that have authority and responsibilities (e.g., Barnard 1968; Wren 1987; Scott 1961). Moreover, from the perspective of organizational theory, von Krogh et al. (2012) assert that at the intersections of autonomous and distributed activities in informal organizations and the routine processes of formal organizations are places where a range of frictions and conflicts occur. These places offer extremely important elements for observation and analysis of knowledge creation activities and the potential for expanding research. As discussed in regard to the theory of Ma, practitioners repeatedly engage in dynamic transitioning to synthesize the wide-ranging contradictions and discrepancies that occur in practice activities due to friction and conflicts between structured (formal organizational) and unstructured (informal organizational) space-time. At these intersections, the elimination of contradictions through this transitioning process takes place in the third domain of space-time, the domain of Ma.

Informal organizations are indispensable for organizational knowledge creation, creativity and innovation. Knowledge creation activities in informal organizations are extremely dynamic and are influenced by the efforts, contributions and serendipity of individuals (Nonaka and Von Krogh 2009). Thus, in regard to leadership in

organizational knowledge creation, von Krogh et al. (2012) assert that it is necessary to direct attention to areas in which the activities of informal organizations (so-called informal human networks) and their closely related concept of distributed leadership (Nonaka and Toyama 2002; Kodama 2003) and formal organizations and their closely related concept of centralized leadership (Kodama 2003) intersect.[1] Von Krogh et al. (2012) clarified the characteristics of these intersections by introducing activity in a third layer (the conditional layer) in the connection between the formal organization (the structural layer) and the informal organization (the core active layer).

In this conditional layer, as described by organizational knowledge creation theory (Nonaka and Takeuchi 1995), administrators in top and middle management mediate crucial resources and make them available for use to enable staff and groups to interact so that they can attempt knowledge creation. In the organization, leadership and management in the conditional layer have particular importance in tying together the core active layer of the informal organizations that activate the knowledge creation process and the overarching structural layer of the formal organization.

According to von Krogh et al. (2012, p. 263) the function of the conditional layer on the boundaries between formal and informal organizations is to (1) facilitate the integration of Ba, SECI and knowledge assets; and (2) provide the flow of resources, people, connections and information for knowledge creation. They also propose three leadership activities for accomplishing this: building, providing and engaging (see Fig. 11.2, Table 11.3).

As discussed by von Krogh et al. (2012, Table III, p. 268), the engagement of practitioners in building Ba, providing knowledge assets and motivating participants to engage as the three leadership activities in the conditional layer are equivalent to the generation of "context architect capability through the Ma of context," "Ba architect capability through the Ma of space-time," "human network architect capability through the mental Ma," "boundary linking capability through the Ma of dissimilars," and "willpower architect capability through the Ma of the spirit" in this book as the three leadership activities in the conditional layer shown in Table 11.3.

Nevertheless, to succeed with knowledge creation activities, practitioners in top, middle and lower management must engage in various boundary negotiations in these three layers, centered on the conditional layer (the Ma layer, the psychological boundary layer). For example, at Sharp of Japan, the company that developed the world's first mobile phone with a built-in camera, the particular knowledge assets (e.g., knowledge of camera miniaturization technologies) were not made subordinate in the flow of managing the company's ongoing projects at the time for the members of the mobile phone development project, but rather necessitated negotiations with other formal and informal organizations so that knowledge assets required for the mobile phone with built-in camera development could be accessed (Kodama 2007, Chap. 3). When integration of different technologies is required (e.g., robotics or AI technologies) for this sort of new product development, support of staff from other formal organizations who have the technical know-how is required to develop appropriate prototypes. However, getting technical support from other organizations requires consensus of upper management and staff in those other organizations, and hence is pan-organizational. Gaining consensus between divisions in this way requires project leaders and members to make efforts to coordinate with each other.

The practice activities of practitioners in the structural layers of formal organizations and the core active layers of informal organizations have an interactive relationship on a time axis. Through practice activities in informal organizations, practitioners share new contexts and knowledge and are inspired to create new knowledge. Practitioners then create knowledge as new achievements (solutions to problems, prototype developments and successful commercialization, etc.) by taking the new knowledge and contexts inspired and created in the informal organizations through company-wide practice activities in formal organizations. Hence, these informal and formal organizations are not in conflict, and practitioners mutually complement the dual nature of these organizational forms to engage in practice activities to achieve knowledge creation. As presented in case studies in earlier chapters, to achieve innovation, management and leadership capable of integrating the bureaucratic nature of
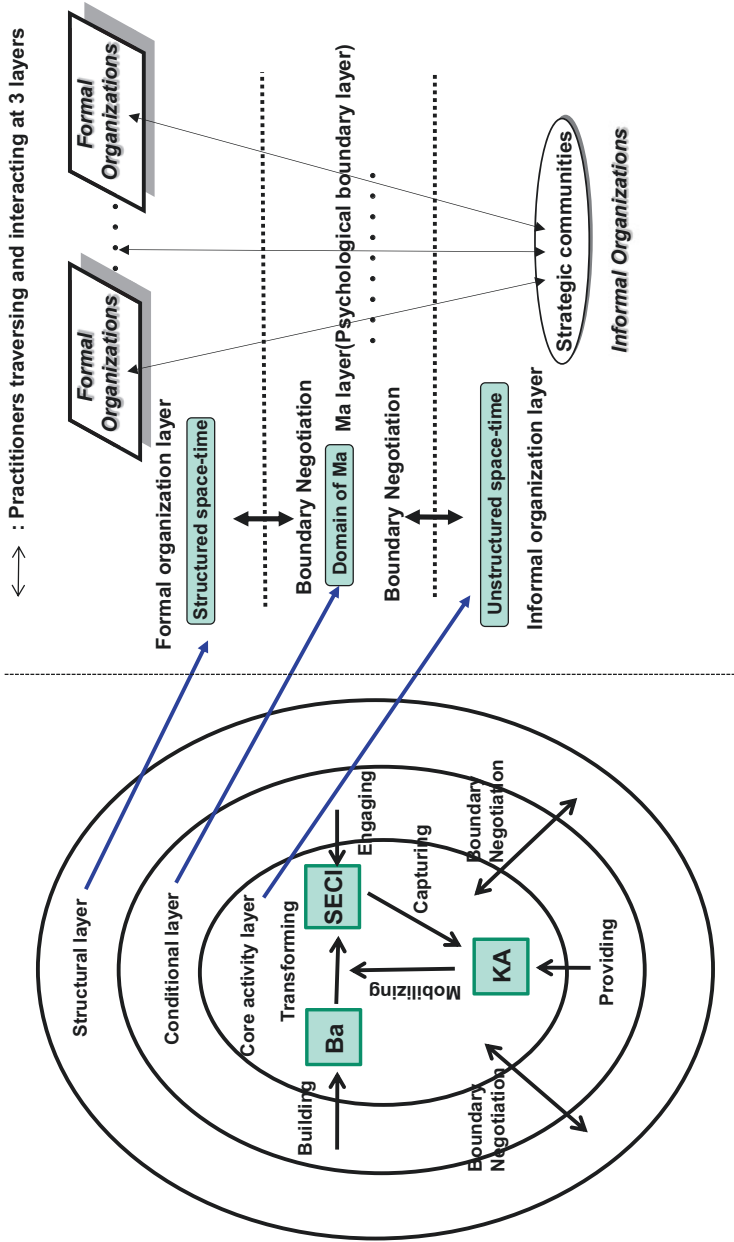
Fig. 11.2   Ma on the boundaries between formal and informal organizations

Table 11.3 The relationship between the conditional and Ma layers

	From von Krogh, Nonaka and Rechsteiner (2012) Conditional layer (Table III on p. 268) (summarized by the author)	Ma layer (Psychological boundary layer)
Characteristic	Behaviors in Conditional layer	Thinking and action in the Ma layer — *Five types of Ma thinking and Five architect capabilities*
Building Ba	- Based on experience, leaders read situations, help form groups at right time, draw on weak/strong links between participants. - Leaders help build peer groups independent of hierarchies - Leaders stabilize working conditions of Ba by connecting and integrating people formally and informally through organizational hierarchy and networks, e.g. define relationships and shape expectations on stable hierarchical leadership	*Context architect capability through the Ma of context* Practitioners act to raise and share awareness with other practitioners of dynamically changing contexts in changing formal and informal organizational situations, and inspire and generate new contexts. *Ba architect capability through the Ma of space-time* Practitioners motivate and support the necessary members to build Ba, the space-time stage on which dialogue and practice to generate new knowledge. *Human network architect capability through the mental Ma* Practitioners inspire new perspectives and span organizational and knowledge boundaries, dynamically share new contexts, and create human networks originate in Ba.
Providing knowledge assets	- Leaders provide experiential assets and people-related routines. Leaders judge suitability/applicability of assets at hand - Leaders provide and steer the flow of assets that are beyond group control, e.g. databases, patents, designs, and synchronize assets between Bas - Leaders fill voids of necessary skills through training, resource facilitation, and experience from other Bas	*Boundary linking capability through the Ma of dissimilars* Practitioners distribute required knowledge assets in formal and informal organizations, share these among practitioners, and act to drive linking of knowledge boundaries to promote the integration of dissimilar knowledge.
Motivating participants to engage	- Leaders connect outcome of knowledge process to knowledge vision - Leaders design and implement systems, rules, and procedures, and set incentives to engage in knowledge creation	*Willpower architect capability through the Ma of the spirit* Practitioners demonstrate willpower, and demonstrate energy and concentration for thinking and actions accompanying awareness of objectives, and act to unify members toward the achievement of strategic objectives

formal organizations with the networking nature of informal organizations is crucial. A concept here is that of the conditional layer, which is where Ma thinking exists (See Fig. 11.2).

From the above discussion, as shown in Fig. 11.2 and Table 11.3, the "structured space-time (of formal organizations)," "unstructured space-time (of informal organizations)" and "domain of Ma (psychological boundary layer)" presented in this book have an intrinsic relationship with the structural, core active and conditional layers identified by von Krogh et al. (2012) respectively.

As networks (informal organizations), strategic communities ensure the creativity and flexibility needed to externalize a company vision as a business function. In contrast, bureaucratic formal organizations ensure the speed and efficiency needed to execute business functions. To adapt to environmental uncertainty, bureaucracies and networks must hence be used to selectively respond to situations, and the structure of organizations must be flexibly changed or improvised as required. The companies in the case studies in this book have networks and bureaucracies that coexist with each other, and it is the conditional layer pivotal to Ma thinking, in other words, the Ma layer that integrates their formal and informal organizations to maximize the synergies between their characteristics. This thinking and action is also a key factor in combining exploration and exploitation (March 1991).

From the perspective of corporate management, the processes of recursion and combining between these hybrid networks in Fig. 11.1 are significant for two reasons. The first is their achievement of partial optimization among the respective management elements (strategy, organization, technology and operations, etc.) within the company's respective organizations in the formal organizations of the centralized network. Practitioners promote optimization of management elements in their own organizations, taking into adequate consideration the integration of consciousness of relevant organizations in the informal organizations and at every management level with regard to congruence of the respective management elements within the company. The second is the practitioners' performance of correction and confirmation of the overall optimization of the

respective management elements across the formal organizations through the formation of informal organizations as they promote coherence among the organizational elements within their own organizations. This back and forth movement between hybrid networks and the combining of these networks by the practitioners unify and integrate diverse contexts and knowledge within and outside the organizations and lead to the construction of optimal management systems of the company as a whole.

The opportunity to consider organizational management from the perspective of informal organizations liberates practitioners from concepts of conventional management models of formal organizations. Wholly new management models are also important for practitioners. Essentially, this is a management model that allows for transitioning between hybrid networks to accommodate dynamic changes in context, to flexibly modify informal organizations according to the strategy goals, and to dynamically execute the strategy.

Furthermore, as new business development becomes more complex and, as a consequence, the level of difficulty of issues and problems increases, the more necessary simultaneous decentralization of informal organizations and their integration (networked SC) will be. An informal organization is one that is goal-oriented and has a mission to resolve issues. This includes concepts of organizational forms such as project teams and cross-functional teams (CFT) in real and virtual space. Organizational behavior where numerous projects establish project networks (also known as "project convergence") (Kodama 2007) and different project members establish new business models while collaborating also corresponds to these informal networks. In networked collaborative organizations described in Chap. 12, practitioners restructure informal organizations in line with changes in the environment and at the same time increase the level of recursion between hybrid networks to dynamically create new knowledge.

In networked collaborative organizations, from the perspective of the time axis of strategy activities, practitioners undertake work to execute the strategy, which is their area of responsibility in the formal organization, which is a centralized network. While doing this, practitioners also work to resolve difficult issues in informal organizations (which are distributed networks) by going back and forth between real and virtual space to take on challenges in high quality business including new product and service development as well as new business development. Networked collaborative organizations simultaneously promote incremental innovation by way of thorough efficiency and ongoing growth in existing business as well as radical innovation through

the creation of long-term business. The strategic goal of networked collaboration organizations is to achieve an optimal organizational morphology for adapting to dynamic changes in the environment and at the same time to independently create a new environment and develop new business.

11.3   Implications Based on Knowledge of a Complex Adaptive System and Leadership Theory

As discussed in Chap. 2, the author asserts that Ma is the third space-time domain that enables the combination of discrepancies as human beings synthesize the wide-ranging contradictions that arise in their daily activities.

> *Ma are the holistic relationships that enable connection of differing continuous and discontinuous events and matters in distinct space-time (structured space-time vs. unstructured space-time).*

With this perspective, as Berque (1982) asserted that Ma are born of the crystallization (tying together) of countless possibilities within emptiness, and as Hasegawa (2009) suggests that Ma function to allow dissimilar matters and events to coexist, it seems in general that Ma have the characteristic of bringing together and combining a range of paradoxes (including infinite possibilities). Accordingly, there are commonalities between our perspective of Ma and Berque's (1982) and Hasegawa's (2009) perspectives, that is, Ma can be interpreted as a holistic relationship connecting continuity and discontinuity of different matters and events.

The existence of this Ma, which continuously and discontinuously unites, combines and integrates diverse paradoxical elements including different things and phenomena, creates the potential for steering order and chaos into a particular state of equilibrium through dynamic processes in complex systems (in the area of business and management, and in the areas of the arts and architecture in creative processes in the case studies in this book). Moreover, Ma has an "emergence" trigger function whereby it creates "something out of nothing." In the case of Apple, it was a series of innovations of products and services including the iPod, iPhone, iPad, iTunes music store, the AppStore and iCloud; in the case of Cisco, it was the creation of new business through synergy effects in technology brought about by mergers and acquisitions; in the case of Nakamura, it was the invention of blue LED, and in the cases of Maeterlinck and Zeami, the creation of various outstanding artistic works. In addition, Ma triggers

"emergence" that leads to the creation of diverse artistic works by outstanding creators. Emergence in complex system theory is a way of thinking whereby important patterns appear completely autonomously within a complex system consisting of many elements (including paradoxical elements) that interact with each other and are interdependent, and it refers to the appearance of certain patterns including unexpected results (outcomes), organization and structuring (Buchanan 2002). Emergence is also unrelenting activity in a complex system that attempts to form certain patterns through self-organization (Waldrop 1992).

As in the cases in this book, the process of emergent thinking and behavior of practitioners (or creators) for promoting the dialectic processes of dynamic recursive practice activities between formal and informal organizations, dynamic paradoxical recursion in strategic thinking and innovation processes and dynamic paradoxical recursive thinking in creative processes needed to innovate successfully demonstrated the integration of different kinds of knowledge (and sometimes serendipity) to realize new value creation. Viewed from such a perspective, the theory of Ma is closely related to complex adaptive systems (CAS).

A CAS is a cohesive body formed from innumerable elements where each of the respective elements constantly engages in interactive and interdependent behavior and, as a result, when viewed as a whole, a CAS displays a manner of unique behaviors greater than the sum of the activity of the parts. Moreover, CAS refers to all phenomena from condensed matter physics to society as a whole, with a large number of parts that strongly interact with each other (Waldrop 1992). A CAS indicates conceptual limits of element reductionism that breaks down the elements of things and phenomena into parts and recombines them to find optimal solutions. Moreover, it develops ideas such as chaos, nonlinearity, the edge of chaos, self-organization, mutual dependence and interaction, and emergence.

Axelrod and Cohen (1999) view the issue in terms of how people should behave in a world where the future is unpredictable as they mutually adapt in a CAS. In addition, they develop the discussion on how the system as a whole (in other words, the organization) is always in a state of flux due to the mutual interaction of participants who join the group. Waldrop (1992) indicates that all CAS, from basic substances to society as a whole, have many elements that strongly interact with each other and that they have the power to steer order and chaos to a particular equilibrium. From the perspective of another interpretation, a CAS is a cohesive body (which has a large number of diverse, disparate elements) and, as a result of the

constant interaction of the individual elements with other elements, it can be said that when viewed as a whole it demonstrates a kind of unique behavior that is greater than the sum of the movement of the parts.

For example, the complex adaptive systems of animals evolve as they move toward the "edge of chaos"—which refers to the boundary between order and disorder, stability and confusion—and they adapt to the environment in proximity of the edge of chaos. According to Kauffman (1995), all CAS in the biosphere, from single cell to economic system, evolve by moving toward a natural state at the boundary between order and chaos or toward a major point of compromise between things with structure and things that are serendipitous. In many cases where living things are concerned, this can be interpreted as living things evolving by moving toward a state where a balance is maintained between chaos and order. Viewed from this perspective, the "edge of chaos" is that critical state between order and the absence of order, and it can also be said that this edge of chaos is used in a metaphorical sense (Gell-Mann 1994).

In other words, in excessively ordered frozen systems, complex actions are not possible. On the other hand, in systems that are too chaotic, controls do not work. In that regard, a system existing at the edge of chaos is said to display complex actions and to be capable of constructing a model that adapts rapidly to the environment. Just as those animals that evolved by moving toward the edge of chaos have a strong ability to adapt to the environment, it can perhaps be said that leadership based on the thinking and behavior of a "pliant organization" and practitioners with autonomy, flexibility and creativity are an organization that readily generate corporate and product innovation such as Apple and Cisco did.

As in the cases of those companies, and of Nakamura, who invented blue LED, companies, organizations and individuals that practice "improvisation" find an equilibrium at the edge of chaos. Through the creation of "silence" and "gaps," Maeterlinck and Zeami also achieved an equilibrium with their viewers (audience) in various contexts before and after events. In complexity theory terms, "improvisation" is a "dissipative equilibrium," an unstable edge between two attractors (i.e., structure and chaos) that tend to pull the system away from the edge of chaos toward the rigidity of too much structure or the confusion of too little structure. However, it is important for the system to remain at the edge of chaos. Every system self-organizes at the edge of chaos because there it is capable of adopting active, complex adaptive behavior. In other words, when systems (individuals, organizations, companies, economies, etc.) maintain a

balance between a loose structure and a rigid structure (in other words, at the edge of chaos), they are able to self-organize and adopt consistent, complex adaptive behavior. If there is excessive structure, these systems will be too rigid to move. If there is not adequate structure, they disintegrate into a state of chaos.

To overcome paradoxes in various elements, practitioners at Apple and Cisco not only engage in dynamic, recursive practice activities in formal and informal organizations but also practice the five types of Ma thinking discussed earlier, through paradoxical, dynamic recursion in strategic thinking and innovation processes. In a similar way, Maeterlinck and Zeami engaged in repeated dynamic recursion in paradoxical contexts through "silence" and "gaps." As stated, Ma thinking enables practitioners (or creators) to remain at the edge of chaos. The CAS as corporate systems at Apple, Cisco and Nichia evolve through the formation of Ma as they move toward the edge of chaos, that is, the boundary between order and confusion and stability and chaos, and they adapt to the environment in the vicinity of the edge of chaos. This enables these companies to engage in complex organizational behavior that combines both innovation (chaos) and business processes (operations) without being biased toward either. Furthermore, if they remain at the edge of chaos, the breadth of options available to them broadens, and they can gain insights into correct strategic options. In a similar way, Maeterlinck and Zeami at the edge of chaos achieved harmony and equilibrium between inertia and movement, reticence and eloquence, strength and weakness, and quiet passion. In addition, Ma thinking synthesizes diverse paradoxes and through optimal methods drives practitioners toward the five architect capabilities for achieving the strategy they are aiming for.

As with CAS in corporate systems at Apple, Cisco and Nichia, Ma thinking becomes the trigger that promotes a balance between creativity and efficiency in people and organizations, and it furthers the achievement of business innovation. Of particular importance are the dynamic thinking and practices that practitioners as micro agents execute intentionally (or unintentionally) not only in formal organizations but also in informal organizations, based on Ma thinking, which strategically creates new business innovation. In areas where "a tug of war and the contradiction between efficiency and creativity" are apt to arise, the Ma thinking of practitioners becomes an important element in generating high quality business innovation.

On the other hand, from the perspective of leadership theory, to adapt to (or create) new environmental changes as in the cases of Apple, Cisco

and the discovery of blue LED, the existence of transformational leadership (e.g., Goh 1998; Burns 1978) and style leadership (e.g., Gill 2006) alone are not adequate for leaders and managers in the organization. The complex adaptive leadership of practitioners with Ma thinking is critical. In other words, it is impossible to adapt (or to create) a new environment through leadership of either top management and/or middle management alone. Necessary conditions are dense linkage, mutual dependence and interaction achieved through unified cooperation of the three levels of management, which includes the lower layer of management as well as the top and middle layers.

These assertions are based on results of various previous studies of the authors. As people and organizations, leadership, and innovation processes exert a mutual impact on each other, and a company dynamically formulates and executes its strategy to achieve innovation, an understanding of the micro leadership processes and dynamism practitioners in the company engage in is particularly critical. Of particular importance are the dynamic and innovative leadership thinking and practices that practitioners as micro agents execute intentionally (or unintentionally) in formal as well as informal organizations according to circumstances—thinking and practices which strategically create new business innovation. From their field studies it became quite clear to the authors that the leadership demonstrated by practitioners in the previously mentioned area where the tug of war between efficiency and creativity occurs is a critical element in the creation of business innovation high in quality.

It is the view of one of the authors, based on 21 years of firsthand experience in ICT companies in the past and field research in various hi-tech companies thereafter, that companies which create strategic, sustainable business innovation have common leadership qualities (e.g., Kodama 2004, 2005). In previous research, this author indicated the need for innovative leadership to balance integrated, centralized leadership and autonomous, decentralized leadership as well as dialectical leadership that balances directive control (strategic leadership and forceful leadership) and participative control (creative leadership and servant leadership) as critical leadership elements for middle managers and project leaders in achieving business innovation. At that time, the author also presented a theoretical framework and practical knowledge for these forms of leadership.

A new perspective gained through this previous research is the viewpoint that middle managers have three types of common leadership characteristics (general line managers as heads of divisional or strategic business

units, functional line senior managers of sales and marketing, product development and production divisions, project leaders of new business development divisions, and vice presidents or senior managers as executive officers).

First are the elements of leadership that establish rules and discipline, realize the vision, and implement strategic planning in formal organizations where integrated, centralized leadership and directive control (strategic leadership and forceful leadership) are practiced. These elements are referred to as "centralized leadership" here. Second are the elements of leadership that have autonomous, distributed creative aspects born from the formation of informal personal networks such as autonomous, decentralized leadership and participative control (creative leadership and servant leadership). These elements are referred to as "distributed leadership" here. And third is "dialectical leadership" that takes place at the interstices of the boundary between formal organizations and informal organizations and is practiced in areas where the practitioners themselves sense and recognize various psychological paradoxes. In short, the above three types of leadership are phenomena individually practiced by middle managers in a three-layered structure consisting of three "practice layers:" the formal organization layer, the informal organization layer, and the "Ma layer," where Ma thinking operates. Dialectical leadership is demonstrated particularly at the Ma layer where Ma thinking is in operation.

The elements of not only a participative leadership style and a flexible approach as discussed in literature on NPD (new product development) leadership research (e.g., Dougherty 1996; McDonough and Barczak 1991) to date, but also a balance of creativity and efficiency and a balance of elements of participative control and directive control (e.g., Shenhar and Dvir 1996; Eisenhardt and Tabrizi 1995) are required. The behavior and dialectical management of such leaders themselves and the behavior and dialectical management between such leaders are not topics that have been widely discussed in previous research on project management in NPD and cross functional teams (CFT).

However, Lewis, Dehler, and Green (2002) argue that a balance of a large number of paradoxical elements is essential in successful project development. They clarify the frequent but ambiguous call for subtle control. For example, they argue that effective managers provide strong leadership to keep teams focused and on schedule, while empowering team members to foster motivation and creativity. Through his field studies, the

author was able to obtain valuable data regarding dialectical thinking and behavior of leaders in dialogue and discussions with leaders. It became clear that dialectical thinking, behavior and leadership (in other words, dialectical leadership elements) are required of leaders at present more than in the past.

As a new viewpoint presented in this book, the authors argue that practitioners in companies that are successful in ongoing business innovation activities demonstrate the three types of leadership described above through dense linkage, mutual dependence and interaction based on unified cooperation at every management layer of the three layers of top, middle and lower management. This means that practitioners (in the three levels of top management, middle management and lower management) dynamically differentiate and combine these leadership elements as the situation requires. Therefore, it can be surmised that complex adaptive leadership exists here as a CAS based on Ma thinking (see Fig. 11.3).

This type of complex adaptive leadership is leadership with a fractal nature. Practitioners at every management layer have a form of leadership consisting of a three-layered structure (three practice layers) of centralized leadership, distributed leadership and dialectical leadership. It is this aspect that makes the leadership fractal in nature. Likewise, the leadership of the corporate system as a whole, with integrated top, middle and lower layers, has a similar leadership morphology with a three-layered structure. The word fractal (Mandelbrot 1983) is a term used in complex adaptive theory (e.g., Morel and Ramanujam 1999; Stacey 1995) to mean that the individual parts have a form that resembles the form of the whole, or that the individual parts, if they were gathered and assembled, would still retain the same basic form as the whole. In a company that has a fractal nature, any part of the organization that is removed and expanded takes on the same form of the organization as a whole. This makes it possible to achieve the same level in decision-making and innovation processes including knowledge creation (or integration) at any level (Nonaka and Takeuchi 1995; Kodama 2011; Nonaka et al. 2014).[2] In the car industry, the mechanisms of a supply chain that consists of vertically integrated systems is also fractal in nature (Nishiguchi and Beaudet 2000). In other words, complex adaptive leadership includes the perception of Ma thinking.

The elements of complex adaptive leadership newly derived from the research presented in this paper differ from the elements of "style leadership management," which only top management or certain leaders possess
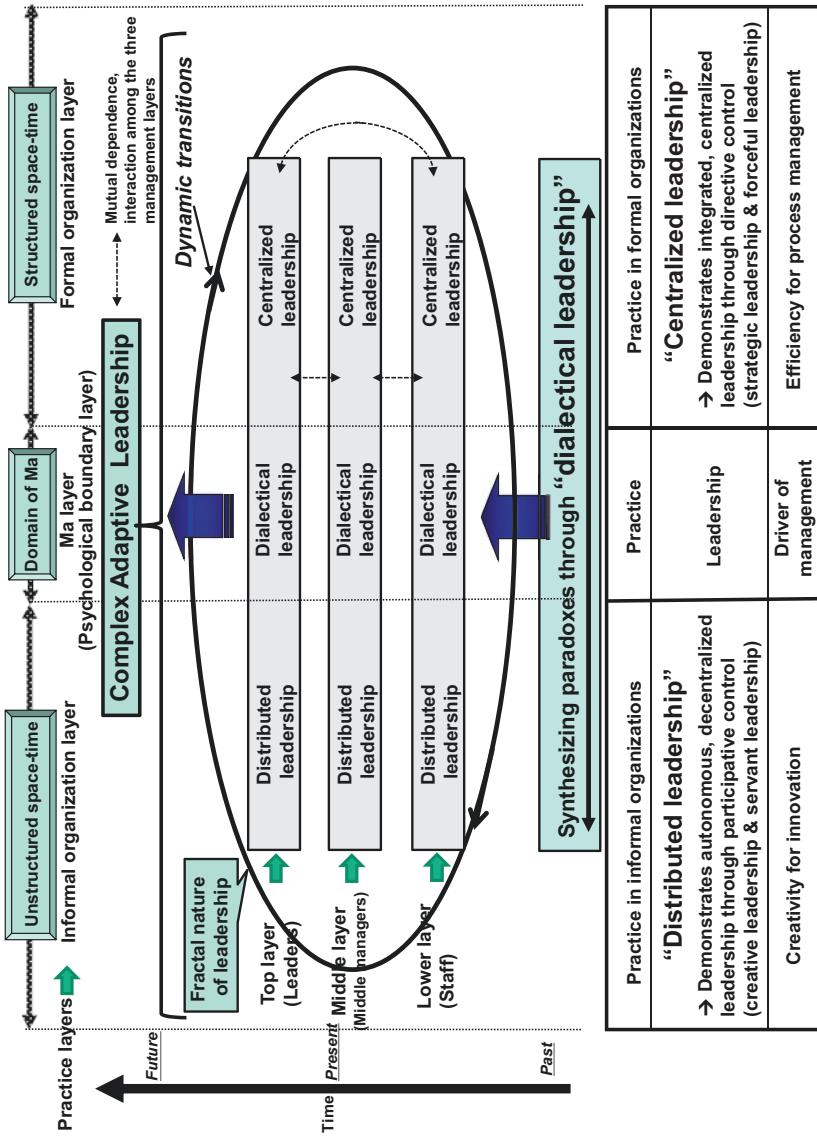
Fig. 11.3 "Complex adaptive leadership" through Ma thinking

as described in conventional leadership theory. In recent years, style leadership theory has come under fire for its inadequate consideration of contingency (Gill 2006). Style leadership exists independent of dynamically changing strategy contexts and organizational contexts, and the leadership style and behavior do not change in any manner or form. It can also be said that this kind of static leadership theory is inappropriate as a form of leadership for realizing the kind of business innovation achieved by Apple, Cisco and the discovery of blue LED in a dynamically changing business environment.

By applying Ma thinking, practitioners in outstanding companies become adept at dynamically and skillfully managing the tug of war between efficiency and creativity as changes occur (strategy context and organizational context). In other words, practitioners create a balance through a form of dialectical leadership based on Ma thinking where they demonstrate centralized leadership to achieve efficiency and, on the other hand, simultaneously demonstrate distributed leadership to pursue creativity by differentiating and applying these diverging leadership elements as the particular situation and circumstances require.

It can be said that the organizational behavior of dynamic recursion between order and efficiency in formal organizations and autonomy and creativity in informal organizations reflects the words of Steve Jobs': "The system is there is no system. That doesn't mean we don't have processes." It is also complex adaptive leadership with Ma thinking. Likewise, the elements that promote informal organizational arrangements at Cisco where "dynamic virtual teams" beyond the framework of existing organizations within the company quickly group and regroup in response to specific business conditions, and the promotion of "strategic collaboration" at Cisco can also be said to be complex adaptive leadership with Ma thinking.

In such leadership theory, the reason for applying a CAS approach is that it is difficult to develop discussion based on a paradigm of traditional leadership theory. Elements of "emergent, fluctuating leadership" based on a concept of a complex system approach which incorporates Ma thinking of both "emergence" and "fluctuation" derived from an extended, self-organized paradigm are vital to practitioners at all management layers. Ma thinking also presents a new, dynamic perspective of CAS in transformational leadership and style leadership, which until now have always tended to be associated with linear process models for explaining and interpreting dynamic organizational phenomena such as the processes of innovation, leadership and organizational change.

11.4   MA THINKING AS AN INTERDISCIPLINARY ACADEMIC FIELD

As discussed in this book, our interdisciplinary innovation research has revealed that to produce new value by integrating dissimilar knowledge (sometimes demonstrating serendipity) as mentioned, we are convinced that practitioners must think and act to drive the dialectical processes of recursive dynamic practice activities between formal and informal organizations, dynamic, paradoxical recursion in innovation processes and strategic thinking, and paradoxical and dynamic recursion of thinking in creative processes. The knowledge gained from these new insights is Ma thinking—the theme of this paper.

Not only applicable to the business workplace, the subject matter of this book is the result of deep observations and analyses of the creative and innovative activities of practitioners (innovators or creators) in architecture and the arts over the long term. Our academic research and experiences in different fields to date (as scholars of business, architecture and the arts) have enabled us to develop a deep understanding of the mechanisms and characteristics of the invisible boundaries between formal and informal organizations that drive innovation in companies, organizations and individuals. The authors found that these mechanisms and characteristics originate in the Ma thinking of leading practitioners who bring them into being creatively, efficiently and positively.

Ma thinking encourages people and organizations to combine creativity and efficiency to bring about innovation. Particularly at the micro level, dynamic thinking and actions based on Ma thinking consciously or unconsciously executed by practitioners, not only in formal organizations but also in informal organizations, are crucial in strategically bringing about new innovation. In our research and investigation, we have clarified that Ma thinking of practitioners is an important factor in bringing about high quality innovation in areas in which the previously mentioned so-called tugs of war and contradictions between efficiency and creativity occur.

This book is the result of research spanning dissimilar academic disciplines in innovation based on Ma thinking carried out through collaboration between scholars involved in business, architecture and the arts. The book presented detailed case studies and theoretical concepts of innovation activities at the micro level in business workplaces (from the perspective of strategic activities and organizational actions) as well as design and artistic innovations in architecture and the arts. Through in-depth case

studies, the book then presented new theoretical concepts related to the five architect capabilities enabled by the five types of Ma thinking as shown in Fig. 2.1 in Chap. 2, and discussed a theoretical framework for the creation of new innovation.

Notes

1. The role of leadership in distributed leadership (Nonaka and Toyama 2002; Kodama 2003) spans entire organizations and entails distribution of various formations. In distributed leadership, two or more people on each team share the roles, responsibilities, activities and functions of leadership. Also, leadership depends on the quality of a group, and in the concept of distributed leadership, where a series of roles must also be played by the group. In contrast, centralized leadership (Kodama 2003) means positions, processes and activities controlled by a centralized authority. Centralized leadership entails formulations of a business vision and official strategic targets, and it plays the role of initiating overall direction in regard to the business vision and strategic targets instilled in a range of organizational units. Von Krogh et al. (2012) summarize the characteristics of centralized and distributed leadership in knowledge creation as comprising six elements: 1) form of collaboration, 2) beliefs, 3) process, 4) authority in decision making, 5) skills and 6) development.
2. In CAS, large-scale projects and companies in many cases are believed to have a fractal structure rather than a pyramid-like hierarchical structure. In other words, if any one part of the fractal structure were removed and expanded, it would take on the same form as the whole. Therefore, it can be interpreted that the level of decision-making and expertise should be the same at every level of scale (Christian 2011).

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Conclusions and Issues for Future Research

Mitsuru Kodama

12.1 Cognitive Capabilities for Ma Thinking

Based on the case study in Chap. 4, the reader may question whether Nakamura in his pursuit of Ma thinking was an exception rather than the norm. Nakamura had the Ma thinking to positively bring together dissimilar knowledge of completely different areas of expertise to existing research (decision-making abilities to selection of GaN material) and new ideas (his unique research methodology for improving manufacturing equipment and experiment processes of trial and error) into the field of existing materials science (and semiconductor physics and electronics). Of course, this does not mean Nakamura completely ignored disciplines based on existing theories in the materials science field, as he drew from these as well.

However, even if Japanese researchers had the latent quality of Ma thinking, their ability to bring different knowledge of certain specialty fields into existing research depended on the cognitive skills (the controlled and deliberative mental processing or executive functions) of individual researchers. This will be discussed later.

As background to the commercialization of the blue light-emitting diode, a device nobody had been able to achieve previously, the author sees a logic that explains the story of Nakamura's success: the differences

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(heterogeneity) in the cognitive capabilities of researchers (such as those of Nakamura) for Ma thinking determined their successful R&D activities. These differences in cognitive capabilities arise from two different contexts. The first is the effects of excessive bias towards existing research, and the second is the effects of reduced dynamic range of knowledge boundaries. These are discussed below in turn and are followed by a discussion on the implications of the way practitioners reinforce cognitive capabilities for Ma thinking.

12.1.1   The Effects of Excessive Bias Towards Existing Research

In recent years, Helfat and Peteraf (2015) discussed how heterogeneity in the cognitive capabilities of top manager teams brings about disparities in organizational performance under changing conditions. According to their reviews of theories of cognitive psychology, cognitive science, social psychology, cognitive neuroscience and behavioral decision theory, cognitive capabilities entail important aspects embedded in certain contexts or areas. They also said that previous research argued for the effect of such aspects on heterogeneity in cognitive capabilities (e.g., Ericsson and Lehmann 1996).

According to the American Psychological Association's *Glossary of Psychological Terms* (2009), "cognition" is defined as "processes of knowing, including attending, remembering, and reasoning; also, the content of the processes, such as concepts or memories." Hence, in view of the various cognitive capabilities of human beings, there is evidence that the performance of mental processes depends on prior experience in certain fields of practice, and such differences in contexts in which practice and training are undertaken can also be linked to heterogeneity of cognitive capabilities. Heterogeneity in cognitive capabilities also has a relationship with the mental performance of the individual (Weber and Johnson 2009), and such differences to some degree account for the differences in the prior experiences of individuals in particular fields of expertise.

In psychology, these mental processes are divided into two information processing modes, one that entails almost entirely automatic processing, which is called "System 1 mental processing" by Stanovich and West (2000, p. 658). Automated mental activities enable swift response to data or external stimuli (Schneider and Shiffrin 1977). The other processing mode is referred to as "controlled mental processing" or "deliberative mental processing," and is often referred to as the "executive function." Stanovich and West (2000, p. 658) call this "System 2 processing"

(Kahneman 2011). This type of processing entails slower mental activity in which responses to circumstances are more cautious (Schneider and Shiffrin 1977).

However, automatic mental processes (or System 1 mental processing) enhance the speed of mental activity and have the potential to generate biases in decision-making (Kahneman 2011; Kahneman et al. 1982). Alternatively, controlled mental processes (or System 2 mental processing) have the potential to intervene in these biases to disable them (Stanovich and West 2000, p. 662), and in actual fact differences can be observed in individuals regarding this capability (see Weber and Johnson 2009, p. 73), which is a factor that gives rise to the heterogeneity of the cognitive capabilities of individuals.

Based on their many years of research in management, Helfat and Peteraf (2015) assert that cognitive capabilities underpinned by these mental processes have been important attributes of managers at the top of organizations and present a number of supporting cases such as research by Rosenbloom (2000) on NCR and research by Tripsas and Gavetti (2000) on Polaroid. Furthermore, while it is suggested that top managers must strengthen their "paradoxical cognition" (Smith and Tushman 2005) to simultaneously pursue exploration and exploitation (March 1991), there have been warnings about many cases of unconscious dependence on inappropriate specialized past knowledge when companies search for new technologies or strategies, in which intuition or "gut feelings" work to ill effect (Miller and Ireland 2005). As confirmed by previous research into the field of management, heterogeneity in the cognition of top management teams affects the heterogeneity of approaches to strategic change and their outcomes.

Alternatively, from this knowledge of psychology and management, the following conclusions can be drawn from observations from the perspective of the heterogeneity of the cognitive capabilities of individual researchers in regards to the Ma thinking of Nakamura and other persons in charge of R&D (including Japanese persons). In general, the research content of any scientist, engineer or social scientist entails incremental (or sometimes radical or discontinuous) development based on massive amounts of previous research, in the sense of "standing on the shoulders of giants." At the time, researchers around the world driving basic or applied research into the blue LED had to make a choice between two materials (ZnSe or GaN). The technical journals and academic announcements of the day proclaimed that ZnSe was the most effective candidate, as 3M had achieved successful oscillations with lasers using ZnSe in 1991, work which was

later continued by universities in North Carolina and California universities, among others. The importance of the GaN material was minor in comparison. Regarding this, Nakamura remarked, "I heard a famous Japanese professor comment that some people thought GaN could be used for LED, but that it shouldn't be possible with such a substance, which was the commonly held view at the time." (OpulsE 2010)

Hence, although many researchers selected ZnSe instead of GaN due to the amassed volume of research and its track record, Nakamura took the opposite tack. Looking back, he commented:

> "When I started out, there were already many major companies pouring their efforts into blue LED development. So to catch up, my strategy was to use a material that the majors where not using.
>
> "At the time, the ZnSe material was thought to be a sure thing. So, I avoided that and chose GaN which was only being researched in a few universities. The ZnSe success rate would probably be high, and it would be easy to pursue because of the large volume of literature on it. I knew that, but with that material, I would have just been following the majors. Thus, even if I succeeded with development, it would have failed as a business. Technological developments are interesting because they don't go as planned. In contrast, they have strong elements of gambling.
>
> "I had great experiences on a chain of technologies from R&D through to manufacture and quality control and visiting customers and not just being stuck in the Lab. That's why I could gamble. How would I position the theme of my development in the world? In short, maybe the basic capability as an engineer to confirm something about a technology that will sell takes 10 years to foster after joining company.
>
> "In the end, you have to believe in yourself, and approach research, development and work according to your own ideas. Naturally, that's the way to choose an original development theme. When I started the blue LED research, I purposely avoided reading too many papers and patents about it. This enabled me to come up with original ideas, and file many patents. Up to then, I had done the opposite and read many papers and patents, but that just ended up in unconsciously copying. It's not possible to do original research by copying people. One's own originality is the most important asset of R&D. (Nikkei Technology On-Line 2014)

Interpreting the mental processes of researchers other than Nakamura based on the aforementioned existing psychology research indicates their mental processes were the automatic type, and that their reaction to the external stimuli and data of prior contributions to materials science and

blue LED meant that many of them may have reacted through the principle of lower risk to choose the more promising ZnSe material. In contrast, interpreting Nakamura's mental processes from the perspective of the existing research reveals that his processes were "controlled" and "deliberative," and that he did not rely on existing research (he read none of the literature), and by choosing the GaN material, a material that hardly anybody had been studying, he was able to avoid the influence of excessive bias due to existing knowledge, and more carefully consider the matters at hand.

These executive functions, the "controlled" and "deliberative" processes, are defined in existing research as "cognitive processes that organize and order behavior, including (but not limited to) logic and reasoning, abstract thinking, problem solving, planning, and carrying out goal-directed behavior" (Stanovich and West 2000, p. 658). Similarly, the APA Dictionary of Psychology (VandenBos 2007) states that "executive function includes the ability to plan and anticipate outcomes (cognitive flexibility) and to direct attentional resources to meet the demands of non-routine events." Regarding exactly how executive functions (or controlled, System 2 processing) act, there are arguments that include the scope of conscious control over actions, although there is general agreement in support of the deliberate and goal-oriented behaviors stemming from mental processing in this mode.

Nakamura also dared to engage in experimental trial and error processes with manufacturing equipment that he built, something that is not often done by researchers in the materials science field. Most materials researchers in major research institutions do not attempt to modify or upgrade manufacturing equipment but instead engage the services of machine manufacturers. With this research method, it can take two to three months for equipment to be modified, and if the desired data cannot be obtained thereafter, the researcher must ask the manufacturer to make additional modifications and then recommence experimentation, a highly disadvantageous process in terms of the time and money required for research. Regarding this, Nakamura stated the following:

> "We bought commercially available MOCVD equipment, but couldn't generate GaN with it. So I spent about a year and a half modifying the device every day. I started every day with modifications in the morning, and then trialed reactions in the afternoon. That's how the two-flow MOCVD equipment came about …. That was the biggest breakthrough. It seems easy to

say, but nobody else has been quite able to replicate it. The heater design was the most difficult. It's an area in which I excel, and was the result of 10 years of experience building equipment. No matter how good the university, no graduate would be able to improve on it. That's because I built it myself with junk I had collected over a long period. I wound the heater myself, and spent ages on other stuff such as the transparent quartz welding. I made the most of the experiences I had gained paying my dues…" (OpulsE 2010)

By engaging in research methods not normally used by materials researchers (repeated improvement and experimentation with self-made equipment), Nakamura was able to avoid the biases of customary research methodologies. Accordingly, it can be said that instead of adopting ad hoc methods, the executive functions of controlled and deliberative mental processes suitably raised the cognitive capabilities of Nakamura.

To paraphrase from the APA *Dictionary of Psychology* (VandenBos 2007), Nakamura seemed to have the combined abilities to both plan and predict an outcome (cognitive flexibility) (factors including the flow rate of the reactive gas, the back flow mechanism and the use of inert gases, etc.), and give direction to his attentional resources to satisfy the requirements of non-routine events (making modifications by himself, experimenting, engaging in trial and error). Thus, had Nakamura's executive functions been mediated through the biases of existing research or customary research methods, they would have been disabled. This perspective offers one source of heterogeneity between the cognitive capabilities of researchers. The above describes the first context of "the effects of excessive bias towards existing research as a factor of differences in cognitive capabilities.

12.1.2   *The Impact of Reduced Dynamic Range of Knowledge Boundaries*

The following describes the second context, one of the impact of reduced dynamic range of knowledge boundaries. As discussed earlier, the dynamic range of knowledge boundaries refers to the scope of change of contexts and knowledge, and the depth of cognitive capabilities of business persons for various values and diversity.

As described in the case studies, management and Nakamura drove the dialectic process of dynamic recursive practice activities in formal and

informal organizations. Ma thinking in these recursive practice activities integrates dissimilar knowledge both inside and outside of a company to bring about creative new products and business models. The achievement of recursive practice activities requires one to span one's own field of specialization and invest oneself in different organizations. In other words, the formation of informal human networks enables various staff members of a company to expand the dynamic range of their own knowledge boundaries and interact.

As novelty in circumstances surrounding individuals, organizations or companies—or knowledge boundaries between different types of knowledge—becomes more pronounced, knowledge boundaries tend to take on the qualities of pragmatic boundaries (Carlisle 2004). Much existing research (e.g., Carlisle 2002, 2004; Kodama 2007a, 2009) suggests that interaction among wide-ranging members in human networks (or the aforementioned strategic communities) with pragmatic boundary qualities is crucial for bringing about innovation. Hence, in their daily activities, innovators repeatedly and dynamically move back and forth between these pragmatic boundary-like informal human networks and their formal organizations.

The important point is that for corporate research to achieve innovation (basic and applied research, and commercial development), cognitive capabilities must be introduced to recognize the importance of the pragmatic boundary-like human network formations.

In analyzing the process of moving from basic research to product development and commercialization, Nakamura's and the management team's autonomous and informal strategy of trial and error on the front line of research was a novel environment constantly full of uncertainty and risk, in which Nakamura's emergent and accidental serendipity lead to radical (or discontinuous) innovation. On the other hand, on the management side, systemized and centralized formal organizations continued with planned and intentional strategic activities towards incremental innovation through existing low-risk and steady business. Although the strategic and organizational activities of Nakamura and the management team were conflicting, Nakamura built informal *particular pragmatic networks* with the management that included *particular people* (CEO) by informally and directly involving the management team in his surroundings to get the funding he needed for R&D.

Moreover, it was in fact the intentional integration of Nakamura's serendipitous awareness as a researcher and the deep understanding of

serendipity by management which drove the dialectic process of dynamic recursive practice activities of management and Nakamura, centered on the particular context on the axis of serendipity. The latent fruit brought about through the serendipity of the new ideas enabled by Nakamura's trial and error was fully harvested with particular timing, through the execution of a carefully considered strategic grand design by the management team, which led to the last major successful invention and product commercialization of the twentieth century: blue LED.

Kodama (2006) identifies four important and specific characteristics for forming pragmatic human networks dynamically to achieve innovation (called strategic communities in literature), which he refers to as *context-specific*, *people-specific*, *timing-specific* and *network-specific* factors. Nakamura and the management team seem to have matched cognitive capabilities to these four factors.

In contrast, many researchers in the workplace in R&D organizations under complex and hierarchical organizational structures in large corporations recognize invisible walls between various specializations (such as laboratories and development, sales, production and management departments). These mental walls between organizations (not only walls between top management, but also between R&D sections and management charged with determining funding, production and sales sections) have been dubbed the "valley of death" (Branscomb et al. 2001; Markham 2002; Merrifield 1995; Kodama 2011), and present major hurdles to basic or applied research and commercialization of their successes. In particular, it is possible that the delay of researchers in large corporations to commercialize blue LED was due to not only the misjudgment of selecting ZnSe as a material but also to the failure of their cognitive capabilities to recognize the need for forming pragmatic informal networks to achieve innovation, which led to a reduced dynamic range of their knowledge boundaries, ruling out their ability to overcome the invisible walls and surmount the valley of death.

In contrast, Nakamura said, "I had great experiences in a chain of technologies from R&D through to manufacturing and quality control, and I visited customers. I was not just tucked away in the lab. That's why I could gamble." This comment suggests that Nakamura had the cognitive capabilities as needed by his empirical knowledge to always expand the dynamic range of his knowledge boundaries and to acquire wisdom in new contexts spanning different organizations.

12.2   MA THINKING AND SMALL-WORLD NETWORKS

In this section we present new knowledge concerning the proposition of Ma thinking promote the formation of small-world networks. In light of knowledge of network theory (Watts 2003; Barabasi 2002), we will first consider the structural characteristics of informal organizations such as strategic communities (SC) where practitioners cross over formal organizations. Networks of people, groups, and organizations at the micro level, which are informal organizations in a complementary relationship with formal organizations, constitute a valuable platform for facilitating knowledge management and knowledge creation (integration or convergence) processes, and this network morphology has a significant impact on the communication of information and knowledge (Kodama 2005; Owen-Smith and Powell 2004; Lin and Kulatilaka 2006). Moreover, the dynamic formation of networks is essential for acquiring sustainable organizational capabilities (Kodama 2003, 2004, 2007b, c), and these informal networks must be dynamically reconfigured in real and virtual space in response to changes in the environment and strategy.

Network theory affords valuable knowledge and insights concerning the behavior of practitioners that move across boundaries within and outside a company, and relationships among practitioners. At the same time, as noted earlier, expanding the dynamic range of knowledge boundaries and reinforcing the cognitive capabilities for Ma thinking that practitioners have facilitates expansion of the practitioners' own informal human networks. The formation of such human networks as informal organizations strengthens the five architect capabilities of practitioners and becomes an important trigger in the practitioners' execution of knowledge creation processes. Network forms can be broadly classified as centralized networks and decentralized networks. Centralized networks are most appropriate for processing routine information and passing on knowledge efficiently (information and knowledge are relayed from the central node to peripheral nodes) (e.g., Albert and Barabasi 2000; Tushman 1979). Therefore, formal organizations that have layered configurations are examples of centralized networks.

On the other hand, decentralized networks are characterized by a simultaneous joining of localized clusters as informal organizations are networks that have local clusters (linkages where practitioners have close-knit relationships) within their network structure, and at the same time practitioners connect with each other through shortcuts (bypasses). This

network topology has been referred to as a "small-world network" (Watts and Strogatz 1998), and according to the definition of network theory this means a node can connect to another node via several other nodes. Thus, networks like this are characterized by the connections between the nodes on the network. Technically, the average path length is short, and the number of cluster coefficients is high. In a typical small-world network, adjacent nodes (the joining points: individuals in society) are connected according to rules, while nodes that are far apart on the network can be linked by random shortcuts or bypasses. The average path length means the average shortest distance between nodes; the cluster coefficient means the degree of bundling of the node within the network.

The small-world network which includes a decentralized network is the most appropriate network form when directly faced with the challenges of uncertainty and risk, facing new issues or challenges, seeking urgent solutions to problems, or when changes in the environment are occurring at a rapid pace (Watts 2003). In small-world networks, while there is adjacent networking of individuals who are closely connected (for example, practitioners in the same formal organizations), these networks are also places in which practitioners who are organizationally dispersed are able to access each other via the shortcuts available, expand the boundaries of individual knowledge, and use resources (knowledge) across the entire organization more efficiently. Small-world networks are robust networks that offer organizations resilience against a concentration of the volume of information in an organization, bottlenecks, sudden changes in the environment such as unexpected problems or accidents, and destruction (Newman 2004; Shah 2000).

From a social network theory perspective, informal organizations such as SC are examples of clusters and cliques of people as the smallest node. A clique is a group where all the nodes within the network are directly linked to each other. A clique is a collective entity where practitioners closely connect and exchange and share information, contexts and knowledge; as an informal organization such as a SC a clique is not a simple collective entity to exchange information but rather a collective entity characterized by pragmatic boundaries with a matrix of semantic boundaries (Carlisle 2004; Kodama 2007a, b), and are groups and teams that dynamically create new contexts and knowledge according to changes in context.

Furthermore, SC are groups that bring about new innovation while coordinating and integrating the five architect capabilities (context architect

capability, Ba architect capability, human network capability, boundary linking capability and willpower architect capability) based on Ma thinking that practitioners with diverse specialist skills use to resolve the problems they face and to achieve new creative strategies. These SC promote the formation of small-world networks within organizations. If we consider the networked collaborative organizations in Apple and Cisco discussed in Chap. 3 from this perspective, this overall network morphology consisting of informal organizations in decentralized networks of cliques formed from shortcuts of a large number of practitioners and formal organizations in centralized networks with many clusters is an example of a small-world network (see Fig. 12.1).

The networks the author pays particular attention to here are SC and networked SC, which are distributed networks that change dynamically, and their morphology corresponds to group-interlocked networks (Watts 2003). Duncan Watts states that actors (practitioners) relevant to certain contexts are preconditions for this network, but in the practical world of business, practitioners actively form groups (SC) of a certain context, and at the same time draw into this group other practitioners (in other words,
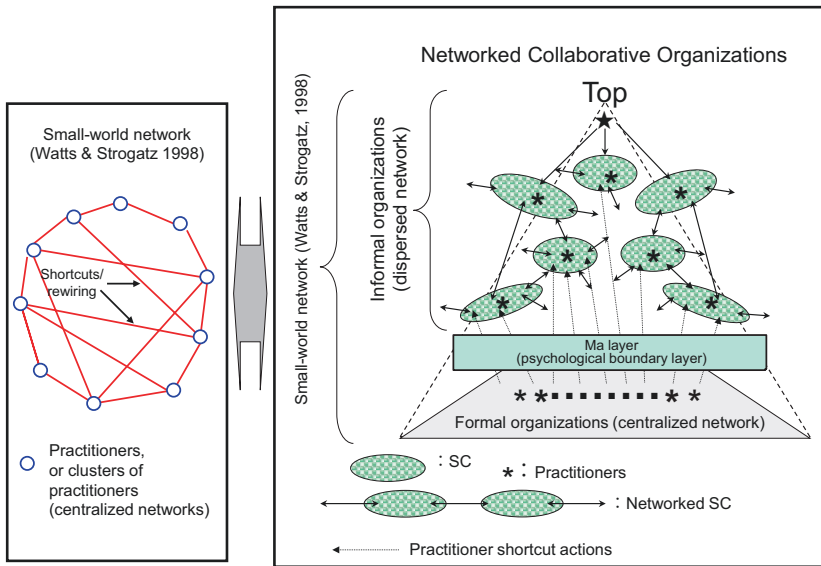
Fig. 12.1   Small-world networks and networked collaborative organizations

create links with other practitioners and draw them into knowledge boundaries as stated earlier). Therefore, SC as groups change dynamically according to context. At the same time, these networked SC, which are an SC network system, also dynamically form and change.

Practitioners dynamically reconfigure SC in real and virtual spaces in the course of daily practice activities. In addition, multiple practitioners participate in multiple SC where they share information and knowledge, and they transfer this information and knowledge to other SC in which they participate, where it is shared with practitioners. This is the process through which SC are formed as group-interlocked networks mentioned earlier. In the framework of group-interlocked network, SC are considered to be equivalent to nodes or hubs. A hub is an extremely small number of nodes that have an enormous number of links within a network. Practitioners who belong to hub or node SC within or outside companies create networks among the SC by dynamically bridging multiple different SC. As a result multiple SC are integrated into networks, and new contexts and knowledge are created.

Underlying the realization of new knowledge creation is Ma thinking. In other words, to achieve new product development and create new business processes, practitioners demonstrate synthesis at the Ma layer, which is the psychological boundary layer, by integrating and balancing various individual management elements in formal and informal organizations through Ma thinking and the five architect capabilities.

12.3   The Building of Networked Collaborative Organizations Through Ma Thinking

In building "networked collaborative organization" discussed in Chap. 3, it is not possible to bring about new knowledge just implementing cutting-edge ICT and practitioners utilize it. In this section, we present new knowledge concerning the proposition of Ma thinking promote the building of networked collaborative organizations.

In Chap. 3, it was noted that Cisco Systems firmly believed that only companies that have the word "collaboration" written into their DNA would be able to achieve success (Chambers 2007). This is because it is not possible to grasp and respond quickly to the undercurrents in diverse market places if the five architect capabilities (context architect capability, Ba architect capability, human network capability, boundary linking capability and willpower capability) cannot used across the company in

addition to the selection of a few superior leaders. Thus, rather than charging management alone with important tasks, Cisco forms collaborative organizations that cut through the range of managerial layers within the company to solve important problems (Cisco calls these "councils" and "boards").

Councils are formed when there is the prospect of business opportunities on a $10 billion scale, whereas boards are formed when the scale is around $1 billion, and working groups are formed to take more strategic initiatives related to these councils and boards. These councils, boards and working groups are organizations that correspond to SC and networked SC, and at Cisco these organizations enable staff to engage in constructive discussion, to understand and cooperate in processes, and to make decisions and take action quickly. Collaboration enables these organizations to get the best opinions as swiftly as possible and enables the company to tackle various problems as a single team.

At Cisco, the ICT environment that supports the organizational structure of Cisco's councils, boards and working groups is the company's "Telepresence," a video communications tools developed by Cisco. The essence of the company's use of ICT is to form SC in real and virtual space, promote intense collaboration among staff and change staff behavior and the corporate culture.

The Telepresence not only provides for business efficiency through huge time savings and reduction in business travel expenses, but also contributes to speedy decision-making. With decision-making for important proposals, it is also important to have the ability to have a sense of obscurity in diverse information sources. When difficult decisions have to be made, such as when facing challenging negotiations with tough customers, it is critical to be able to read their facial expressions and body language.

The Cisco case is a good example of how dialectical dialogue and creative collaboration are demonstrated through discussions in real and virtual spaces as organizations (SC) are formed through demonstration of the five capabilities rooted in the Ma thinking and ICT capability of the company's practitioners.

As in the case of Cisco, there is a strong tendency for the creation of new knowledge, —innovation—to occur at the boundaries between disciplines and specializations (Leonard-Barton 1995). Corporations are segmented into a range of job functions and specializations, and there are many visible and invisible boundaries that exist therein (e.g., geographic

boundaries as globalization, industry boundaries as strategy, organizational boundaries as corporate theory and human cognition as bounded rationality). In business areas where changes in the environment and competition are intense, practitioners (including customers) in many corporations must transcend these numerous boundaries within and between companies, and integrate various kinds of knowledge to formulate and execute strategies that will bring about new knowledge creation and business innovation. Without a doubt, knowledge is the wellspring of corporate competitiveness (Kogut and Zander 1992; Nonaka and Takeuchi 1995; Leonard-Barton 1995). On the other hand, not only do organizational boundaries exist as sectionalism among practitioners in companies but also knowledge boundaries attributable to values, backgrounds and areas of specialization of practitioners also exist (Brown and Duguid 2001). In other words, the particular mental models of practitioners (Spender 1990; Grinyer and McKiernan 1994) and path-dependent knowledge can also act as barriers to business innovation (Carlisle 2002).

The question then is this: How can practitioners manage knowledge to create new knowledge by transcending organizational and knowledge boundaries? There needs to be a mechanism in place that will share a mission among practitioners and induce Ma thinking in organizational and business contexts among practitioners. Furthermore, practitioners must establish resonance of value (Kodama 2001) and mutual trust (Kodama 2007c, d) through dialectical dialogue and deep collaboration among themselves, and work to form SC as informal organizations through the five architect capabilities grounded in Ma thinking. Therefore, strengthening the cognitive capabilities of practitioners for Ma thinking to expand the dynamic range of knowledge boundaries mentioned earlier is essential.

Furthermore, as described in Fig. 11.1, practitioners need space-time management strategies to engage in recursive activities and balancing among hybrid networks that will create new contexts and knowledge through dynamic interaction between informal and formal organization in real and virtual spaces. In addition to a deep understanding of Ma thinking among practitioners, the nurturing of staff unity in community-based organizations and the mutual understanding of individual practitioners' thinking and values in the company are essential.

As stated earlier, informal organizations (SC and networked SC) are not in conflict with formal organizations. Networked collaborative organizations have a duality that mutually complements the informal and formal

organizations. Practitioners who participate in informal organizations such as SC and networked SC pursue exploratory activities as new business domains. Dispersed and autonomous SC and networked SC have the characteristics of passively coping with changes in the environment and actively taking up the challenge of creating environment: unknown markets and new business (Kodama 2010).

In contrast, formal organizations engage in exploitative activities to promote current business as a matter of routine. Tasks undertaken by formal organizations with a flat hierarchy are not only concerned with executing existing business but also have an important role in the rational and planned execution of new business created by informal organizations (SC and networked SC). Therefore, a paradoxical management style is required for both flat hierarchical organizations (with an image of being disciplined organizations) as formal organizations that focus on principled and rational deliberate strategies and SC and networked SC as informal organizations (with an image of being organic organizations) that focus on autonomous, dispersed creativity and improvisation.

From the viewpoint of new knowledge creation and new customer value, the important focus in networked collaborative organizations is on maintaining the building of appropriate flat formal organizations from the viewpoint of optimizing the company as a whole, and at the same time to dynamically reconfigure SC and networked SC on a regular basis. Therefore, practitioners must be the architects of informal organizations, and the five architect capabilities are a key factor for a company in bringing about ongoing innovation that will enable it to maintain its competitive edge.

12.4   Reinforcing Cognitive Capabilities for Ma Thinking

Cognitive capabilities for Ma thinking facilitate the formation of small-world networks and the building of networked collaborative organizations. However, there are times when it is difficult for a company to form small-world networks or networked collaborative organizations. This is because there are disparities in the cognitive capabilities for Ma thinking in practitioners as mentioned in the previous section.

The effects of excessive bias towards existing research and the reduced dynamic range of knowledge boundaries influence the differences (heterogeneity) of practitioners' cognitive capabilities for Ma thinking. Therefore,

what are the factors required to strengthen cognitive capabilities for Ma thinking to succeed in R&D activities as it did in Apple, Cisco and Nakamura in Nichia?

March (1991) interpreted organizational learning as an adaptive process that entails positioning resources between "exploration" and "exploitation." In other words, just like Nakamura's activities in the invention of blue LED, exploration is a chain of activities characterized by discovery, invention, the pursuit of diversity and creativity, the taking of risk, experimentation and the maintenance of play and flexibility. Moreover, exploration has the potential to dispel the impact of excessive bias toward existing research and to bring radical organizational learning to fruition without being trapped by existing knowledge or information. Radical organizational learning is equivalent to radical or discontinuous innovation (e.g., Leifer et al. 2000) and the new resource combination or creative resource construction discussed by Schumpeter (2011). The seeds of creative construction can be discovered in unlimited ordinary events, and Schumpeter stresses the importance of practicing "new combinations" by adding something to the data or conditions in one's surroundings, which appears to be what Nakamura did in his invention of blue LED.

In contrast, exploitation is characterized by progressive learning entailing modification, reworking, comparison, selection of alternatives, standardization, improving efficiency, speeding up processes and cost cutting (in other words, incremental innovation). Thus, in the context of R&D, exploitation has significant dependence on and bias towards existing research (which can also be excessive) and does not easily engender radical innovations such as new breakthrough inventions or discoveries. According to March (1991), effective organizational learning requires an appropriate balance between exploration and exploitation, although organizations have a strong tendency to prioritize exploitation over exploration. This is because exploitation offers companies better profits in the short term, and companies with a low appetite for risk tend to prioritize exploitation in spite of the dangerous prospects it holds for organizational survival over the long term.

However, top managers need to demonstrate "paradoxical cognition" (Smith and Tushman 2005) to pursue exploration and exploitation simultaneously, or "strategic innovation capabilities" (Kodama and Shibata 2014) to combine radical or discontinuous innovation (exploration) and incremental innovation (exploitation).

Hence, how can practitioners raise their cognitive capabilities in Ma thinking to become oriented towards the practice of Schumpeter's "new combination" or March's combined exploration and exploitation? The concept for this is the aforementioned expansion of the dynamic range of knowledge boundaries (and the practice of drawing from different knowledge boundaries). One of the theoretical elements for achieving these is "perspective-taking," which is described below.

Perspective-taking is a cognitive process in which individuals adopt others' viewpoints in an attempt to understand their preferences, values and needs (Parker and Axtell 2001). This essentially means putting oneself into the emotional position of others as a cognitive aspect that enables understanding others from that perspective (Goldman 1993; Hogan 1969). Moreover, perspective-taking requires executive functioning, a cognitive capability of the brain (e.g., Brown-Schmidt 2009; Qureshi et al. 2010). In other words, this requires restraining and controlling oneself (controlling one's emotions and thoughts to consider the perspectives of others) and being flexible in thinking to see matters from a different angle, as well as introspection (the ability to consider the thoughts of others parallel with one's own thoughts).

In existing research in the field of business and management, perspective-taking has long been considered an important aspect that is responsible for much of human social capacity (Mead 1934; Piaget 1932). The concept of perspective-taking is particularly significant for modern organizations where traditional boundaries are blurred and the need to work collaboratively is very salient (Dean and Snell 1991). Furthermore, in the case of knowledge-creating companies like Apple, Cisco and Nichia (Nonaka and Takeuchi 1995), competitive advantage and product development success is a result of collaborative, ongoing learning and innovation. That is, success depends on how effectively the diverse individuals are able to organize and develop their unique knowledge as well as how effectively they can integrate and synergistically utilize their distinctive diverse knowledge through a process of perspective-taking (e.g., Nonaka and Takeuchi 1995; Dougherty 1992; Purser et al. 1992; Brown 1991). This perspective-taking concept promotes expansion of the dynamic range of practitioners' knowledge boundaries and drawing from different knowledge boundaries, and it is a wellspring of innovation from which epoch-making original new products or businesses such as those of Apple or the blue LED have developed in the past. Grant and Berry (2011) assert that perspective-taking enables intrinsically motivated employees to develop ideas that are useful

as well as novel, and perspective-taking interacts with intrinsic motivation to enhance creativity, which means that perspective-taking can be seen as a trigger to raise cognitive capabilities for Ma thinking and bring about creative thinking.

Conversely, the concept of "perspective-giving" entails functions that give focus to people, groups and organizations to promote new ideas and help people become aware of new things and broaden their thinking. Thus, the two concepts of perspective-giving and perspective-taking are mutually complementary, much like the wheels of a vehicle (e.g., Stary 2011; Bruneau and Saxe 2012), and promote creative and dialectical dialogue (e.g., Kodama 2007). Moreover, perspective-giving and perspective-taking promote creative abrasion (Leonard-Barton 1995) and productive friction (Hagel and Brown 2005) in groups and organizations, and drive higher quality organizational learning and innovation through trial and error processes based on new ideas.

Deep communication and collaboration processes between different fields of specialization have been reported to contribute greatly to new innovations (e.g., Van Rijnsoever and Hessels 2011; Kodama 2011). However, to encourage this kind of communication and collaboration, the wide range of knowledge boundaries perceived by individuals and organizations must be explored and combined with glimmers of new learning and innovation through the practice of perspective-giving and perspective-taking. Accordingly, practitioners must focus on dissimilarities and differences in a wide range of boundaries, and must drive knowledge creation based on new combinations by raising cognitive capabilities in Ma thinking.

12.5   Future Research Issues in Ma Thinking

In this book, we analyzed and considered innovation and knowledge creation processes that traversed different fields of specialization such as business management, economics, art and architecture from the perspective of Ma theory. Art innovation in the field of art meant mainly innovation through new creative activities, while design innovation was mainly expressed as represented in the field of architecture as well as innovation through product development in the field of engineering, and on a macro level innovation through new design thinking in integrated networks that cut across companies and industries as seen in the cluster concept (e.g., Porter 1998) in the theory of industrial organization.

On the other hand, from the perspective of knowledge theory and epistemology, art is subjective and emergent, and the creation of tacit knowledge (Polanyi 1966), which is the wellhead of new ideas and concepts, is considered important. In contrast, design is objective and planned, and the creation of explicit knowledge as new design processes and design rules (Baldwin and Clark 2000) is valued. While art and design in a strict sense have different qualities, to achieve new creation (not only of "things" but also "ideas") as innovation, an upward spiraling process of converting tacit knowledge based on subjectivity and explicit knowledge based on objectivity is vital (Nonaka and Takeuchi 1995).

In traditional Western epistemology, knowledge is defined as "justified true belief," but in knowledge creation theory Nonaka defines it as a "dynamic human/social process for justifying an individual's beliefs by approaching the truth" (Nonaka and Takeuchi). In other words, the dynamic human process of justifying one's personal beliefs (ideas) towards truth is in itself defined as knowledge. The ideas (subjective view) an individual embraces are justified (objectivized) within the social dynamics in which the individual engages with others and the environment, and are considered "truth." Knowledge is a process where an individual continues to question truth, virtue and beauty through interaction with others, and the essence of knowledge lies in the very interaction of such beliefs (subjective view) (tacit knowledge) and their justification (objective view) (explicit knowledge). Therefore, art innovation, design innovation, product innovation and cluster innovation are essentially knowledge creation (integration or convergence) processes.

As an element promoting such knowledge creation process, the existence of Ba as a relationship platform among people is important (Nonaka and Takeuchi 1995). Japan is a country that has a culture of Ma and the Japanese people have a unique type of Ma culture that can be found in the exquisite sensitivities, imagery, colors and meanings expressed through traditional Japanese culture and arts. In no small measure has this unique and refined Ma also influenced the sensibilities of the Japanese people and enabled them to bring forth the distinct aspects of their culture and art.

Although there has been research focusing on the concept of Ma in areas such as culture, architecture, the arts and linguistics, research on Ma in relation to people and organizations engaging in and developing economic and social activities on a daily basis, and in the fields of business management and economic, is almost nonexistent. Against this backdrop, this book provides new knowledge on the theory of Ma. In this book, the authors assert that the capability which provides for the coexistence of

different phenomena originates in Ma and, as stated above, the formation of Ma is an important element that promotes the knowledge creation process.

Because Ma itself is not something with a particular meaning or role but is a virtual layer (Ma is referred to as the psychological boundaries layer) with a hollow structure, the surrounding conditions and environment of Ma relate to each other to create something, and the psychological boundaries layer mediates and accommodates on each occasion and creatively generates new meaning depending on the situation, as everything surrounding Ma changes. Ma has the role and function of mobilizing the creativity (or imagination) of people, and what eventuates as a result of its existence depends on time, space and context. On the other hand, if we interpret Ma as the state of a holistic relationship that changes dynamically and allows for diverse meaning, it has the role of comprehensively synthesizing various paradoxes observed in strategy-making processes, organization structures, leadership structures and practice process within corporate organizations.

Moreover, the existence of Ma as a hollow structure also becomes the trigger that establishes "mutual subjectivity" without separation of subject and object. Mutual subjectivity is a "we" relationship that transcends oneself, and is established when there is acceptance, concern and socialization of the mutual subjectivity of all others. Moreover, it establishes the formation of Ba for dynamically sharing living context. Practitioners who belong to formal organizations within a company, while interacting with the environment, dynamically form Ma that allow for diverse meaning, and from this comprehensive relationship form Ba for sharing new meaning. Therefore, the existence of Ma is essential for forming creative Ba. The existence of Ma is also a necessary condition for the formation of strategic communities (SC) based on the formation of Ba. This book presents new knowledge of the relationship between Ma and Ba, which has not been the subject of any academic research to date.

It is hoped the future will see further detailed and practical research on Ma theory focusing not only on knowledge in business management, economics, the arts and architecture discussed in case studies in this book, but also on broader interdisciplinary viewpoints across broad interdisciplinary fields including philosophy, politics, sociology, education, psychology, cultural anthropology and psychiatry; in addition, we look forward to explorations of Ma theory in interdisciplinary fields including behavioral science focusing on communications between individuals in society and decision-making mechanisms of individuals and society.

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[1]Note: Page numbers followed by "n" refer to note.