

(1) The previous text has already mentioned the three actions of no form: isolation, motive force, and manifestation, and has also preliminarily brought about an unfold-manifestation of how to use them. However, why are there three no form actions? Are there more?

1) The answer to this question must first be sought from within humans. As human beings, we possess three abilities. When we see an object, consciousness will isolate it as an individual object, and will also isolate it into an individual concept: what this object is (animals likely do not have the ability to isolate things into concepts). When we see an object, our human consciousness will manifest its structure, the color of its unfold-manifestation, and so on; this is the ability of manifestation of our brain's consciousness. We have imagination, the capacity for thought, willpower, passion, are moved by things, and have the motive force to realize our plans; these are all forms of motive force.

Based on my observations in various aspects, my conclusion is that we humans possess just these three basic abilities. Other abilities can ultimately be reduced to one of these three basic abilities, or to a combination of all three, or to a combination of two of them. These three abilities that we humans possess correspond to the three actions we possess: isolation, motive force, and manifestation. It is because humans possess these three actions that they have these three abilities. These three basic abilities can be regarded as the concrete embodiment of no form action on the level of human cognition and existence.

If there were other no form actions in this world, and we humans did not possess the corresponding abilities, then we would be unable to know what these actions are. For example, a color-blind person sees the world only in black and white. Even if you told them that there are various other colors in the world, it would be useless to them; they would be unable to perceive them. In other words, we humans can only understand the world through our own abilities. Anything that exceeds these limits is 'unknowable' to us.

Unless we could indirectly learn from other intelligent beings whether there are other actions besides these three—on the condition that such intelligent beings possess abilities that we humans lack. But even then, we would only know that there are other actions besides these three. This is because such an action, incomprehensible to humans, could only be understood by translating it into the terms of the three abilities that we can understand. Therefore, for humanity, these three no form actions constitute the fundamental framework through which we understand and interact with the world. Whether actions exist that are beyond our cognitive abilities is an open question, but any action that we are able to discuss and understand must necessarily fall into the category of these three or their combinations.

These three abilities that we humans possess thus limit our capacity to acquire information from the world and the types of information we can acquire. When we interact with the macroscopic world, we can only obtain three corresponding types of information: information of isolation (such as the process of change in things, the structure of things, the types of things), information of motive force (such as change, velocity, energy), and information of manifestation (such as color, taste, sensation). Thus, we know that the macroscopic world also corresponds to these three actions. As humans, we can only begin by observing and analyzing the macroscopic world from our own perspective; that is, the first step is to obtain information from the external world starting from the manifestation of intuition. Taking this as the starting point, the theoretical system of no form action theory is established.

Why, just because humans have three no form actions, would we then think that the macroscopic world also has these three actions? This question relates to epistemology and ontology, their relationship, and the relationship between the human world of consciousness and the objective world. It is impossible to obtain a definitive

explanation for this question through strict formal logical reasoning, because we are in the process of knowing the world, and this knowledge cannot substitute for the objective world that we know. (Why can our knowledge not substitute for the objective world? Can our knowledge of the world of consciousness substitute for the world of consciousness itself? These questions will be explored later). However, we can use the logical laws established by no form action theory to explain it (this issue will be explored more deeply when discussing the relationship between the three types of no form).

Part of the answer to this question is that we assume that in this world, things in both the world of consciousness and the macroscopic world are a combination of form and no form. In other words, we hold that these two worlds are unified under the framework of the two-dimensional theory of form and no form, and likewise, that the combination of form and no form in both worlds will generate the same three no form actions. This also illustrates that these three no form actions are the most fundamental actions, the highest-level actions, because they are generated directly from the combination of the two most basic dimensions: form and no form.

It is not that no form itself possesses these three actions, but rather that no form combining with different forms generates these three different actions. However, when we trace back to the ultimate cause, we ultimately arrive at no form. No form is its own cause; there is no further cause. Therefore, from a causal perspective, we can say that the three no form actions are generated by no form acting on form. (Viewing the issue from a causal perspective is, in fact, viewing it from the perspective of motive force. Viewing the issue from different perspectives will lead to different conclusions. This issue will be explored in later chapters). No form is uncaused. It is the end, the final point. We cannot study no form directly, but we can study no form action. No form manifests its action through its combination with form. Other actions can all be reduced to these three no form actions or combinations thereof.

2) In a later section, "exploring philosophy with mathematics," a mathematical approach will be used to corroborate that there are only three no form actions. Here is a brief introduction. If we use 0 to represent no form and 1 to represent form, from a purely formal perspective, no form and form, as two dimensions, have three combinations: $a=(0,1)$, $b=(1,0)$, and $c=(1,1)$. They represent, respectively: manifestation action, motive force action, and isolation action. Adding $e=(0,0)$ (which also represents no form), these four elements form a Klein four-group. The relationship among the elements (a, b, c) of this group corresponds exactly to the relationship among the three no form actions. This is not a direct mathematical derivation of the three no form actions, but rather a mutual corroboration between mathematics and no form action theory.

(2) The search for the three no form actions

It has been discussed previously that we humans have three abilities: isolation, motive force, and manifestation. However, the discovery of these three no form actions was not achieved by analyzing these three human abilities, because it is too difficult for a person to transcend the self. (In human consciousness, there are all sorts of sensations and functions; it is very difficult to discern the most fundamental things from amidst this intricate complexity). People's understanding of form can be direct, but no form action cannot be recognized directly. This is like when we are observing an object with a flashlight: we directly see the object illuminated by the light, but we cannot directly observe the light itself.

Fortunately, the development of modern electronic technology helped me; the inspiration for the method of finding these three no form actions came from computers. Of course, in discovering these three no form actions, I was also using my own three abilities.

The field of computer programming is not a philosophical one, but within this field, certain principles that align

with ancient Greek philosophical thought are objectively embodied or applied, regardless of whether this was the conscious intention of the designers. For example, in object-oriented programming languages, there is the design of classes and objects. A class is equivalent to Plato's Idea, and an object is equivalent to the participation in or implementation of that Idea. Thus, an object is an implemented instance of a class, and a class is the abstraction of objects. This is the same as Plato's Theory of Ideas. Classes or objects have attributes, methods, etc., and objects can inherit the properties, methods, and so on from classes.

All of the above demonstrates that philosophical theories indeed have applications in the field of programming. Why is it that computer programming uses philosophical theories? Computer programming is different from the natural sciences. It deals with human-related needs; it needs to handle or simulate human logical thinking, human needs, and so on. In this respect, science is powerless, and so it becomes necessary to draw upon philosophy, the highest achievement of human thought. Thus, we can use our imagination and ask: is it possible that programming languages have incorporated some philosophical ideas that humans have not yet discovered? These are philosophical ideas that had to be adopted out of the necessity to handle problems encountered in programming—or to solve real-world problems using programming languages—more efficiently, intelligently, and rationally. I think this is entirely possible.

(2.1) No form manifestation action

My discovery of the first type of no form was inspired by computers. A computer has a host and a monitor. The monitor displays the structural data stored in the host. This data is equivalent to what is called form in philosophy, and the role of the monitor is to manifest this data form. We see that the monitor's manifestation of the data form is only a manifestation; it does not change the data. In other words, the data form is one thing, and the manifestation is another. Manifestation and data form are separate; they are different things.

Inspired by this, we can imagine that in the macroscopic world, manifestation and form are also different things, and that manifestation is an individual thing. (An individual thing is not necessarily an independently existing thing. An independently existing thing and an individual thing are different concepts. An individual thing refers to a thing that can be distinguishable—that is, a thing that can be isolated.) We can first imagine the macroscopic world as a large monitor, and that there also exists something like a computer host to store form. For example, a stone is simply some forms being manifested (such as its shape and hardness), except that in the case of the stone, the form and the manifestation are unified. In other words, the macroscopic world is one where manifestation and form are unified. The macroscopic world does not have a computer host to store form, nor is it a giant monitor.

Manifestation itself is an individual thing, and its action is to manifest form. Manifestation is one thing, and the form that is manifested is another. Since manifestation and the form being manifested are different things (although they may not be able to exist separately), manifestation cannot possibly be form. Because if manifestation were also a form (meaning that the manifestation of any form is itself manifested by another form), then a certain form 'a' would be manifested by a form 'b'. This would inevitably lead to the question: what enables 'b' to manifest 'a'? If a form 'c' exists that enables "b to manifest a," then questioning in this manner would generate an infinite causal regress (Aristotle, Physics). This problem is unsolvable because this causal chain has no end. Such an infinite regress would mean we could never find the ultimate ground that makes manifestation possible, thus rendering the essence of manifestation incomprehensible and unable to be established, which is generally considered unacceptable when seeking a foundational explanation.

Unless, in the process of this continuous backward questioning, one encounters something that has no form. It

has no form, and this thing should be the manifestation of no form. Therefore, manifestation is not form; it can only be no form. Manifestation, as no form, does not require further regress. This is because regressing from no form still results in no form. This implies that no form is one, without differentiation, in absolute identity. No form is that which has no form whatsoever. Its action is to manifest form; no regress is needed. 'Manifestation' manifests form; it itself does not need to be manifested. Considering the problem this way is the only reasonable path.

In the macroscopic world, the mass, length, volume, hardness, change, etc., of objects are all manifestations of no form. Anything that can be expressed, that can be brought forth for an unfold-manifestation, is a manifestation of no form; it is manifestation action. One must be careful here: what is being manifested in the macroscopic world? It is form. It is important to note here that the exploration of no form action theory is conducted within the framework of the two-dimensional theory of no form and form. Anything that has no form must be a thing of no form. The reasoning here is only to illustrate that the hypothesis that 'manifestation is no form' is reasonable and coherent (it is without logical contradiction).

Let us now re-examine our human consciousness. At present, when people study consciousness, they are always asking how consciousness is manifested and what manifests it. Answering such questions has no future, because when we ask 'how consciousness manifests things,' we are in fact asking about the mechanism of its generation: by what kind of neural correlates, in what kind of brain neural states, and through what kind of neural processes it is generated. (Current theories on consciousness basically describe it as a process, a state, or as something that is manifested within a certain process or under a certain state). This is, in fact, asking about a formalized causal relationship, and it cannot answer the question, "What is consciousness?"

Why not ask what manifestation itself is? What is the essence of manifestation? Since form is one thing, and the manifestation of form is another, then, in our consciousness, it should also be that no form manifests form. For example, when we see a stone, it is actually the light reflected from this stone entering our eyes, undergoing a series of transformations in our brain, and ultimately, the forms of this object, such as its shape, are manifested in our consciousness. Of course, this object is also manifested in the macroscopic world; this is the object's own manifestation.

This leads to a conclusion: the macroscopic world manifests form, and the world of consciousness also manifests form; they are both the manifestation of form. In other words, consciousness is also a type of manifestation action. Just like the manifestation action in the macroscopic world, it manifests form; it is just that these two types of manifestation action have some differences. It is like computer monitors, which include LCD screens, projectors, and television screens (some television screens can be used as computer monitors); they all manifest the data from the computer, just in different ways.

In this way, consciousness is no longer mysterious. Manifestation action is universally present, whether in the macroscopic world or in the world of consciousness. It is just that these two types of manifestation action are somewhat different, but both are the manifestation of no form. Manifestation action is universally present, which is not to say that consciousness is universal; these are two different concepts. It is crucial to note here: what does the world of consciousness manifest? It is likewise form.

Any thing that is manifested must have its form. The macroscopic world manifests form, and the world of consciousness also manifests form; in both these worlds, it is the manifestation of form. Similarly, the color we see is a manifestation in human consciousness. What is being manifested? It is, of course, form. This type of form is the form of color. For instance, red is precisely the form of red, and it is this form of red that is manifested in

human consciousness. What manifests this form of red? We can only say that it is manifested by no form.

This form of red is clearly distinct from the forms we usually think of, such as structure, velocity, relations, spatial size, and so on. They are two different types of form. The essence of a thing is the form it possesses. This form of red is the essence of the color red, just as the essence of an object includes forms such as its spatial size, mass, structure, and so on. Besides form, can we find anything that is more essential? From the perspective of manifestation, form is essence.

Whether in the macroscopic world or in the world of consciousness, what no form directly manifests is the formal essence of things. We cannot directly grasp the forms of the macroscopic world, but on the level of conscious presentation, form constitutes the essence that we can directly grasp. The form of the color red appears in our consciousness; it is a form in our consciousness, not a form in the macroscopic world. This is why it is difficult for us to understand this form from the perspective of the forms of the macroscopic world, yet we do directly grasp it (directly feel it). Only by taking form and no form as a higher dimension can these two different types of form be unified, enabling a better understanding of both.

Consciousness is a world of manifestation, and it is a world dominated by manifestation. In contrast, the external macroscopic world we speak of is a world of isolation, a world dominated by isolation. This is the essential difference between the world of consciousness and the macroscopic world. The difference between these two worlds means that we cannot use the laws of objective things to explain consciousness; they each possess laws and modes of expression that cannot be substituted for by the other. This ensures their respective independence.

However, they also have common aspects (as they are both ultimately based on "form and no form"); otherwise, our consciousness would be unable to know external objective things. Similarly, the ability of our consciousness and body to coordinate and interact is also due to the common aspects these two worlds share. Otherwise, we could not imagine how we could know the objective world, nor how our consciousness and body could coordinate and interact. A discontinuity between them would inevitably arise, which would in turn inevitably lead to the emergence of dualism, and dualism is a difficult problem to solve.

Therefore, there must be a continuity between our world of consciousness and the macroscopic world in order to avoid the emergence of dualism. This continuity is the common aspects they share. In this way, no form action theory avoids the predicament of dualism.

In fact, things like pain, suffering, happiness, taste, beauty and ugliness, and so on, are all forms manifested in consciousness. Things like volume, shape, mass, the impenetrability of objects, and so on, are all forms manifested in the macroscopic world. Whether manifested in the macroscopic world or manifested in consciousness, they are all form. Anything that is manifested is form. This is viewing form from the perspective of manifestation.

In this way, from the perspective of manifestation, we have unified the macroscopic world and the world of consciousness. This unity ensures that the transition from matter to consciousness, and from consciousness to matter, is continuous, with no gap in between, so that neither side appears abruptly. Otherwise, it would become dualism, which in turn would lead to the need for a mysterious third party to explain how they are connected. Moreover, both the macroscopic world and the world of consciousness possess manifestation. Manifestation action is one of the most fundamental actions of this world, thus enabling the first truly significant breakthrough in the understanding of consciousness in human history. Of course, this is only a preliminary understanding of consciousness. A more in-depth exploration will follow, addressing questions such as: why does the macroscopic world not have consciousness? What are the more essential differences between manifestation in consciousness

and manifestation in the macroscopic world? And so on.

It is commonly thought that things like color are properties that exist in dependence on an object. This is only speaking from the perspective of isolated things in the macroscopic world. For instance, a flower is red. However, from the perspective of manifestation in the world of consciousness, the being of red is not the being of a property of some thing, but rather the being of an independent and determinate thing in its own right. This type of being is the being of manifestation action in the world of consciousness. Whereas the being of things in the macroscopic world is the being of isolation action. This being of isolation action and the being of manifestation action are not the same; they are two different types of being.

We know that our consciousness has a characteristic, which is intuition. There is also a universal Immediacy; intuition is the Immediacy within consciousness. From now on, when 'Immediacy' is mentioned, it will refer to this universal Immediacy, unless the 'intuition' within consciousness is specifically emphasized. Immediacy is one of the characteristics of manifestation; it means 'direct manifestation'. Since there is manifestation in the macroscopic world, there must also be Immediacy in the macroscopic world. The Immediacy of the macroscopic world is embodied in the way its things directly present their own state of being.

However, our consciousness cannot directly know the Immediacy of the macroscopic world. This is because the Immediacy in our consciousness is directly manifested within our consciousness, whereas the Immediacy of the macroscopic world requires us to think in order to recognize it (perhaps this is the Immediacy of God or the Immediacy of the universe). The Immediacy of the macroscopic world is directly 'grasped' by the macroscopic world itself; it is not an Immediacy that we can directly grasp. However, this Immediacy does indeed exist. For example, the reason a table's structure and external form are what they are is because it possesses the property of being immediate—it is brought forth through Immediacy. This macroscopic Immediacy is by no means the Immediacy in our consciousness, but it is still related to the Immediacy in our consciousness.

Immediacy is a kind of direct generation (direct manifestation). It is the characterization of manifestation from the perspective of motive force and is a characteristic of manifestation (this will be discussed later). In other words, we can view manifestation from the perspective of motive force, and of course, we can also view it from the perspective of isolation (this will be discussed later). This is using the no form motive force action and isolation action to explain manifestation action.

The reason why humans must begin with conscious experience to find laws and know the world is because humans use consciousness to know the world, and consciousness is manifestation action. Therefore, in knowing the world, humans must begin with the manifestation of intuition. Humanity's knowledge of things takes the manifestation of intuition as its starting point. From the manifestation of intuition to the formation of a theory (which is, in fact, the formation of some interconnected, reasonable concepts), there is a discontinuity in between. What is needed? That is faith, which is what we believe through hypothesis; this is a form of willpower.

This line of thinking is the same in mathematics and science; this faith is the foundation of axiomatic systems. For example, Euclidean geometry is built upon self-evident assumptions, from which theorems are deduced (Euclid, c. 300 BCE, Book I), while Einstein's theory of relativity is built upon the constancy of the speed of light and the equivalence principle (Einstein, 1916). Therefore, faith is an indispensable way of thinking.

In fact, the manifestation of intuition is manifestation action; faith is motive force action (it is the inclination toward a viewpoint, the adherence to it); and the theory we are to establish is composed of the various isolated concepts, which is isolation action. This reflects the collaboration of the three no form actions.

Although manifestation has been mentioned in the history of philosophy, it has not been consciously studied as an individual thing in its own right. Instead, the focus has been more on 'what a certain thing manifests'. For example, Husserl stated that phenomenology does not investigate appearances as things, but as correlates of intentional acts: "We do not investigate appearances as things but as correlates of intentional acts" (Husserl, 1913, p.87). Although Hegel's concept of 'expression' is close to manifestation, and he held that appearance is precisely the display of essence—"There is nothing in appearance which is not in essence, and there is nothing in essence which is not manifested" (Hegel, 1817, p.503)—he did not elevate manifestation to the level of an independent no form.

People did not realize that manifestation is an individual thing, and even less did they realize that manifestation is a type of no form. To be more precise, they did not realize that manifestation is something distinct from form, and did not elevate manifestation to the same level of importance as form. Instead, they regarded manifestation as merely the manifesting of a thing's essence, with that essence being the most important thing. This is the fundamental reason why no breakthrough has been made in the exploration of consciousness. For, without realizing these two points, one can only study consciousness using a formal approach. Consciousness itself is not a formalized entity, and so, even the most detailed exploration cannot possibly lead to an essential understanding of consciousness.

(2.2) No form isolation action

Let us consider this question: There are individual things in this world, so why do they appear? The answer to this question is: for individual things to be generated (or to exist), there must be an action in this world that makes the generation of individual things possible (or makes the existence of individual things possible). Without this possibility, how could individual things be generated? I call this action 'isolation action'.

The inspiration for discovering this no form action came from computer programming. In object-oriented programming languages, there is a concept of 'isolation,' which means that there must be a certain degree of functional independence between the different functional blocks of a computer program. If the code in one functional block is to be changed, the other functional blocks should not be affected by the modifications made to this block (of course, this is the ideal situation; in practice, the aim is to minimize the impact as much as possible). This makes a functional system easy to maintain, modify, and extend. Otherwise, if changing one functional block affects the others, the affected blocks will also have to be modified in turn, making the maintenance of the program system require a greater workload and also making it more prone to errors. For a large-scale program system, maintenance could even become an impossible task. That is, changing one part would involve every other part.

In fact, the object itself in object-oriented programming is a form of isolation action. It encapsulates code and functionality within an object, providing only callable methods, data, and functions to the outside. The capability to create such objects is pre-provided by the programming language itself; otherwise, we would be unable to create objects. This isolation action in programming languages allows us to imagine that the reason all things in the world can become individual things is because there is an action called isolation action that enables them to become individual things. Just like with objects in object-oriented programming, the 'object' itself is pre-provided by the programming language.

This isolation action likewise enables individuals to have a certain degree of independence, ensuring that, to a certain extent and within a certain scope, they do not affect other individual things. Otherwise, any change in any one thing in the world would affect all other things, causing them to change in turn. This is both unimaginable

and contrary to fact.

In computer programming, the isolation action does not require extra, specialized code; it is merely a change in the way of coding. However, for the various functional blocks of a program system, it does indeed serve the role of isolation. Relative to the programming code, this isolation action is a no form action. Consequently, we can imagine that in the real world, the isolation action, relative to individual things, should also be a no form action.

In the real world, if isolation were a form, then what would isolate isolation from the individual thing? This would lead to an infinite regress, just as discussed in the context of no form manifestation. To avoid this infinite regress, isolation can only be no form, and isolation action can only be no form action. This means that isolation action is an action generated by no form. It isolates form, but it itself does not need to be isolated. Note, what does no form isolate? It isolates form. Here, we can call form 'entity'.

In other words, from the perspective of isolation, form is entity. This is also Aristotle's method of studying the essence of things by using substance; this method of study is clearly from the perspective of isolation (because substance emphasizes independence and distinguishability) (Aristotle, *Metaphysics*, Book IV). Whereas in no form manifestation action, we called form 'essence'. This is very interesting.

The macroscopic world, in fact, is a world dominated by isolation. In this world, there are various isolated things; the things we see every day are all of this isolated nature. For example: houses, books, bottles, flowers, trees, birds, bees, clouds, water droplets, rivers, fish, the sun, sunlight, stars, the moon, motion, change, growth, and even the processes of change in things, and so on.

Each isolated thing has a certain degree of independence (as can be seen from the previous analysis, independence is spoken of from the perspective of motive force, because independence involves mutual influence arising from change). They can all be distinguished or distinguished in some way (distinguishability is spoken of from the perspective of manifestation, as something must be manifested through distinction). Isolation exists not only in the macroscopic world but also in the manifestation world of consciousness. The individual things we form in our consciousness are each isolated things. For example, red, green, and the various other different colors are different isolated things; sour, sweet, bitter, and spicy are also different isolated things. The objects we form in our consciousness are also isolated things. However, in the manifestation world of consciousness, isolation action is not strong relative to manifestation action, because that is a world dominated by manifestation. The boundaries of conscious experience are sometimes blurry and fluid, not as clearly demarcated as physical objects.

From the philosophy of ancient Greece to the present day, people have always been thinking about philosophical problems within the context of no form isolation action. For example, every concept is a product of no form isolation action, because every concept is distinguished from other concepts and possesses a certain degree of independence. It is just that people have never consciously conceptualized this no form action, and indeed, no one has even recognized that such an action exists. No form isolation action is the most difficult action to perceive; it seems as though no one has yet become aware of it, because its effect feels very inconspicuous.

Usually, when inquiring into the origin of individual things, people often fall into thinking from the perspective of causality, believing that each individual is generated or transformed from other things. This way of thinking is undoubtedly important. In reality, thinking this way is to consider the problem only from the perspective of causality, a way of thinking to which people have become accustomed. Considering the problem from causality is, in fact, to consider it from the perspective of no form motive force action.

However, it is also necessary to consider the problem from the perspective of no form isolation action. Considering the problem from this perspective, one will ask such a question: why do individual things appear in this world? In other words, that individual things can be generated in this world is one thing, but that there exists an action that makes the generation of such individual things possible is another matter entirely. The meaning here is that only when the possibility for the existence of individual things is present in this world can individual things be generated. Otherwise, the world would be an undifferentiable 'One' and would have no diversity or difference. Even if there were motive force, it still could not generate any individual things.

Looking back at the history of philosophy, the discussion concerning the Principle of Individuation, Distinction, and Boundary/Limit is indeed very rich. For example:

1) Aristotle held that what makes a thing this individual is not the form (the universal, such as 'man'), because form can be shared by multiple individuals; nor is it the matter (potentiality), because matter in itself has no determinacy. Aristotle was inclined to believe that it is the individual thing as a whole—that is, the composite of form and particular matter (hylomorphism)—that constitutes the individual. As for what specifically causes a certain form to combine with this portion of matter and not that portion of matter, thereby forming a unique individual, Aristotle's discussion is not entirely clear (Aristotle, *Metaphysics*, Book VII).

2) Aquinas argued that form gives a thing its universality, while matter signed with a specific quantity (Matter signed with quantity) is the principle of individuation. In other words, matter is not only the basis for individuation, but it is matter with specific spatial dimensions that allows a form to be realized as a unique individual at a specific spatiotemporal location (Aquinas, *De Ente et Essentia*).

3) Duns Scotus proposed the famous doctrine of Haecceity / Thisness. He held that what makes an individual this one is not the form, nor the matter, nor the combination of the two, but an ultimate, positive, and irreducible individualizing form or individual difference, namely, the haecceity. The haecceity is added to the Common Nature, making this nature a unique individual. For example, Socrates is Socrates not only because he possesses humanity (the common nature), but also because he possesses the unique "Socratic-ness" (the haecceity) (Duns Scotus, *Ordinatio*).

4) Leibniz held that each Monad is a unique individual. Its individuality stems from its complete inner concept or inner principle, a concept that contains all the past, present, and future predicates (attributes and activities) of that monad. The Principle of the Identity of Indiscernibles is the core of his thought on individuation: if there are no two individuals that are completely identical in all their attributes, then they are the same individual. Conversely, if two individuals are different, they must necessarily differ in at least one attribute. Therefore, the sum total of all attributes possessed by a substance constitutes its individuality (Leibniz, 1714).

5) Kant, focusing mainly on epistemology, held that individual objects are given and known in space and time (as a priori forms of intuition). Spatiotemporal location is the key to distinguishing different individuals in the phenomenal world. We receive the manifold through the senses, and then unify it into an object of experience through the categories of the understanding (such as substance and causality) (Kant, 1781, B138).

However, these theories only provide different criteria or conditions for individuation; they do not recognize that there could be a no form isolation action. In fact, if one were to further question these criteria or conditions, one would fall into an infinite regress. Therefore, it is a matter of necessity that no form isolation action makes the appearance of individual things possible.

Note that the "individual things" I speak of are not merely what Aristotle called "particulars," but rather all

isolated things that possess independence and distinguishability. Therefore, this also includes abstract concepts, properties, objects, processes, and so on.

The substance that Aristotle spoke of: Substance is that which is neither said of a subject nor is in a subject (Aristotle, *Metaphysics*). This is clearly an issue of isolation, because "not being in a subject" means that a substance must have the characteristic of being independent and existing without relying on other things; this is to say that a substance is isolated. I have previously defined entity clearly: from the perspective of isolation, form is entity. However, his concept of substance is complex, polysemous, and not entirely clear. This is reflected in:

1) The tension between first substance and second substance: At times, he emphasizes the concrete individual (first substance) as the most real substance, while at other times he emphasizes the form/species (second substance) as the more fundamental substance that makes the individual what it is. The relationship and priority between these two sometimes appear ambiguous.

2) The difficulty of form as substance: If form is universal, then how can something universal be the most real, individual substance? This is a long-debated issue.

3) The role of matter: Matter is the basis of individuation, but matter itself is indeterminate. Its precise status in the constitution of a substance sometimes also needs clarification.

The reason for this phenomenon should be his relative dualism (form and matter). Since form and matter can be mutually transformed, the concept of substance defined by them (or their combination) will naturally carry a certain indeterminacy.

As stated earlier, red is a kind of form, and in our consciousness, it is simply manifested. This is completely different from saying that red is a property of an object. To say red is a property of an object is to speak from within the macroscopic world. But in the world of consciousness, it is not a property; it is an isolated thing. Therefore, in the world of consciousness, from the perspective of isolation action, red can be called an entity. (Note: as previously mentioned, from the perspective of manifestation action, red is called an essence.)

From the analysis above, it is clear that not only does our external macroscopic world possess isolation action, but there is also isolation action in the manifestation world of consciousness. Just as previously discussed, there is manifestation action in the manifestation world of consciousness, and there is also manifestation action in the macroscopic world. However, the macroscopic world is a world dominated by isolation, whereas the world of consciousness is a world dominated by manifestation.

In other words, just like manifestation action, isolation action is common to and unified in both the macroscopic world and the world of consciousness. This is the reason why we can use our consciousness to know the laws of this macroscopic world. In this way, from the perspective of isolation, we have unified the macroscopic world and the world of consciousness. Of course, the isolation action in these two worlds has both common and different aspects.

Let us now analyze the motive force in a computer. The computer's motive force is provided by the CPU. This motive force is needed to drive the programming code in order to run the software on the system. For the programming code, this motive force exists; otherwise, how could each line of programming code be executed? However, this motive force is clearly not a thing of 'form' like the code is. For the code in the system, this motive force is 'no form'; it cannot be described by the code itself.

For example, take this line of programming code: `System.out.println("Hello, world")`. It displays "Hello, world" on

the screen. But when the computer executes this statement, from the perspective of the code, we cannot see what this executing motive force is. We only know that a motive force has executed it. Therefore, relative to the code itself, this motive force can only be 'no form'. Thus, we can again use our imagination and propose that the motive force of the real world, relative to the individual things of the real world, is no form. It exerts a no form action on individual things.

Motive force is a universally recognized phenomenon. People have come to know all sorts of forces, for example: electricity, gravity, the strong force, the weak force, influence, acting force, pushing force, attraction, repulsion, driving force, ability, and so on. The characteristic of all these forces is that they can drive things to change, to move, or to maintain a certain state. This driving force is the original motive force (which we will simply call motive force when there is no ambiguity). So, what is motive force? And how does motive force cause things to change or move?

Since ancient Greece, people have been searching for two things. The first is: what is the most fundamental substrate of the world? The second is: what is the motive force that drives the change of this substrate? Or, what is its cause? In ancient Greece, the seed of the idea that motive force is no form had already sprouted, but to this day, no one has consciously articulated this concept. This is because no one could imagine that a thing without any form could cause other things to change or move. Indeed, no one could even believe that a thing without any form exists.

Anaximander said that the archē (origin) of all things is not water or any other element, but some kind of infinite, indeterminate being (Apeiron), which is eternal and indestructible (Aristotle, *Physics*, Book III). As Aristotle explained: "As the archē, it is ungenerated and indestructible. For whatever has a beginning must reach an end, and an end implies a limit [a definite form]. Therefore, it is said that the infinite [the indeterminate] has no archē, but is itself the archē of other things, encompassing all and governing all" (Aristotle, *Physics*, Book III). In short, no single or simple natural substance can be the archē of all things; only a primordial chaos that transcends specific material forms can be the archē of all things.

From Anaximander's view, two points can be seen. First, the archē is an indeterminate or unlimited realm, a thing without form. Second, the archē itself possesses a dynamic nature, for it is not generated, yet it is the origin from which all things are generated. In other words, Anaximander and others already had the nascent idea of viewing motive force as no form.

Because that primordial matter was indeterminate, people thought there was no way to study it, or even to express it. One could only say that it was an indeterminate thing. For example, Anaximenes was dissatisfied with Anaximander's unlimited/indeterminate archē, believing that an indeterminate 'unlimited' had no concrete meaning for him. He proposed that the archē should be 'air', a determinate substance, and that all things are generated through the processes of rarefaction and condensation of air (Simplicius, 2011).

This attempt by Anaximenes represents a tendency in early philosophy to try to grasp the origin of the world with a more concrete and determinate substrate. This also foreshadowed how later philosophers would become increasingly alienated from that elusive 'indeterminate one', and could only study things that were determinate and limited. This opened the path for philosophers to take form as the main object of philosophical study. Gradually, people began a philosophy aimed at finding that which is unchanging, unmoved, eternal, and ungenerated/indestructible.

After the efforts of several generations of philosophers, such a thing was indeed found. For Plato, it was the Idea; for Aristotle, it was form. Furthermore, Plato regarded the Ideas he discovered as the motive force for the change

and motion of things, and Aristotle similarly regarded the form he discovered as the motive force for the change and motion of things. It is improper to be unable to study that 'indeterminate, unlimited' thing and instead take such unchanging Ideas or forms as the motive force. This is because doing so did not explain that 'indeterminate, unlimited' thing, but merely set it aside and replaced it with its opposite. This approach is clearly inappropriate.

Since Aristotle's philosophical system is fundamentally a philosophy of form, he also explains motive force in a formal way. Let us then examine Aristotle's form that possesses motive force.

In Aristotle's view, any individual thing is a unity of form and matter. These two are relative: the form of a lower-level thing can become the matter of a higher-level thing. For example, bricks and tiles, as the form of clay, are at the same time the matter that constitutes a house. Thus, the entire universe constitutes a hierarchical sequence that ascends alternately from pure matter (equivalent to 'non-being') to pure form ('the form of forms'). Within this teleological framework, a higher-level thing is not only the formal determination of a lower-level thing, but also the purpose and source of motive force that attracts the lower-level thing to develop towards itself. Therefore, the 'pure form' at the apex of the sequence, as the ultimate purpose pursued by all things, becomes the final origin driving the development and change of the entire universe—that is, the 'First Mover'. Since it itself is already pure form and requires no further change, it is therefore the 'Unmoved Mover' (Aristotle, *Metaphysics*).

For Plato, the Idea leads the entity towards perfection (Plato, *Republic*). The force explained by these two philosophers, Plato and Aristotle, is a force of an attractive kind. In reality, it reduces force to form; it is a teleological approach (form attracts matter to change towards form, and form is the purpose of matter).

In contrast, Newton described force as a push, which is a mechanistic approach. Mechanism explains motion by having another object push a certain object. For instance, 'a' is pushed by 'b', 'b' is pushed by 'c', and so on. This leads to a continuous, infinite regress. In this way, we do not discover force, only a series of objects. Unless, at some object, the chain stops, and that object is unmoved, but is the ultimate cause that pushes other things into motion. This ultimate cause is the same result as that derived from the teleological approach; both arrive at an 'unmoved mover'. The substance of these two forces is the same; only their direction is opposite.

In reality, this is the standard formal mode of thinking. To examine the world using only this way of thinking will inevitably lead to ignoring that which has no form. Only by admitting that motive force is no form can that ultimate mover be reasonably understood. This is because no form is its own cause. Only thus can it possibly move other things, while not being moved by other things, nor needing other things to move it, because it is self-caused.

Besides external pushing and pulling, philosophers turned to looking for motive force within substance itself. Leibniz held that the nature of the monad is a "primitive force" (forces primitives). It is precisely this force that makes each monad a free, self-causing entity, endowed with abilities similar to perception and appetite, thereby driving the motion of the monad and the things it constitutes. Leibniz called the monad an "incorporeal automaton," whose inherent spontaneous activity became the source of its action (Leibniz, 1714). Kant located this force in the practical activity of the subject, endowing it with the capacity for autonomous action (Kant, 1788). Hegel refined it into the self-negating dialectic of the concept, which drives the development of history and logic (Hegel, 1817). Fichte's self-positing self actively constructs reality, unifying matter and consciousness (Fichte, 1794). These philosophers consciously used motive force to solve philosophical problems, having already recognized the action of motive force (whereas isolation action is different, having not yet been consciously used for philosophical explanation). However, being able to consciously use motive force to explain problems is one thing; to clarify "what motive force is" is another matter entirely.

Many philosophers have explored philosophies of form, but hidden behind them is motive force action. Hegel's dialectical logic illustrates this point; he regarded negation as the driving force behind the development of concepts and history. For Hegel, contradiction is not merely opposition, but an internal self-negation and self-conflict within a substance; it is the "root" of all motion. Unlike formal logic, which views contradiction as incoherent, dialectics sees contradiction as the "sufficient reason" for change, a groundless ground that requires no further cause (Hegel, 1817).

Hegel introduced motive force into his dialectic, but he did not explain what motive force is, nor did he explain the relationship between his dialectic, his theory, and motive force, as if the two were unrelated. In his dialectic, it seems as if an invisible hand is acting as the motive force behind the scenes, but this invisible hand never comes to the forefront of the dialectic. He reduced force to the self-contradictory negativity of the subject, but why should contradictory negativity be motive force? This question still cannot be answered. This, too, does not transcend the limitation of reducing motive force to form. There is no way around this, because according to traditional thinking, 'that which has no form' cannot be expressed, nor can it be studied.

Although modern physics has developed into a very profound discipline, no physicist can tell us what motive force is. A physicist like Richard Feynman was very humble; he did not know what force is, apart from defining it with a mathematical formula:

Let us ask, "What is the meaning of the physical laws of Newton, which we write as $F = ma$? What is the meaning of force, mass, and acceleration?" Well, we can intuitively sense the meaning of mass, and we can define acceleration if we know the meaning of position and time. We shall not discuss those meanings, but shall concentrate on the new concept of force. The answer is equally simple: If a body is accelerating, then there is a force on it." That is what Newton's laws say, so the most precise and beautiful definition of force imaginable might simply be to say that force is the mass of an object times the acceleration. Suppose we have a law which says that the conservation of momentum is valid if the sum of all the external forces is zero; then the question arises, "What does it mean, that the sum of all the external forces is zero?" A pleasant way to define that statement would be: "When the total momentum is a constant, then the sum of the external forces is zero." There must be something wrong with that, because it is just not saying anything new. If we have discovered a fundamental law, which asserts that the force is equal to the mass times the acceleration, and then define the force to be the mass times the acceleration, we have found out nothing. We could also define force to mean that a moving object with no force acting on it continues to move with constant velocity in a straight line. If we then observe an object not moving in a straight line with a constant velocity, we might say that there is a force on it. Now such things certainly cannot be the content of physics, because they are definitions going in a circle. The Newtonian statement above, however, seems to be a most precise definition of force, and one that appeals to the mathematician; nevertheless, it is completely useless, because no prediction whatsoever can be made from a definition. One might sit in an armchair all day long and define words at will, but to find out what happens when two balls push against each other, or when a weight is hung on a spring, is another matter altogether, because the way the bodies behave is something completely outside any choice of definitions (Feynman, 2011, Vol. I).

Quantum mechanics explains force as the exchange of certain particles. For instance, the electromagnetic force is the continuous exchange of photons by electrons. But is the exchange of photons force? Where is the force? Is this not very similar to people trying to explain consciousness with particles? Both attempt to use an observable, describable mechanism (form) to explain a phenomenon whose essence is difficult to directly observe or grasp (no form action or its result), but the mechanism itself is not entirely equivalent to the essence of the phenomenon.

In both philosophy and physics, there is still no definitive essential characterization of motive force. Motive force is merely an intuitive concept. As for 'what is motive force?', there is no clear understanding in either field. Philosophy and science share a common dilemma on this point; both are still stuck at a relatively intuitive and superficial level of understanding and using 'motive force'.

"What is motive force?" has been a problem that people have wanted to solve since ancient Greece. To this day, people are still merely describing motive force and have not gained a deeper understanding of it. Philosophers only say that things of form generate motive force, while physicists only measure and calculate motive force, able only to define it with a mathematical formula. These are all formal approaches. The understanding of force, just like the understanding of consciousness, remains a 'black box' understanding. We only know that such a thing exists, and we know how to measure, calculate, and apply it, but we simply do not know what it is. This phenomenon is still like searching for the light with a flashlight.

A great deal of in-depth research has been conducted on form, but to this day, there is still a lack of fundamental understanding of what the ultimate essence of the motive force that drives the development of things is. Therefore, we can boldly conjecture that for human understanding, certain things can only be known intuitively, not rationally, while other things can be known rationally through their formal structure. Things that can only be known intuitively have no formal structure, and thus cannot be known rationally (through formal decomposition and structural analysis). Motive force should be a thing of no form, having no formal structure.

From the above understanding of motive force since ancient Greece, it can be seen that motive force can only be no form; that is, the cause of change in things can ultimately only be attributed to no form. Because any attempt to express motive force in a formal way ultimately finds that it is not motive force at all, but form. Therefore, only by admitting that motive force is a type of no form can we have a true understanding of it.

If motive force were a form, then what would drive motive force? This would lead to an infinite regress, just as discussed in the context of no form manifestation. To avoid this infinite regress, motive force can only be no form, and motive force action can only be no form action. This means that motive force action is an action generated by no form. Motive force drives form; it itself does not need to be driven. Note, what does no form motive force drive? It drives form. Here, we can call form 'subject'. That is, from the perspective of motive force, form is subject. The meaning of subject is to possess agency (the subject is the embodiment of form under the action of motive force, and is therefore necessarily related to agency, being its bearer or expresser).

Whereas in no form manifestation action, we called form 'essence'. And in no form isolation action, we called form 'substance'. This is the very reason why Hegel said, "Substance is Subject, and Subject is Substance" (Hegel, 1817). Evidently, from the perspective of no form, these two concepts are still distinct: substance is form viewed from the perspective of isolation, while subject is form viewed from the perspective of motive force. Hegel did not strictly distinguish between them. It can be seen that by viewing form from the three different perspectives of no form action, three different concepts arise. Thus, our understanding of the three concepts of essence, substance, and subject becomes clearer and has become transparent.

Previously, we saw that consciousness is a world of manifestation, and the macroscopic world is a world of isolation. So, is there a world of motive force? The answer is yes. This world is the quantum world. The quantum world is a world dominated by motive force; it is characterized by dynamic change. The quantum motive force world is clearly different from the macroscopic world, because quantum mechanics tells us that we cannot directly observe a quantum particle. As soon as we observe a quantum, it collapses, losing its original state (collapsing from a superposition of multiple possibilities to a definite eigenstate).

Thus, based on the three no form actions, we divide the entire world into three different worlds: the manifestation world (the world of consciousness), the isolation world (the macroscopic world), and the motive force world (the quantum world).

Similarly, there is also motive force in the manifestation world of consciousness (for example, willpower), and there is also motive force in the macroscopic isolation world (the motion of objects in the macroscopic world requires motive force). It is just that in these two worlds, motive force is relatively weak. The quantum motive force world also has manifestation action (for example, the manifestation of different quantum states as they evolve over time) and isolation action (for example, quanta themselves are discrete units, which is a standard isolation action because it embodies discreteness and distinguishability).

Regarding motive force action: every thing of motive force has the characteristic of change. This is speaking from the perspective of manifestation; in other words, change is the manifestation of motive force. Every thing of motive force, from the perspective of isolation, has the characteristic of generation. Motive force generates different things, thereby manifesting change.

Regarding manifestation action: every manifested thing, from the perspective of motive force, is Immediacy (as previously explained), and from the perspective of isolation, it is identity. From the perspective of isolation, what an independent thing directly manifests is itself (which is also its essence); what is manifested is its own identity. For instance, regarding manifestation, the color red possesses identity. No matter when, the red generated in our consciousness is the same; this color is determinate, it is identical.

The final summary is: isolation action has the characteristics of independence and distinction (as previously explained); motive force action has the characteristics of change and generation; manifestation action has the characteristics of Immediacy and identity. Each no form action has two characteristics, and the two characteristics of each no form action are obtained from the perspectives of the other two corresponding no form actions. These characteristics can only be obtained in this way, because the characteristic of a thing must be distinct from the thing itself to be called a characteristic of that thing. This is using no form action to understand no form action itself.

Of what use is it to have found these three no form actions? This is already very powerful. Based on this, we can divide any thing and any concept into three categories: the isolation category, the motive force category, and the manifestation category. For example, in the preceding discussion, we have already, from the three perspectives of no form, obtained a classification for form: essence, substance, and subject. This enables a very clear classification of things and can clarify the confusion in thought and concepts that arises from conflating these categories.

To give a simple example, we already know that the quantum world of motive force and the macroscopic world of isolation are different worlds. Therefore, when we observe quanta, we are doing so in the mode of isolation, because our instruments are all isolated things of the macroscopic world. As soon as a measurement is made, the quantum transforms into a thing of the isolation world. This means that with our instruments, we can only observe the behavior of the quantum as it transforms into a thing of the isolation world, but not the behavior of the quantum itself within the quantum motive force world. Therefore, the result obtained is also a result of the isolation world, and it is impossible to observe the objective reality of the quantum motive force itself. This is what is said in quantum physics: the behavior of the quanta we observe is always related to the measurement itself, and it is impossible to obtain a result that is not disturbed by the measurement. It can be seen that by simply dividing the different worlds through no form action theory, we have clearly explained the long-debated

'measurement problem' in quantum mechanics (this will be elaborated on in detail later).

By the same logic, we can also explain why consciousness is something subjective and not objective. We cannot observe consciousness with any instrument. This is because using the methods for studying the objective macroscopic world to study consciousness can only yield results of the isolation world; it is impossible to observe consciousness itself, just as with using instruments to observe quantum behavior. This is the reason why consciousness possesses first-person privacy (see the subsection: Can science unravel the mystery of consciousness?).

According to this logic, the quantum world of motive force should also possess a certain privacy relative to the macroscopic world of isolation. When we perform a measurement, we are in fact performing a measurement on the isolation world. The measurement of things of motive force (such as the measurement of quantum particles) is done by transforming the motive force into things of isolation.

The objectivity we usually speak of is, in fact, the objectivity of the isolation world. The reason we cannot measure the objectivity of motive force is that we can only measure things of motive force after they are transformed into things of isolation. This is because our measurement itself is only a measurement of isolation; therefore, we can only measure isolation and cannot directly measure motive force. That is to say, the macroscopic isolation world, the quantum motive force world, and the manifestation world of consciousness each possess their own objectivity. Their objectivity has its own independence (not being able to observe and measure the objectivity of motive force in the motive force world does not mean one cannot know the objectivity of motive force; these are two different concepts, and this issue will be explored later), and they cannot be substituted for one another, but they can be mutually transformed.

One cannot demand that the objectivity of the quantum motive force world be the same as the objectivity of the isolation world. Likewise, one cannot demand that the objectivity of the manifestation world of consciousness be the same as the objectivity of the isolation world. We have used a single logic to explain two different problems, and the answers to these two different problems are the same. This enhances the persuasive power of no form action theory's explanations. In this way, we now have three perspectives and three ways of thinking about problems, and are no longer limited to a single, one-sided way of thinking. By combining these three ways of thinking to examine and study the world, a comprehensive and clear conclusion can be obtained. This is also the method I have used to examine and study no form action theory itself.

Modern science has only used and studied two types of form: one is mathematical form, and the other is structural form. In fact, these are all isolation forms. However, there also exist the forms of manifestation and the forms of motive force. And when science studies these other forms, it does so by using mathematical and structural forms to simulate them, or by transforming them into mathematical and structural forms for study. Therefore, science struggles when it comes to studying things like consciousness.

From the above analysis, it can be seen that these three no form actions each have their own corresponding forms, each with its own formal determinacy, and thus each possesses its own objectivity. They cannot be substituted for one another, but they can be mutually transformed. Of course, there are also common forms among the three actions; otherwise, our consciousness would have no way of knowing the objectivity of macroscopic things, and likewise, the macroscopic world would not have evolved human consciousness.

On the other hand, knowing these three no form actions allows us to systematically inquire into things and concepts. For example, the three concepts of substance, essence, and subject discussed previously. When we see the essence of a thing, we will naturally think about its substantiality and subjectivity. When we are faced with

manifestation action, we will think of its two characteristics, Immediacy and identity; and the same is true when we are faced with motive force action and isolation action. Let us take any concept, for instance, morality. We will then ask: is there a manifested morality? An isolated morality? A motive force morality? If so, what are they? This mode of systematic inquiry will be one of the primary ways of thinking in the following chapters.

Is there any relationship among the three no form actions? On the surface, they seem to have no relation whatsoever; their differences are obviously great, and it is difficult to imagine what kind of relationship they could have. Yes, not only is there a relationship between them, but this relationship is the most core viewpoint of no form action theory. The following section will explore this question.

References

- Einstein, A. (1916). *Relativity: The Special and General Theory*. Translated by R. W. Lawson, Methuen & Co., 1920.
- Euclid. (c. 300 BCE). *Elements*. Translated by T. L. Heath, Dover Publications, 1956.
- Aristotle. (1984). *Physics*. Translated by R. P. Hardie & R. K. Gaye, in *The Complete Works of Aristotle*, edited by J. Barnes, Princeton University Press.
- Aristotle. (n.d.). *Metaphysics*. Translated by W. D. Ross, Oxford University Press.
- Hegel, G. W. F. (1817). *Science of Logic*. Translated by A. V. Miller, Humanity Books, 1969.
- Husserl, E. (1913). *Ideas: General Introduction to Pure Phenomenology*. Translated by F. Kersten, Martinus Nijhoff, 1982.
- Aquinas, T. (c. 1252-1256). *De Ente et Essentia*. Translated by Robert T. Miller, Fordham University, 1997.
- Duns Scotus, J. (c. 1300). *Ordinatio*. Translated by P. V. Spade, in *Five Texts on the Mediaeval Problem of Universals*, Hackett, 1994.
- Kant, I. (1781). *Critique of Pure Reason*. Translated by N. K. Smith, Macmillan, 1929.
- Plato. (c. 380 BCE). *Republic*. Translated by G. M. A. Grube, revised by C. D. C. Reeve, Hackett Publishing, 1992.
- Leibniz, G. W. (1714). *Monadology*. Translated by R. Latta, Oxford University Press, 1898.
- Kant, I. (1788). *Critique of Practical Reason*. Translated by M. Gregor, Cambridge University Press, 1997.
- Fichte, J. G. (1794). *Foundations of the Science of Knowledge*. Translated by P. Heath & J. Lachs, Cambridge University Press, 1982.
- Simplicius. *On Aristotle's Physics 1.3-4*. Translated by C. C. W. Taylor and P. K. Pellegrin, Bloomsbury Academic, 2011.
- Feynman, Richard P., Robert B. Leighton, and Matthew Sands. *The Feynman Lectures on Physics*. Definitive ed., vols. 1-3, Basic Books, 2011.