

# Maneuvering Knowledge: A Study of U.S. Marine Corps

Ikujiro Nonaka

*Hitotsubashi University, Japan*

Kota Uno

*buho, Japan*

## Abstract

The U.S. Marine Corps is known as one of the most innovative and adaptive military organizations in the world. This paper argues that the Marine Corps innovate and adapt effectively because they constantly cultivate “knowledge maneuverability,” an organizational ability to create and practice knowledge in a timely, contextual, and purposeful manner. Drawing on the human paradigm of knowing, this paper identifies three pillars that constitute the Marine Corps’ knowledge maneuverability: purpose and values, intersubjectivity, and middle-up-down management. It then suggests what business managers should do to foster knowledge maneuverability for their organizations.

**Keywords:** *U.S. Marine Corps, tacit knowing, tacit knowledge, knowledge creation, purpose, value, meaning, intersubjectivity, ba, middle-up-down management*

The U.S. Marine Corps is considered one of the most innovative, adaptive, and high-performance military organizations in the world. As the only nonessential component of the armed forces in the U.S. military forces, the Marine Corps had to prove why they need to exist every day. They created ground-breaking strategies and tactics to adapt to and overcome the emerging situations faster than other military sectors in the nation. Rather than passively reacting to the uncertainty of dynamic war environment, the Marine Corps actively created knowledge to shape and thrive in the changing landscapes of the modern warfare.

For example, the Marine Corps have innovated “amphibious operations” with the U.S. Navy during the 1920s and 1930s when virtually the rest of the military organizations in the world had ignored the potential significance of amphibious operations (Murray 2011). This capacity of amphibious

landing operation eventually enabled the Navy and the Marine Corps to capture the island bases that led to the defeat of Imperial Japan during the Pacific War. Similarly, unlike the U.S. Army Air Corps, the Marine also succeeded in developing the air-ground task force for “Close Air Support,” an air action against enemies in close proximity to friendly forces (Muller, 1996).<sup>1)</sup> During the Iraq War and Afghanistan War, the Marine Corps innovated a capability for counterinsurgency operations in densely populated areas where the knowledge of each local social environment was critical to complete missions and defeat insurgent forces, to which the Marine Corps quickly adapted both in the field and at its training installation and schools.<sup>2)</sup>

One of the central reasons the Marine Corps can innovate and adapt in a timely manner can be attributed to their warfighting philosophy called “maneuver warfare.” Maneuver warfare is about

efficiency and efficacy. For instance, the Marine Corps “concentrate fires and forces at decisive points to destroy enemy elements when the opportunity presents itself and when it fits our larger purposes” (U.S.\_Marine\_Corps 1989). Rather than relying on the volume of the fire power or the number of soldiers, this philosophy focuses military capacity on essential, strategic points to defeat the enemy in the most efficient and effective way. In this sense, maneuver warfare is about “fighting clever” to achieve the big goal.

Today’s business organizations have much to learn from the U.S. Marine Corps, because they live in the era of “innovation economy” (Janeway 2012), where the fast evolution of technologies and emerging new business disrupt existing sectors and produce tremendous uncertainty and volatility (Teece and Leih 2016). Just like the Marine Corps, business organizations need to be able to adapt, improvise, and innovate quickly to do the right thing at the right time.

What the Marine Corps embodies is “knowledge maneuverability,” an organizational ability to create and practice knowledge in a given situation in a timely and purposeful way. They maneuver the process of knowledge creation to achieve speed, flexibility, and innovation. The lessons from the Marines Corps would enrich the practices of business organizations today.

Knowledge maneuverability is essentially about wisdom (Nonaka et al. 2014). It is not so much about having knowledge about some facts, but is about a way of “seeing” or perceiving the meanings of the reality according to mission, purpose, and values. Such a way of seeing the reality is cultivated through living a certain way of life, guided by principles and values. Wisdom—a distinct category of knowledge—is essentially about the ability to derive pragmatic and appropriate meanings from the reality and create knowledge from it. In other words, effective knowledge creation can occur through living a certain way of life that cultivates wisdom.

The idea of knowledge maneuverability is constructed according to the theory of knowledge creation and the case studies of the Marine Corps. We have summarized three factors that construct organizational knowledge maneuverability: 1) good purpose and values, 2) intersubjectivity, and

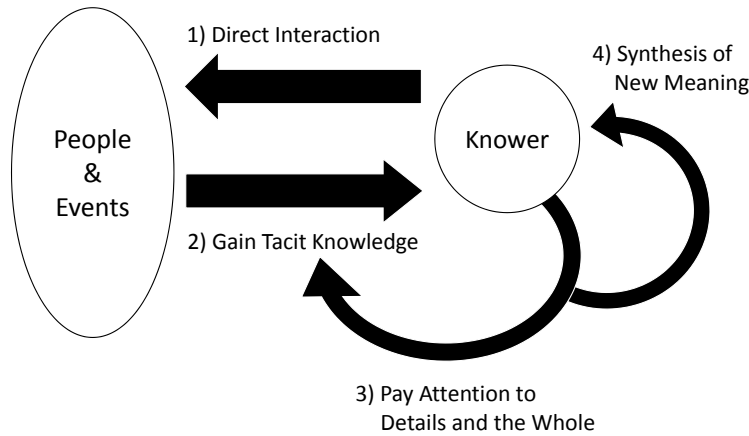
3) distributed leadership. The nature of knowledge and knowledge creation allows us to draw the connection between those three elements and the organizational ability to adapt and innovate. More specifically, we start by explaining the foundation of knowledge creation, namely “tacit knowing,” and how humans derive meanings from various phenomena to create knowledge.

## FUNDAMENTAL MECHANISM OF KNOWLEDGE CREATION

### *“Tacit Knowing” as the Foundation of Knowledge Creation*

We define knowledge as dynamic process of justifying personal beliefs towards the ‘truth’ (Nonaka and Takeuchi 1995); (Nonaka and Toyama 2007, Nonaka, Toyama, and Hirata 2008).<sup>3)</sup> We see knowledge as a *social process* that takes place in a particular context or event. Knowledge is essentially a part of subjective experience, which emerges from a specific context or event, conditioned by a particular time and place. This intimate link between knowledge and subjective experiences suggests that knowledge is *embedded in human action*: knowledge is not something people merely have but something people *act out*.<sup>4)</sup> This implies that human action or practice is the means not only to use knowledge but also to gain one. The way human agents respond to or act upon a reality, which is perceived through their interactions with the surrounding human agents and environment, embody their knowledge about the reality.

Knowledge can be categorized into two kinds: Explicit and tacit knowledge. Explicit knowledge is in the form of words, numbers, figures, or images and can be shared as data, scientific formulae, specifications, manuals, and the like. This is the kind of knowledge that can be promptly transmitted between individuals formally and systematically. Tacit knowledge, on the other hand, is highly subjective and possessed by individuals. Tacit knowledge is hard to express with concepts or words, so it is difficult to share or communicate with others verbally. Subjective insights, intuitions, and hunches are all tacit knowledge. Tacit knowledge is obtained from human action and experience, guided by



**Figure 1: Process of Tacit Knowing**

ideals, values, and emotions.

These two kinds of knowledge are not completely independent entities, because all knowledge is rooted in tacit knowledge. While explicit knowledge can be possessed as it is, one needs to rely on tacit knowledge to understand or apply the explicit knowledge (Polanyi 1966). Tacit knowledge can capture the subtlety and nuance of the reality without conceptual, linguistic, or symbolic constraints of explicit knowledge. Accordingly, Hungarian scientist and philosopher Michael Polanyi argued “we can know more than we can tell” (Polanyi 1967).

All knowledge is attained through a process called “tacit knowing,” the concept originally proposed by Polanyi. It suggests that you gain knowledge through direct interaction with the environment, navigated by a subjective belief. Tacit knowing involves four steps (Nonaka, Hirose, and Takeda 2016) as follows (See Figure 1):

- 1) We physically interact with various people and events based on the knowledge and purpose we have.
- 2) We gain tacit knowledge through the direct experience.
- 3) We decide where to pay attention to in the accumulated knowledge, shifting focus between its details and the whole, and discover new meanings.
- 4) The new meanings are synthesized into the knowledge we already have.

In the stage 1) and 2), the subconscious/

unconscious part of the mind may play a major role in gaining tacit knowledge, but in the stage 3) and 4), the consciousness engages in the process critically to capture and synthesize knowledge. By repeating these four stages, you are able to create new knowledge. Through the four stages, different people can derive different meanings from an event or subject matter, because they have various kinds of personal experiences from the same event or subject matter.

Take a look at how we conceive the meaning of “marriage” through the synthesis of knowledge based on our personal experiences. Marriage may feel pleasant if one is in a “happy” marriage, spending a quality time with the spouse and taking care of each other well on a regular basis, etc. However, marriage can appear a harmful institution, if one is in a broken marriage or experience an intense divorce, in which case, one may even never wish to be married again. The environment or life condition also affects marriage. For example, if your professional life gets time-consuming and leaves little time to spend with your spouse, one may start to feel the marriage as burdensome or something negative. How one feels about the marriage can always change as one personally experience things in- and outside the marriage over time. As is shown, personal experience, which arises through tacit knowing, shapes meanings.

Personal experience is captured through the body, not just by the brain. This is why knowledge cannot be acquired purely by the operation of the brain. Body and the five senses enable us to directly

interact with people and the environment. This is not to say that body or the five senses are merely the vehicle for the brain to grasp the environment. It is rather that our mind encompasses the physical boundaries between the body, brain, and environment. This view is called “embodied mind” or “extended mind” (Varela, Thompson, and Rosch 1993, Clark and Chalmers 1998). This indicates that a certain place is more suitable to create a certain kind of knowledge than other places. Direct bodily engagement with others and the environment enables the mind to explore the dynamic reality we face and allows us to capture its essence, which then fuels knowledge creation.

As personal, bodily experience is highly subjective, knowledge creation also always starts with subjectivity. Knowledge is always biased and never completely objective. As Alfred North Whitehead (1954) argues, “there is no whole truths; all truths are half-truths. It is trying to play them as whole truth that plays the devil” (p. 14). As many people with various backgrounds and experiences as there are in this world, there are a variety of views about any reality, even when multiple people experience the same phenomenon together (Cornelissen and Werner 2014). Thus, knowledge creation starts with respecting and valuing different experiences and perspectives.

All of the above direct us to the contextual nature of knowledge. Since experience happens in a certain time and space, knowledge reflects a certain reality of a particular context in which the experience emerges. This means that some knowledge formed in a certain context may not work the same way in another context.

### *There Pillars of Knowledge Maneuverability*

The U.S. Marine Corps trains the individual Marines and execute its missions according to the understanding that tacit knowing is the fundamental process of knowledge creation. The organization neatly incorporates the essential characteristics of knowledge—the bodily, subjective, contextual—into their organizational practices. Based on the theory of tacit knowing, we now explain each of the three pillars that enable and sustain knowledge maneuverability of the U.S. Marine Corps.

### 1. Purpose and Values

The US Marine Corps is primarily driven by purpose and values (Katzenbach and Santamaria 1999). Their purpose and values constitute their identity to the extent that they say, “you don’t join the Marines, you become one.” The US Marine Corps’ organizational mission is “to win [its] nation’s battles swiftly and aggressively in times of crisis,” and their core values are comprised of “honor, courage, and commitment.”<sup>5)</sup> They are infused into numerous principles for any Marine to follow, such as “always give 100% of yourself,” “respect all others,” “never compromise,” “obey orders instantly and willingly,” “never quit and never give up.”

As the first phase of tacit knowing illustrates, knowledge is fundamentally shaped by purpose and values. They clarify what to look for or what validates or invalidates our existing beliefs. What one perceives as important, truth, useful, or beautiful—whether consciously or unconsciously—shapes a series of judgments that create one’s personal knowledge.<sup>6)</sup>

Take an example of adversarial judicial system, a system used in Common Law countries, where two opposing parties fight for their own case. Each party presents a version of facts favorable to their position that will be challenged by the other party before a judge or jury, who attempt to determine the truth and pass the judgment accordingly (Hale 2004). Since each party has different, typically opposing, objectives, they present often contradictory truths and narratives about the case at the court, even though they are about the same incident. In this example, their differing objectives guided them to focus on a different set of evidence or interpret the same evidence, producing different knowledge.

Similarly, values shape what appears to be truth. If you believe in Christianity, for example, you would think that God created the earth and all the living things on the Earth (Paley 1802). However, if you believe in modern astrology, you may think that the Earth was created by the Big Bang, and that all the living things emerged purely out of the evolutionary process over several billion years (Knoll and Nowak 2017). Their knowledge of how the world came to be differs because of their distinct value systems.

In short, both purpose and value direct our attention to certain aspects of realities we face and become the criteria for assessing what is “true” or “good” in these realities. Different focuses and criteria, even if they are about the same phenomenon, result in different meanings, truths, and hence, in knowledge. In this knowledge paradigm, organization can set up a purpose and values for its employees to facilitate knowledge creation process.

The Marine Corps mandates that all recruits memorize their core values. The three core values of the Marine Corps—“honor” (integrity, responsibility, accountability), “courage” (do the right thing, in the right way, for the right reason), and “commitment” (Devotion to the Corps and my fellow Marines)—are printed on red cards and handed to every recruit to be carried around all the time (Kerr 2013). Doing so assists Marines construct a set of behavioral scripts (Bower 1979) that reflect those values even under any demanding circumstances.

Besides, the Marine Corps deploys a physical approach to inculcate the organizational principles, which embody the purpose and values of the Marines in all the recruits. The recruits experience those purpose and values directly in practice during the boot camp. At the boot camp, the recruits not only just remember the organizational mission (purpose) and values but commit to and act out the principles that uphold them. Throughout the boot camp, the recruits are ordered to do numerous tasks that are seemingly “impossible” and physically taxing to complete. The boot camp culminates in the notorious, 54-hour long continuous field exercise called “the Crucible.”<sup>7)</sup> In this drill, recruits are required to overcome a series of grueling challenges—such as combat assaults through mud pits and under machine-gun fire—with little sleep, rest, or food. As we fundamentally acquire knowledge through our body, suggested by the process of tacit knowing, physical practice of principles helps the recruits accumulate the tacit knowledge of what you need to do to be a Marine.

Besides the physical ordeal, the drill instructor uses historical narrative to make sense of the meaning of the drills that the recruit goes through. Throughout the Crucible, the drill instructors constantly cite the heroic acts of Medal of Honor winners to the recruits to contextualize what it means

to be a Marine. Through this process, the recruits take pride in themselves, in their units, and this pride strengthens their energy and builds enduring loyalty to the organization after the boot camp is over. The historical narrative of the Marine Corps in the midst of the physical ordeal teaches the recruits the legacy of the Marine Corps, building in them an identity, disciplines, and endurance of a Marine.<sup>8)</sup>

Instilling purpose and values to organizational members enhances the quality of the organizational knowledge creation. This initiation process builds foundational beliefs and values in the organizational members, which guides them to figure out what to see and what to do. In short, the purpose and values form the basis of judgment skills for the organizational members.

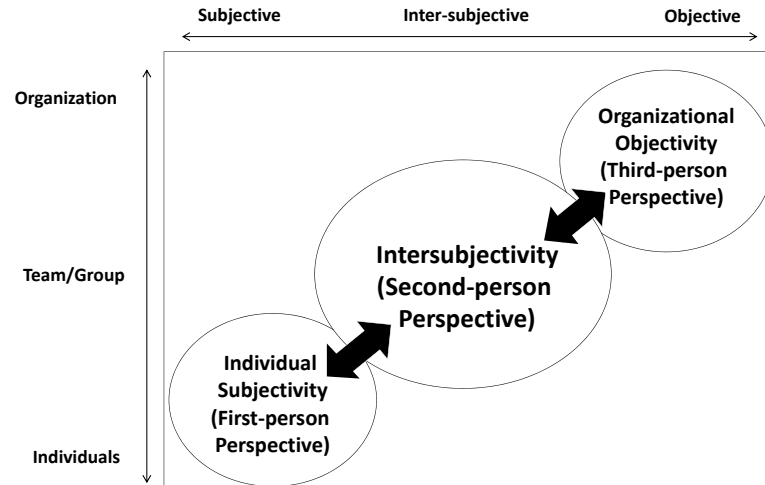
## 2. Intersubjectivity (forming the perspective of “us”)

Knowledge maneuverability requires the organizational members to share their knowledge and inspire with one another to create new insights and ideas. This “sharing” cannot be successful unless the members of the organization develop a certain kind of bond or relationship with each other, infused with “intersubjectivity.”

Intersubjectivity is the state of interpersonal relation where subjective perspectives are shared with multiple individuals. Edmund Husserl explores the mechanism of intersubjectivity and argues that intersubjective experience emerges from empathizing with others by “putting one’s own shoes into others.” (Husserl 1999, 1970, 1973). Husserl calls this mechanism of empathy “pairing,” a condition where the narrow egoism that separates individuals vanishes, making them feel as if they are intimately connected to one another on a visceral, sensory level. Intersubjectivity is the subjectivity of “us” that emerges when people mutually and wholeheartedly empathize with each other.

As the process of tacit knowing suggests, knowledge arises from the relationships between people and the environment that they are embedded in. Knowledge is always created in a certain relation with somebody and somewhere at a certain time period. Given such nature of knowledge, organization ought to encourage its members to build intersubjectivity with others in a certain environment





**Figure 2: Intersubjectivity as a Bridges between Individual Subjectivity and Organizational Objectivity**

to create and find new, appropriate meanings.

Intersubjectivity bridges individual (or subjective) perspective and organizational (or objective) perspective. As an individual interacts with others on a personal level, he or she gradually senses and understands their perspectives. In this sense, building intersubjectivity with others is essentially about acquiring a second-person perspective. These shared perspectives together comprise the objective, organizational perspective that is oriented to the organizational vision, values, and philosophy. In order to enrich subjective perspectives of individuals and the objective perspective of the organization, intersubjectivity, established in a team or group setting, becomes the middle ground to connect the individuals and the organization.<sup>9)</sup> To personalize the organizational objective and values to each member, managers need to build intersubjectivity with them and speak from the second-person perspective. Figure 2 illustrates the relationships between intersubjectivity, subjectivity, and objectivity.

The state of intersubjectivity allows people to share tacit knowledge. As tacit knowledge involves one's subjective sense, feeling, or emotion, it is difficult to know the tacit knowledge of others purely through logical conversation. When multiple people mutually empathize with one another on a visceral, sensory level, they can perceive the sense, feelings, and emotion of others (Gallagher 1986).

### *Creating ba for intersubjectivity*

Successful organizations, such as the Marine Corps, creates a platform for its members to form intersubjectivity with each other, where they share experience and engage in a dialogue together. We call this platform *ba* and defined it as a “shared context in motion” (Nonaka and Konno 1998, Nonaka 1988). *Ba* can be thought of as a dynamic platform where people share context and interact with each other. In a *ba*, every participant brings and shares their own context and knowledge to create new knowledge. *Ba* is a concept originally developed by a Japanese philosopher Kitaro Nishida and is roughly translated into “place,” “space,” or “field” in English. *Ba* is *in motion* because it is constantly changing and shifting—participants bring their own knowledge and background and relate to and collaborate with each other, changing their shared context and creating new meanings.

Although it is easier to conceptualize *ba* as just a physical space, such as a meeting or conference room, *ba* can take many forms as long as it can harbor appropriate interactions. *Ba* as a place can be physical (i.e., office, laboratory, factory), virtual or digital (i.e., email, video or online chat, SNS), mental (i.e., shared experience, ideas, ideals), or any combination of them. For example, the Marine Corps has a form of *ba* that is a professional journal publication called the *Marine Corps Gazette*. Founded in 1916, *Gazette* provides a forum for the exchange of ideas to advance the knowledge and

spirit of the Marine Corps. The willful Marines articulate their honest and critical opinions through this forum to suggest changes and improvements for the organizational success. Thanks to *Gazette*, the honest ideas of any rank of Marines are shared throughout the organization.

*Ba* is an interactive space where people share their contexts and work together to achieve a certain goal. The interaction in *ba*, however, needs to be distinguished from ordinary human interaction because participants of *ba* need to *commit* to a certain objective. Without the commitment, a space remains a place of aimless, unproductive interaction. Instead, people in *ba* have to share a sense of purpose and needs to make conscious effort to achieve the goal.

Besides, knowledge is attached to and contained in *ba*. That is, knowledge is a part of *ba* itself. Just as a baker cannot gain his or her real knowledge of baking without actually baking bread or pastry repeatedly in kitchen, certain knowledge cannot be obtained without a certain environment. In this sense, we need to think critically about what kind of place or space is appropriate to build *ba* that is conducive to fulfilling each purpose.

Selflessness is a key to achieve deep intersubjectivity and creation of *ba*. To transcend one's own limited perspective or boundary allows people to share and synthesize knowledge with others. Ego-centric attitude and behavior prevents us from forming intersubjectivity. The Marine Corps has its recruits practice selflessness in its boot camp. The recruits cannot use the term "I" to refer to themselves: each of them must call him or herself "this recruit." Drill instructors also frequently deny the personality of the recruits with the endlessly harsh words and sometimes imposes other penalties. While those practices can seem mental abuse of the recruits, they help the recruits realize that protecting their own ego should not be the priority in the Marine Corps. This realization facilitates the formation of profound intersubjectivity among each other.

Bootcamp also emphasizes teamwork and collective responsibility. The recruits are divided into teams that are tasked to compete against one another. They learn the practical meaning of teamwork and collective responsibility by experiencing

the reward of collaboration and the cost of the mistakes by individuals. For example, if someone drops the rifle, everybody on the team is punished. Such rules enable recruits to learn that a mistake by one member can cost the lives of all the team members in a battlefield. Through such an experience, they not only learn the individual responsibility toward the team safety and success but also the attitude to support each other. Trust and love are built among the recruits out of this process.

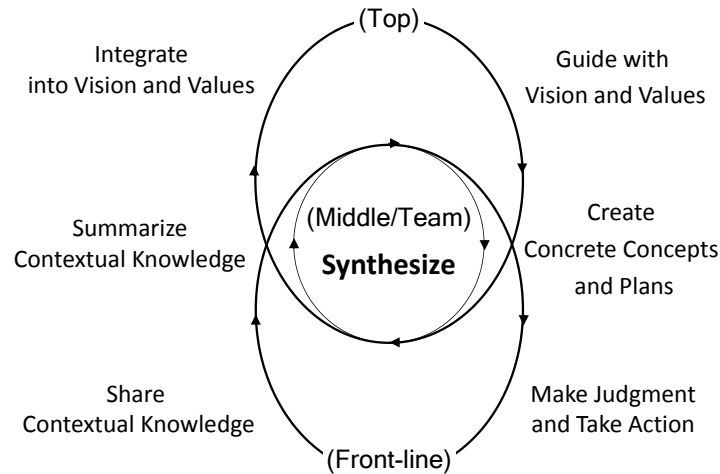
### 3. Middle-up-down Management (Distributed Leadership)

Since knowledge is created locally in various contexts where each individual operates, organizational members—from the frontline to top management—commonly have contradictory opinions and ideas from each other. The key to mobilize the contradictory knowledge within an organization depends on its leaders' capacity to synthesize and embrace those contradictions. To facilitate the process of knowledge synthesis, the Marine Corps adapt what we call "middle-up-down" management (Nonaka 1988).

Middle-up-down management features team leaders in organizations—leaders of a task unit or a project team—to facilitate the synthesis of contradictory knowledge through building *ba*. These leaders build *ba* with their colleagues and bosses to promote the process of knowledge creation dialectically (Nonaka and Konno 1998). In a close, team setting, the leaders, colleagues, and bosses interact and empathize with each other and try to understand different views and values. In this way, the team achieves the synthesis of individual subjectivity and organizational objectivity for knowledge creation.

When the leaders interact with the members with rich tacit knowledge about the realities of the frontline environment, the leaders turn their local knowledge into something useful at the team or organizational level. In doing so, team leaders also orient the frontline members toward a purpose of the team or organization, giving them a conceptual framework to make sense of their own experience and contextualizing their knowledge in larger and broader relationships with the environment and organization by using strategic narratives (Nonaka 2015).

In the middle-up-down management, top



**Figure 3: Middle-up-down Management**

management creates the vision and core values of the organization and inspire the team and project leaders (or middle managers). On a team level, these team leaders come up with concrete concepts and plans that frontline employees can understand and practice. Conversely, the leaders also gather insights, opinions, complaints of the team members who engage in their particular contexts, and summarize and translate their ideas and concerns for top management to integrate into the organizational vision and values.

In short, the middle-up-down management creates an effective dialogue between all the members of the organization. The mechanism of middle-up-down management is summarized in Figure 3.

The Marine Corps illustrates a form of the middle-up-down management. The Marine Corps delegates autonomy and responsibility to allow frontline Marines to actively make autonomous decisions. This organizational system is based on the understanding that war environment is highly uncertain, dynamic, turbulent, and complex. Under such conditions, a strict top-down decision-making cannot accommodate with the contingent and rapid changes of the battlefield. To prioritize speed, flexibility and ability to exploit opportunities as the situation unfolds, the Marine Corps adopt a decision-making principle called “mission command control.”

“Mission command control” is a decentralized form of decision-making principle,<sup>10)</sup> featuring an autonomous, on-the-site decision-making process. In this system, while top officers take charge of

command, control for separation, the leaders physically on the battlefield are authorized to dictate control with a bottom-up approach. The members on the battlefield rely on their understanding of the situational requirements and the overall mission to make decision and take action. In other words, commanders decide what needs to be done and why but leaves the authority to determine *how* to get it done to the on-site Marines.

This decision-making system can reconcile the needs of the top management and the on-site Marine units. They understand that technological assistance and the understanding of preexisting situation cannot reflect all the details or predict the potential changes in the dynamic battlefield and that our instinct and tacit knowledge capture something as subtle and implicit as the motivation of the enemy or the attitudes of the civilians in and around the battlefield. Only by actually being in the situation and perceiving it directly on the frontline through five bodily senses can a Marine make effective tactics to defeat the enemy.<sup>11)</sup>

## CONCLUSION

In this article, we showed how the U.S. Marine Corps cultivate organizational knowledge maneuverability for creativity, adaptability, and speed. Based on the paradigm of how humans create knowledge, there are three essential organizational factors that every managers should focus on: 1) instilling good purpose and values to organizational



members, 2) creating *ba* to foster intersubjectivity among employees and beyond, and 3) practicing middle-up-down management to allow team or project managers as well as employees to exercise and practice their own judgments in the right place and moment. These three kinds of practices from the Marine Corps gives us an invaluable insight to how to build organizations that can survive, thrive, and innovate in complex, uncertain, and rapidly changing environments.

In the era of AI and IoT, we tend to lose sight of the potential of human capability. Excessive emphasis on data-driven, rationalistic, analysis-based approach to management can downplay humans' fundamental, tacit capacity of knowledge creation, especially when done improperly (McCloskey 2008). In 1999, Peter Drucker said, "the most valuable asset of a 21st-century institution (whether business or nonbusiness) will be its *knowledge workers* and their productivity" (Drucker 1999). Knowledge workers must have a strong motivation and purpose to work, featuring quality over quantity, spontaneity over control, and workers as capital asset rather than as cost. Drucker believed that the future of developed countries lies in knowledge creation management and knowledge maneuverability.

Knowledge maneuverability is cultivated through "human-centric" management. Human beings are the ultimate creator of knowledge. In the age of the ever-evolving power of machine and technology, unleashing the full potential of its employees to create and practice knowledge can bring unique competitive advantage to each organization. In organizational management, humans should no longer be regarded as "tools" but as active "agents." Organizations need to realize that a degree of autonomy and spontaneity has to be spared for improving creativity, speed, and adaptability. Knowledge maneuverability, thus, is essentially about giving everybody in the organization more freedom and responsibility, rather than subjecting them to be passive and subordinate. It is about empowering them to "live" their own life to the fullest, rather than forcing them to live someone else's life. In doing so, they help organization and society to prosper. Finally, fostering this healthy, harmonious, and reciprocal relationships between

individuals and organization will equip the organizations to realize what all the organization and people ought to strive for: To make society a better place.

## NOTES

- 1) This operation requires detailed integration of each air mission with the fire and movement of these forces. The Marine made advances in close air support by emphasizing doctrinal improvements, rather than new technology. They highly specialized the role of aviation—to support ground troops in "small wars"—which minimized the risk of friendly fire during the operation (Muller 1996).
- 2) In the modern warfare, we are entering into the era of "fourth-generation warfare": a form of warfare where a major participant of the war is not a state but rather a violent non-state actor who leverage on political, social, economic, and technological changes. The state of warfare has thus become more complex, uncertain, and volatile. In fact, the casualties against insurgents are higher than against Saddam's armed force (Hammes 2006); (Evans 2008).
- 3) We highlight 'justified belief' rather than the absolute 'truthfulness' of knowledge, because we focus on how people think, behave, or act based on their beliefs. The 'truth' here means what we come to believe as such, which is fundamentally different from the static, universal Truth. The creator or practitioner of all knowledge is always individuals; their beliefs and commitments as well as values and ideals drive the creation of knowledge. As Michael Polanyi (1967) quoted St. Augustine, "[u]nless ye believe, ye shall not understand." Accordingly, we consider that the knowledge that is not believed in or acted upon by anybody consists purely of explicit knowledge—what Karl Popper calls "knowledge without a knowing subject" (Popper 1979): 109).
- 4) Wilfred Searle's (1969) idea of "speech act" points out the close relationship between language and human action in terms of "intention" and the "commitment" of speakers.

- 5) See the official website of the United States Marine Corps for their mission (<https://www.marines.com/content/marines/en/who-we-are/our-purpose.html>), and values (<https://www.marines.com/who-we-are/our-values.html>).
- 6) And this is why firms take different forms and strategies from each other—because they envision different futures (Nonaka and Toyama 2007).
- 7) <http://recruitparents.com/bootcamp/crucible.asp>.
- 8) This process is called “Internalization,” where we consciously practice based on explicit knowledge to acquire new tacit knowledge. Empirical research of organizational knowledge suggests that Internalization is possible (Nonaka and von Krogh 2009).
- 9) Intersubjectivity also serves as the source of both the subjectivities of the individuals and the objectivity of the organization. That is, individuals come to know who they are or what their thoughts are through the interaction with others; the objective perspective of organization also comes from individuals getting exposed to what other people thinks about the organizational perspective. Intersubjectivity, in this sense, is the primary state where different individuals share their understandings and feelings of each other, which allows them to communicate on a deep level.
- 10) “Mission command control” is contrasted with the concept of “detailed command control.” Detailed command control is characterized by a strict centralized authority exercise, where commanders give orders and plans that are detailed and explicit, and their successful execution requires strict obedience and minimizes subordinate decision-making and initiative.
- 11) Besides, “mission command control” allows the Marines who risk their own lives to decide what to do on the frontline duty. This can fire up the morale of the other Marines because soldiers fight harder when they are in charge of their own decisions, action, and lives.

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Ikujiro Nonaka is Professor Emeritus of Hitotsubashi University, Japan. His most recently publication includes *The Wise Company: How Companies Create Continuous Innovation* (2019). Kota Uno is a freelance business writer and producer, and a former Research Assistant of Ikujiro Nonaka at Hitotsubashi University.