

## **BA Theory/Field Theory: BA-Oriented Thought and Language**

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**Abstract.** The conceptual approach of *ba* (a Japanese term that combines the meanings of place, locus, situation, and field) has existed in the East since ancient times. The distinguishing characteristic of *ba*-oriented thought is non-separation of subject and object and non-separation of self and other. Modern approaches apprehend subject and object as different entities, and consider the self and the other to be entirely different entities. Free subjectivity understands the object that has necessity as an individual and its cause-and-effect relationship, while the other stands as an objective thing to the self. Quantum field theory and brain science, however, have shown that the subject and object are not distinctly separable, and that the self and the other are profoundly interlinked. In *ba*-oriented thought, there is first a locus (*ba*) where interaction occurs between subject and object and between self and other. It is from that locus or field (*ba*) that subject and object, the self and the other, come into being, and what takes this *ba*-oriented thought as its foundation is *ba* theory. Language is also generated from the *ba* where the self and the other interact.

**Keywords:** *ba* (field), non-separation of subject and object, non-separation of the self and the other, quantum field theory, complex system, mirror neuron.

### **1 BA Theory/Field Theory**

The conceptual approach termed *ba* (a Japanese term that combines the meanings of place, locus, situation, and field) has existed in the East since ancient times. It is found in the Buddhist conceptual approach and in Japanese thought, and the distinguishing characteristic of this conceptual approach could be summed up as non-separation of subject and object, or non-separation of the self and the other.

The foundation of the modern era's conceptual approach is in Newtonian mechanics and Cartesian philosophy. Its characteristic features are the way it distinctly separates the subject and the object, and the way it conceptualizes the self and the other as clearly distinguished one from the other. The object is a realm of necessity and the subject is a realm of freedom. The object is made from a substantive individual, and the causal relationships between individuals can account for all things. The individual person is a subject that cannot be divided any further, and it is considered an entity that is clearly separate from other people.

In the East, by contrast, since long ago the subject and the object have not been distinctly separated, and the self and the other have not been considered to be clearly differentiated (Suzuki, 1972). That which takes this subject and object, self and other, and enfolds them within itself without distinguishing them is the *ba*. The first to think of this *ba* philosophy was Kitaro Nishida. Nishida's view was that the subject and the object are not differentiated in experience at the moment of experience (pure experience), and that the subject and the object first emerge when reflective retrospection occurs (Nishida, 1979). Later he used the term place (*basho*) for that which enfolds this subject and object. This is why Nishida's philosophy is also referred to as a philosophy of place. The concept that includes subject and object, self and other in itself was thus named place in Nishida's philosophy, but here this will be expressed

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instead by the term *ba*. These words place and *ba* are employed in a variety of ways according to the context. Here, however, for the sake of simplicity, they will all be expressed collectively by the term *ba*. The conceptual approach that is founded in this thing called *ba* that enfolds subject and object, the self and the other, in this way will be referred to here as *ba* philosophy. Scientific inquiry into this is *ba* theory, and the ideological apperception of it is *ba* thought.

This is not to suggest that there were no doubts in the West regarding modern Western philosophy. The question of why, when the self and the other have separate existence as subjects with regard to each other, one human and another can understand each other (why is understanding other minds possible) was a topic in Husserl's phenomenology, which explained that the other's perception of the subject is made possible by empathy. Heidegger, by contrast, found that there is co-existence between one human being and another, and sought to resolve the problem of understanding other minds by means of this co-existence. As he saw it, the self and the other are not separated entities, but rather possess co-existence from the start (Heidegger, 1927). Adam Smith, J. J. Rousseau, Schopenhauer, Karl Marx, Emmanuel Levinas, Tetsuro Watsuji, and others have all made observations on the connectedness of the individual person and the individual person, but it was Heidegger who posited a basis for human existence in the co-existence of the self and the other.

These positions, however, all belong within the realm of philosophy. Where the validity of the conceptual approach of *ba* was shown clearly and scientifically was in the science of living organisms, which is founded upon the science of complex systems. Living organisms are entities that exhibit special behavior in terms of the laws of physics. All things essentially are moving toward stasis, thermodynamically speaking, and their entropy increases. Living organisms, however, contain mechanisms that reduce entropy. The activities of living organisms are complex systems. Living organisms are entities with the abilities to change the self itself and continue surviving by assimilating information in the interior of the self.

Professor Emeritus Hiroshi Shimizu (Doctor of Pharmacology) of the University of Tokyo understood living organisms as entities that live in the *ba* of non-separation of the self and the other. He named the field that studies the activities of these living organisms that carry on their lives within a *ba* as the relational study of biological self-organization. This applied the self-organization treated in the science of complex systems to living organisms, and it considers living organisms to engage in self-organization within the *ba*. In other words, the individual cells that make up a living organism and the living organism itself are situated within a single *ba* where they are not differentiated and where they interact. In the same way, the life of the earth as a whole (the natural environment) and individual living organisms are considered to exist within a single *ba* within which they are not differentiated and within which they interact. Human beings and nature, the self and the other, interacting as single entities within a *ba* of this kind, are viewed as living organisms. Each individual cell has a self and engages in its own unique activity, and even while doing so acts cooperatively with other cells, whereby it is also interacting with the activity of that creature's body as a whole. Dr. Shimizu refers to this as twofold life (dual mode thinking). While such entities live as individual cells, they are also living as parts of living organisms. In the same way, while individual human beings are living as individuals, they are also assimilating environmental information, interacting with other living organisms and the environment, and living as parts of living organisms, as well (Shimizu, 1996).

Such a conceptual approach is not by any means eccentric or outrageous. It is, rather, deeply in agreement with present-day science. This point will be examined below.

## 2 BA Theory and Present-Day Physics

Modern science is founded upon elemental reductionism, which breaks things down into elements called molecules, atoms, and quarks, and combines those elements as its explanation for everything. Such science is said to have reached a dead end. The reason for this, it is said, is

that such science is inconsistent with the real world understanding that just gathering together parts is not enough to yield the movement of a whole.

Modern science is structured to separate the human consciousness (the subject) and the object (the thing) entirely, so that consciousness is looking at the thing from outside that thing. Considering this more strictly, however, it is apparent that the subject and the object are not unambiguously differentiated, and the self and the other have aspects in which they are not unambiguously separate. The subject and the object, the self and the other are interacting entities, and modern science has ignored the aspects in which such connections exist.

Ba theory was born out of the systems of the natural world, and it is compatible with the way of perceiving nature suggested by present-day physics (quantum field theory). Present-day physics does not consider things as independent entities that have self-existence apart from the *ba*. In that sense, the conceptual approach of *ba* could be said to underlie the present-day scientific conceptual approach.

Physics made the transition from Newtonian mechanics to quantum field theory during the 20th century, and the science of complex systems appeared at the end of the 20th century. The basis of elemental reductionism is in Newtonian mechanics, and so it is not compatible with today's physics. *Ba* theory is compatible not only with the science of complex systems, but also with quantum field theory, and it finds support in both. As noted above, *ba* theory is concerned with the holistic *ba* that is in the background of the individual (entity), and its focus is not as much on the individual as it is on the *ba* in which that individual is situated. In present-day physics, the individual does not have real existence as an individual, but is rather an entity that repeatedly gathers, scatters, comes into being, and passes out of existence within the *ba*. The individual is able to determine the location and kinetic energy of that activity, and in this it first becomes able to determine its real existence as an individual. Present-day physics (quantum field theory), however, has clearly shown that the location and the kinetic energy of an individual cannot be determined simultaneously. The properties of the individual entity cannot be definitely established except in the *ba* within which it is situated. Modern elemental reductionistic science dissects the individual from the *ba* to study its properties, but an individual that is apart from the *ba* does not exist.

### **3 BA Theory, Brain Science, and Ethology**

As discussed in Section 1, the distinguishing characteristic of *ba* theory is that it is a conceptual approach of non-separation of subject and object that does not divide up the subject and the object, and a conceptual approach of non-separation of the self and the other that does not divide up the self and other people. In *ba* theory, the object is not situated someplace far removed from the self that is the subject. Rather, it considers the self that is the subject and the thing that is the object as both being situated within a single *ba* that includes the self. Furthermore, the self and other people are not considered to be completely divided. Rather, they are seen as existing in a unitary manner within the *ba*. This conceptual approach accords well with present-day brain science and ethology.

In present-day brain science, the conscious activity of the human being (the subject) is not situated at some place removed from the physical matter called the brain (the object), nor are the things that we have been discerning so far as objects accurately reflecting the outside world. Brain science has made clear, rather, that they are selected, processed, changed in shape, and put into order by the brain. In other words, it is not possible to elucidate the object without referring to the subject, and not possible to elucidate the subject without referring to the object. In that sense, either is a self-referential entity. This is in accord with *ba* theory. There is also the fact that the brain has neurons that fire in the same way for actions by the self and actions by the other. Brain functions that point to a cooperative collectivity between the self and the other are coming to light (Iacoboni, 2008). Heidegger's co-existence is also being demonstrated.

Human beings think that they are consciously and freely controlling the body of their self, but it is only a portion of the human being's activity that is under the control of the consciousness. In most cases, there is sensory input that is not conscious, and perceptions are being shaped in ways that the person does not realize (Shimojo, 1996). Moreover, human beings initiate action before they are conscious of it. Even though the intention has been to issue an order from the frontal lobe to press a button, the order has already been issued before that, unconsciously, and the action of pressing the button is already being carried out before awareness of it comes (Libet, 2005).

In other words, human beings communicate by transmitting and receiving information to and from each other without being consciously aware of it. Apperception of the conscious information transmission alone will not enable apperception of the content of the communication. In order to think about communication, it will be necessary to think about the *ba* that also includes the transmission and reception of unconscious information.

There is also empathy between one human being and another, and human beings are inclined to feel considerate toward other people. That feeling of consideration links the self and the other together, and gives rise to the human attitude of cooperation with other human beings. That this kind of empathy and cooperativeness are not the unique possession of human beings is also being made clear by ethological research. It has been established that there are cases when even animals other than human beings or other primates have empathy one for the other, and take cooperative action that shows consideration of one for the other (de Waal, 2010.) This is in accord with *ba* theory, which takes the view that human beings and animals alike possess within their self a function that sustains a larger holistic life, and that, between them and the other, they possess a non-separate existence.

Furthermore, in order to grasp living organisms as entities that possess this kind of non-separateness of subject and object and non-separateness of the self and the other, the approach is not to think from a position that dissevers the object from the subject, nor to think from a position that dissevers the other from the self, nor that the object and the other are entities with independent self-existence separate from the subject and the self. It is necessary rather to understand that they exist within the interrelatedness of the subject and the self. That is the approach taken in *ba* theory.

#### **4 BA Theory and Linguistics**

Modern society has held to the understanding that the human subject is free and moves its body according to its own free decision-making. Present-day biology and brain science, however, are showing that this understanding is mistaken. The body (including the brain) and the subject cannot be understood apart from each other. Nor can the body be understood as something that is formed apart from the environment. On the one hand, the images of the body and the object that possess individuality are formed, and on the other hand, the subject (the ego) that possesses individuality is formed, both amid the interactions of the body and the environment.

We human beings float suspended in our mothers' amniotic fluid during our fetal stage. It is within the environment of this maternal body that we take in nutrients, hear the sounds of our mothers' heartbeats and talking voices, and develop as fetuses. After we are born, as infants we feel the sensations of touching, smelling, and tasting our mothers' skin, we hear our mothers' voices, and we form our mechanisms of visual perception in accordance with environmental conditions. The brain also grows the cells required to adapt to that environment, while unneeded cells, on the other hand, die away. That is to say that brains (i.e., bodies) possessing their respective individuality are brought into being in interaction with the environment.

An interaction begins between the newly born infant and its mother whereby they smile at each other. It is thought that this interaction forms mirror neurons (MN), which react in the same way to activities of the other as to activities of the self. The brain undergoes self-organization through interaction with the other. It has been reported that even infants as young

as six or seven months have already developed neurons that distinguish the actions of human beings, the natural movements of things, and the movements of human beings on television (Shimada & Hiraki, 2006). That is, human beings are already capable during infancy of distinguishing the movements of real human beings from the movements of other things and from virtual images. As these MN undergo self-organization, the activities of the self and the activities of the other are formed in an increasingly unitary manner so that the movements of the self are patterned after the movements of the other, and it becomes possible for the activities of the other to be sensed from the activities of the self. (This is the reason that mother and child are observed in a unitary manner.) Meanwhile, the brain cells that distinguish the self and the other start to become active. (These are thought to be brain cells in a different location from the MN. Research on the brain function of patients with mirror sign or asomatognosia has been reported to show that neurons capable of self-awareness are located in the right supramarginal gyrus (cf. Feinberg, Haber & Leeds, 1990; Uddin et al., 2006)). This activity gives rise to a separation of the self and the other. The MN automatically give a profound understanding of hand movements and bodily gestures by other people, and make it possible to mimic those gestures. The existence of the MN makes it possible for people in a particular *ba* to share an understanding of the dense layers of meaning in the words they speak to each other. When viewing another person stretch out his hand to a tea cup and grasp it, and this action takes place in scenarios (a) where there is no particular context, (b) where the context is that the tea is finished, and (c) where the context is that the person is starting to have the tea, then comparison of these scenarios shows that MN activity becomes increasingly active from (a) to (c), in that order (Iacobini, 2005). This suggests that there is a system within the brain that reacts with instantaneous understanding to the intentions of another human being, so that there is no need to put oneself in the other person's position and infer those intentions.

One explanation of how it becomes possible for a human being to understand the hearts and minds of other people is in the theory of mind, which finds that the ability to place oneself in the position of other people and infer their state of mind means that it is possible come to understand the mind of the other. While the theory of mind can be applied to children at the age of four and up, however, the diagnosis of autism is made at ages two to three. At this stage, what the theory of mind refers to as the false-belief task is not useful. It is more appropriate to think of autism as occurring not because that person is incapable of putting a theory of mind into practice, but rather because there is an impairment in that person's ability to mimic others. The cause of dysmimia is thought to be in an impairment of the MN.

The important point here is that the operation of the MN is not operation of a nervous system in which the self imitates the other and the self and the other are separate from the beginning. The theory of mind is structured so that the self and the other are separate, and the self infers the actions of the other from the viewpoint of the other. In the MN, however, the self and the other are not separate in the first place. The conduct of the other and the conduct of the self are not distinguished one from the other, and the MN reacts in a similar manner to both. Human beings are entities in which the self and the other are originally non-separate. They are co-existences. From that *ba* of non-separateness, the self and the other gradually separate, and the separation of mother and child comes about, but that co-existence does not pass away. In other words, at the same time that human beings exist as individual entities, they are also "being with" (*Mitsein*) as a kind. The human being is an entity with complementary existence as individual and kind (Kido, 2005).

This kind of co-existence characterized by non-separation of the self and the other is also at the foundation of language, which is thought to come into being through interaction of the self and the other. We inhabit similar environments, and the body basically has the same structure for all of us. The surrounding world that human beings live in and the sensory mechanisms with which human beings are endowed are also things they have largely in common. Under these circumstances, the interaction between the surrounding environment and the sensory

mechanisms leads, on the one hand, to the creation of sensory mechanisms that are adapted to the surrounding environment, and on the other hand, the surrounding environment is articulated by these sensory mechanisms. As a result of this kind of interaction between the environment and the body, an image of the semantic content of language, or in other words, of the signified, is formed. This becomes the foundation upon which linguistic gestures and voices are linked together as signifiers, which is thought to bring sign language and spoken language into being. The result of this is that languages all possess similar kinds of syntactic structure and translation is made possible. There have been reports that MN functionality is also involved in the encoding of these syntactic structures and other such hierarchical structures (Molnar-Szakacs, Laplan, Greenfield & Iacobini, 2006).

Interaction also occurs between the human being's consciousness and body. In other words, there are aspects in which the consciousness controls the body, and there are aspects in which the body controls the consciousness. That is interaction. Human beings use their bodies to articulate their environment before they start to speak in language, and they apprehend the meaning of actions through the interaction of mother and child. This can also be understood from the way in which bodily movements have a deep prior involvement in the formation of language concepts (Glenberg & Kaschak, 2002). Two examples that indicate how language is created by interaction between the self and the other are the talking heads experiment (Steels, 2001; Steels et al., 2002) and the creation of Nicaraguan sign language (Kegl, 1994). In the talking heads experiment, a device is set up that has one agent that assigns a new word to a certain code pattern displayed on a white board while another agent watches this process. If that second agent matches the code pattern assigned to the word, then the word can be considered to have been encoded. It was discovered that when several thousand interactions are reiterated using this kind of experimental device, a vocabulary is gradually brought together and encoding emerges. As to the sign language in Nicaragua, it was found that the repeated interaction by hearing-impaired children there using hand and body gestures resulted in the emergence of a new sign language. These cases can both be assessed as the occurrence of self-organization in a *ba* where the self and the other interact, giving rise to language by emergence. Conversations that do not have any scenario structure advance as each participant takes in the words uttered by the other, through their responses, they originate a series of utterances. A common understanding proceeds to develop in that process, and it is thought that the concrete meanings of the linguistic expressions used in the conversation become encoded in a still more concrete manner. A *ba* for these interactions of the self and the other therefore exists at the foundation of language.

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