

Tao Te Ching Ontology

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Introduction

The world view expressed in one of humankind's most ancient texts, the *Tao Te Ching*, is remarkably similar to one of the most recent comprehensive metaphysical systems, the process metaphysics of Alfred North Whitehead. At the core of each is the recognition that process, not substance, is the fundamental characteristic of the world; what is most real is change and movement. In this chapter I look at how this concept turns our usual notions of reality on their head, why it makes sense to think this way, and what implications this ancient way of thinking has for our conduct in daily life today.

Ontology

It is useful to think of philosophy as having three main branches: ontology, epistemology and ethics. Ontology, from the Greek *ontos*, being, is the study of what is real. Epistemology, from the Greek *episteme*, knowledge, is the study of how we know what is real. Ethics, from the Greek *ethikos*, having moral character, is the study of what to do about what is real.

Every culture embeds within its taken-for-granted common knowledge some notions about what is real. Embedded in the human perceptual apparatus is an intuitive classification of what we experience, including an intuitive physics and an intuitive psychology; and we know how to distinguish reality from imagination. Ontology is the careful critique of these common-sense intuitive notions with a view to finding out

what is most fundamental to everything that is. It the study of existence itself considered apart from any existent object.¹

The question is how best to characterize everything that is, apart from any particular set of objects, to answer the question “what is real” in the most general sense. The answers are important because they underlie and inform the way we approach the world and conduct our lives.

The Mechanistic World View

What is the most fundamental characteristic of all that is? Throughout European history from the Greeks onwards, the answer has most often been framed in terms of substance, inert stuff that occupies space and persists through time, which are conceived as mere containers. The ancient Greek philosopher Democritus held everything to be composed of atoms, which are physically indivisible, separated in space and always in motion. Aristotle gave a privileged position to substance among his ontological categories; for him the primary sense of the word “being” is substance. In this view the properties of substances are never touched by change, which affects only the relations between substances.

In the 18th century, with the rise of modern science, Sir Isaac Newton asserted that reality consists of solid, impenetrable particles, and ever since then we have thought ourselves to live in a world that is fundamentally physical and causally determined, a Newtonian mechanistic universe in which inert matter is all there is and every change is determined, much like the movement of billiard balls. The success of the technological accomplishments we have enjoyed since then lends credence to such a view. But such a cold universe leaves no room for human freedom and creativity.

René Descartes conceived both physical and mental reality as substance. The former he called *res extensa*, Latin for “extended thing,” after its primary attribute, extension in space. The latter he called *res cogitans*, or “thing that thinks,” after its primary attribute, the ability to be conscious. The problem with such a dualistic metaphysics is that it is incoherent. Ever since Descartes, philosophers have grappled with the so-called “mind-body problem,” how to explain how two such ontologically disparate substances can influence each other. I say “so-called” because it is a problem only given the metaphysical assumptions within which it is framed. Descartes himself had to resort to yet a third category, a benevolent, all-powerful and supernatural God, to reconcile the two.

Dualism has a certain appeal. It is not surprising that we find the idea that things endure through space and time comfortable and familiar, because in our ordinary experience they do. Our minds have evolved to have an intuitive grasp of the physics of objects. It is also not surprising that we do not like the idea that our experience, feeling and cognition – in short, our mentality – is a mere byproduct of material causes. We know subjectivity, experience and volition first-hand and we have an intuitive grasp of the psychology of others like us, which has proven to work out correctly over and over again in the long history of our race. The two realms – body

¹ Flew, *Dictionary of Philosophy*, p. 255.

and mind – seem distinct and have different qualities. But dualism is unsatisfactory, because it lacks a coherent explanation of how body and mind can influence each other. Other attempts to solve the problem – asserting that the mind is just an effect of physical causes or that mind is primary and the physical is an illusion or that mind somehow emerges from the physical as the latter becomes more complex – are all unsatisfactory as well. There must be something better.

Process Metaphysics

Fortunately, there is another explanation of reality that does not suffer from such defects: process metaphysics, also called process philosophy. This is the view that reality is best understood as processes rather than things, that the fundamental character of all that exists is change and that enduring objects are best understood as persisting patterns amid change, much like the flame of a candle. It too has been present in European thought from the time of the Greeks. Heraclitus used the metaphor of a river, which remains what it is by changing what it contains.² Change is a necessary condition for constancy; without it we would have only lifeless uniformity and would not even know it, because knowing itself is a temporal process.

In the twentieth century the most elaborate and thoroughly-developed version of this ontology is that of Alfred North Whitehead. Whitehead was a mathematician who finished his career teaching philosophy at Harvard, where he formulated a metaphysical system based on the idea that reality is made up of atomic or momentary events, not inert particles. This is not an intuitive idea, and his major work, *Process and Reality*, is a dense, highly-technical work over 500 pages long. I'll try to summarize it briefly.

These events, which Whitehead calls “actual occasions” are a bit like subatomic particles, with some important differences:

- Each is momentary, coming into being, going through various phases and then passing away.
- The final phase of an actual occasion is not fully determined by the beginning. There is room for novelty, for the possibility of something new coming into being.
- Each actual occasion has awareness. In a primordial way it experiences its past and its present surroundings. Whitehead calls it an “occasion of experience.”³
- What we think of as a particle is actually a series of these actual occasions. A single electron is a series of momentary electron-occasions that form an enduring object much like the momentary frames of a movie form a continuous picture.

² The famous comment that it is not possible to step in the same river twice, quoted by Plato, is probably a misstatement of Heraclitus' views. The point is “not that all things are changing so that we cannot encounter them twice, but something much more subtle and profound. It is that some things stay the same only by changing.” Graham, “Heraclitus.”

³ Whitehead, *Adventures of Ideas*, p. 221.

- Nonliving things are composed of streams of actual occasions whose primordial experiences randomly cancel each other out.
- The primordial experiences of the actual occasions comprising living things, such as plants, animals and human beings, bind together and reinforce each other, giving birth to a higher-level experience. The richest and most intricate example we know of is our own conscious experience.

This doctrine is known technically as “pan-experientialism.” It solves the mind-body problem by asserting that everything has at least the rudiments of mind. Everything, even non-living things and even at the tiniest, most elementary level, has some sort of primordial experience. I like to say that everything has an inside and an outside, the inside being the world as experienced by the entity and the outside being the way that the entity is experienced by other entities.

Another way of saying this is that to be real is to have an effect. If you think of something that has no effect, then what you are thinking of cannot be real. The minimal effect something has is to be detected by something else. We never find something being real without something else being real as well. Relatedness, as well as process, interiority and creativity, is fundamental to the way things are.

Chinese Metaphysics

For several thousand years a civilization at least as accomplished as European civilization has viewed reality in terms of process and patterns of change instead of isolated entities. The surprising (to Western sensibilities) efficacy of Chinese medicine has led to an increased interest in the world-view of that ancient culture. The difference between West and East can be striking. In a book whose title nicely summarizes the Chinese worldview, *The Web That Has No Weaver*, Ted J. Kaptchuk tells of a Western doctor and a Chinese doctor diagnosing six people complaining of stomach pain. The Western doctor, using X-rays and endoscopy, diagnoses all six as having the same problem, peptic ulcers. The Chinese doctor looks at an array of signs and symptoms, including the patients' emotional disposition, the color and texture of their tongue and face, the quality of their pulses, and many others. He diagnoses each one as having a different problem, such as "Damp heat affecting the spleen" or "Deficient yin affecting the stomach," etc. For each one he prescribes a different regimen. The Western doctor looks for an underlying pathological mechanism. The Chinese doctor looks for a pattern of disharmony involving many elements. "To Western medicine, understanding an illness means uncovering a distinct entity that is separate from the patient's being; to Chinese medicine, understanding means perceiving the relationships between all the patient's signs and symptoms."⁴

The Chinese worldview sees the world in terms of relationships, patterns and change. For the Chinese there are two fundamental laws underlying change in the universe, the law of polar reversal and the law of periodicity. Polar reversal means that things change into their opposites, but not only that. Even more profoundly, the seeds of change are carried within each entity; each entity contains within itself the tendency that will one day manifest as its opposite. Periodicity means things change in recurring cycles, like night and day or the changing of the seasons.⁵

The symbol for polar reversal is the well-known Yin and Yang symbol, a circle divided into two curving sections, teardrops separated by an S curve, one white, representing Yang and one black, representing Yin. In the center of the white portion is a black dot, symbolizing Yin within Yang, and in the center of the black portion is a white dot, symbolizing Yang within Yin.



The author of *The Web That Has No Weaver* gives the clearest account I have found of Yin and Yang:

⁴ Kaptchuk, *The Web That Has No Weaver*, p. 6.

⁵ Wing, *The I Ching Workbook*, p. 12.

The character for Yin originally meant the shady side of a slope. It is associated with such qualities as cold, rest, responsiveness, passivity, darkness, interiority, downwardness, inwardness, and decrease.

The original meaning of Yang was the sunny side of a slope. The term implies brightness and is ... associated with qualities such as heat, stimulation, movement, activity, excitement, vigor, light, exteriority, upwardness, outwardness, and increase.⁶

All things have both aspects, a Yin aspect and a Yang aspect. They are not separate, but are always found in relationship to one another.

Thus, time can be divided into night and day, place into earth and [sky], season into inactive periods (fall and winter) and active periods (spring and summer), species into female and male, temperature into cold and hot These qualities are opposites, yet they describe relative aspects of the same phenomena. Yin and Yang qualities exist in relation to each other.⁷

Yin and Yang mutually create each other. One could not understand heat, for instance, without the concept of coldness, nor tallness without shortness, nor good without harm or right without wrong. Lao Tzu, the perhaps mythical author of the *Tao Te Ching* says

*Being and non-being produce each other;
Difficult and easy complete each other;
Long and short contrast each other;
High and low distinguish each other;
Sound and voice harmonize each other;
Front and back follow each other.*⁸ (Chapter 2)

Yin and Yang mutually control each other. If Yin is excessive, then Yang will be too weak and vice versa. If the temperature is too cold, then there is not enough heat; but if both are in balance then the temperature is comfortable. If they are out of balance, then the situation is precarious and likely to change, and is not conducive to harmonious action. Again from the *Tao Te Ching*:

⁶ Kaptchuk, *The Web That Has No Weaver*, p. 8. This traditional account of Yin and Yang differs from that of the popular dietary philosophy, Macrobiotics. Macrobiotics reverses the expansive-contractive polarity, calling Yin expansive and Yang contractive, but leaves intact the rest, calling Yin dark and cooling and Yang light and warming. In the author's humble opinion, Macrobiotics gets it wrong and is needlessly confusing.

⁷ *Ibid.*, p. 10.

⁸ *Tao Te Ching* chapter 2, translated by Wing-Tsit Chan, quoted in Kaptchuk, *The Web That Has No Weaver*, p. 10.

*[One] who stands on tiptoe is not steady.
[One] who strides cannot maintain the pace.
[One] who makes a show is not enlightened.
[One] who is self-righteous is not respected.
[One] who boasts achieves nothing.
[One] who brags will not endure.
According to followers of the Tao,
“These are extra food and unnecessary luggage.”
They do not bring happiness.
Therefore followers of the Tao avoid them.⁹ (Chapter 24)*

Yin and Yang mutually transform into each other. This can happen in two ways, one harmonious, in the normal course of events, and the other sudden and disruptive of harmony. The former is the give-and-take relationship found in all things and in everyday life, as the out-breath follows the in-breath or waking follows sleeping. The latter happens when Yin and Yang are out of balance. In that case there will be a rapid and drastic change from one to the other. In an unbalanced situation there are actually three possibilities: rapid and disruptive transformation; graceful rebalancing, which is the aim of Chinese medicine; or termination of the pattern altogether, in other words death. The *Tao Te Ching* says

*That which shrinks
Must first expand.
That which fails
Must first be strong.
That which is cast down
Must first be raised.
Before receiving
There must be giving.*

*This is called perception of the nature of things.
Soft and weak overcome hard and strong.¹⁰ (Chapter 36)*

The Chinese world view does not think of cause and effect in the same way as the western world view. Instead of looking for an external cause for each event, one looks for the pattern being expressed. The *I Ching*, or Book Of Changes, an even more ancient text than the *Tao Te Ching*, contains sixty-four hexagrams, combinations of Yin and Yang (broken and whole) lines, which represent recurring patterns of reality. “In Chinese thought, events and phenomena unfold through a kind of spontaneous cooperation, an inner dynamic in the nature of things.”¹¹ “Things behave in particular ways not because of prior actions ... of other things, but because their position in the ever-moving cyclical universe [is] such that they [have been] endowed with intrinsic natures which [make] that movement inevitable.”¹²

⁹ *Tao Te Ching* chapter 24, tr. Feng and English.

¹⁰ *Tao Te Ching* chapter 36, tr. Feng and English.

¹¹ Kaptchuk, *The Web That Has No Weaver*, p. 14.

¹² *Ibid.*, p. 15, quoting Joseph Needham.

The key word is pattern. The world is

an integral whole, a web of interrelated things and events. Within this web ... an entity can be defined only by its function and has significance only as part of the whole pattern.¹³

This metaphysics ... [is] from Taoism, which altogether lacks the idea of a creator, and whose concern is insight into the web of phenomena, not the weaver. For the Chinese, that web has no weaver, no creator; in the West the final concern is always the creator or cause and the phenomenon is merely its reflection. The Western mind seeks to discover and encounter what is beyond, behind, or the cause of the phenomena Knowledge, within the Chinese framework, consists in the accurate perception of the inner movement of the web of phenomena. The desire for knowledge is the desire to understand the interrelationships or patterns within that web, and to become attuned to the unseen dynamic.¹⁴

Tao Te Ching

The *Tao Te Ching* (pronounced “*Daodejing*”), from which I have been quoting, is an ancient classic of Chinese literature, written down around 400 BCE, during the Warring States Period, 476 BCE to 221 BCE. It was a time of constant warfare among feudal states in the central Chinese plains, full of battles, intrigue, shifting alliances and broken treaties. Technological advances in the art of warfare led to more and more bloodshed and greater and greater consolidation of power, coming to an end in 221 BCE with the rise of the Qin dynasty, which had conquered all the others. In the midst of carnage and the horror of war, the *Tao Te Ching* offered a vision of a more harmonious way of life.

The title is translated in various ways. *Tao* means “way” or “the way.” *Te* means virtue in the sense of “personal character”, “inner strength”, or “integrity.” The semantics of this Chinese word resemble the English virtue, which developed from a (now archaic) sense of “inner potency” or “divine power” (as in “healing virtue of a drug”) to the modern meaning of “moral excellence” or “goodness.”¹⁵ *Ching* means “book” or “classic.” Thus the usual translation is “The Book of The Way and Its Power.” The name of its author, *Lao Tzu*, literally means “the old one” or “old master.” He was probably an elder contemporary of Confucius. The story is that he was an official in the imperial archives of the Qin and had devoted his life to learning how to live well. Refusing to commit anything to writing but having gained some acclaim, he left for a journey to the West at the end of his life and was persuaded by a guard at the gates to write down his wisdom. The result is the book we know as *Tao Te Ching*.

The book consists of 81 short poems, which are ambiguous and elusive. The topics range from lyrical mystical insight to political advice to rulers to practical advice for people. Some of the major themes are the ineffability of the source of all things, the importance of Yin or yielding energy symbolized as feminine (rather a counterbalance

¹³ Ibid., p. 15.

¹⁴ Idem.

¹⁵ Wikipedia, *Tao Te Ching*.

to the Yang effort of warfare), the need and indeed inevitability of return to a primordial state, emptiness as efficacy and power, the usefulness of humility in knowledge, and many others.

A Whiteheadian Interpretation

The recent, *Dao De Jing: A Philosophical Translation*, by Roger T. Ames and David L. Hall, claims that the work is best understood in the Whiteheadian tradition of process metaphysics. The authors translate *Dao De Jing* as “The Classic of This Focus (de) and Its Field (dao).” Here they take *De* to mean the particular virtue or excellence of an individual moment of experience and, by extension, of the ongoing person whose experience it is. They take *Dao* to mean the contents of one’s field of experience, which ultimately encompasses the entire world. The aim of the *Tao Te Ching*, they say, is “bringing into focus and sustaining a productive disposition that allows for the fullest appreciation of those specific things and events that constitute one’s field of experience.”¹⁶

The specific things and events of which one is conscious at any given moment have a two-fold character. They are elements in one’s own experience and as such are unique, personal and private. And they are elements within the world that extends beyond one and as such are part of the universal web of relationships. The aim of life is to harmonize one’s experience such that one takes the widest scope of the world into the richest particularity of one’s own personal experience. This is an artistic view of life that seeks beauty and harmony.

Structurally, we are like actual occasions who take in all the aspects of our world; add an element of uniqueness, of novelty, of our own point of view, intention and desire; and synthesize these elements into a new moment of creation. We can do this elegantly and gracefully or clumsily and awkwardly. The *Tao Te Ching*, in the view of Ames and Hall, gives us advice on how to do it in the most satisfying way.

We can think of the world as being a field of energy, called *Qi* (pronounced “chee”). The world and its phenomena are perturbations that emerge out of and fold back into this energizing field. The perturbations are not different from the energy. “*Qi* is both the animating energy and that which is animated. There are no ‘things’ to be animated; there is only the vital energizing field and its focal manifestations.”¹⁷ The fulfillment of life consists nourishing one’s *qi* so as to be most vital, to live to the fullest. “[O]ne nourishes one’s *qi* most successfully by making of oneself the most integral focus of the most extensive field of *qi*.”¹⁸ The physical movements of Qi Gong (“*Gong*” means discipline, exercise or skill) are a recent method of cultivating *qi* in the physical body, similar to Tai Chi Chuan, the martial art. The Taoist aim, however, is more than just physical health. (And to be fair so, ultimately, are the aims of Qi Gong and Tai Chi Chuan.) In the view of Ames and Hall, the goal is to achieve a harmonious existence that leaves nothing out and includes all elements in a satisfying, ongoing whole.

¹⁶ Ames and Hall, *Daodejing*, p. 13.

¹⁷ *Ibid.*, p. 63.

¹⁸ *Ibid.*, p. 19.

Several skills contribute to the achievement of this state (which is not static, but an ongoing and constantly changing pattern), all of which involve some deference and restraint, some holding oneself back from arrogantly imposing one's will on the world.

One is *wuzhi* or non-impositional consciousness. One strives to pay attention simultaneously to the insistent particulars of one's personal experience and to the overarching pattern of the whole of reality. "A full appreciation of particularity requires that we understand and be responsive to the complex patterns of relatedness implicated in any event" say Ames and Hall.¹⁹ *Wuzhi* is one of the "wu-forms," which add the prefix "wu," meaning roughly "not," to terms for various activities. Sometimes translated as "not knowing" or "no-knowledge," the term actually refers to refraining from imposing predetermined categories of thought on one's immediate experience of reality. Of course, we cannot do this entirely, as our very perceptual apparatus is composed of what we might call "perceptual judgments" in addition to the raw data of sensation and emotional tone. But we can exercise restraint in jumping to conclusions or overlooking the details of the particular situation by seeing it only as an example of a general category. "*Wuzhi* provides one with a sense of the *de* of a thing – its particular uniqueness and focus – rather than yielding an understanding of that thing in relation to some concept or natural kind or universal."²⁰ From the *Tao Te Ching*:

*Leave off fine learning! End the nuisance
Of saying yes to this and perhaps to that,
Distinctions with how little difference!
Categorical this, categorical that,
What slightest use are they!
If one man leads, another must follow,
How silly that is and how false!
Yet conventional men lead an easy life
With all their days feast-days,
A constant spring visit to the Tall Tower,
While I am a simpleton, a do-nothing,
Not big enough yet to raise a hand,
Not grown enough to smile,
A homeless, worthless waif.
Men of the world have a surplus of goods,
While I am left out, owning nothing.
What a booby I must be
Not to know my way round,
What a fool!
The average man is so crisp and so confident
That I ought to be miserable
Going on and on like the sea,
Drifting nowhere.
All these people are making their mark on the world,
While I, pig-headed, awkward,
Different from the rest,*

¹⁹ Ibid., p. 35.

²⁰ Ibid., p. 41.

*Am only a glorious infant still nursing at the breast.*²¹ (Chapter 20)

Another skill is *wuwei*, often inadequately translated as “no action” or “non-action.” It does not mean not doing anything, although it certainly has the connotation of quiescence. It means “the absence of any course of action that interferes with the particular focus (*de*) of those things contained within one’s field of influence.”²² Instead of imposing one’s will on circumstances, instead of interfering, one acts like water, which flows to the lowest place and ultimately prevails. *Wuwei* is found throughout the *Tao Te Ching*. Here are some examples:

*[T]he sage goes about doing nothing, teaching no-talking.
The ten thousand things rise and fall without cease,
Creating, yet not possessing,
Working yet not taking credit.
Work is done, then forgotten.
Therefore it lasts forever.*²³ (Chapter 2)

And

*Tao abides in non-action,
Yet nothing is left undone.
If kings and lords observed this,
The ten thousand things would develop naturally.
If they still desired to act,
They would return to the simplicity of formless substance.
Without form there is no desire.
Without desire, there is tranquility.
And in this way all things would be at peace.*²⁴ (Chapter 37)

It might be useful to provide another translation of this same verse. In the following, Ames and Hall translate *Tao* as “way-making,” emphasizing its active nature as a process.

²¹ *Tao Te Ching*, chapter 20, Tr., Bynner, pp. 36-37.

²² Ames and Hall, *Daodejing*, p. 39.

²³ *Tao Te Ching* chapter 2, tr. Feng and English.

²⁴ *Tao Te Ching* chapter 37, tr. Feng and English.

Way-making is really nameless.

*Were the nobles and kings able to respect this,
All things would be able to develop along their own lines.*

*Having developed along their own lines, were they to desire to depart from this,
I would realign them
With a nameless scrap of unworked wood.*

*Realigned with this nameless scrap of unworked wood,
They would leave off desiring.
In not desiring, they would achieve equilibrium,
And all the world would be properly ordered of its own accord.²⁵ (Chapter 37)*

Related to Wuwei is Wuzheng, striving without contentiousness:

*When the Tao is present in the universe,
The horses haul manure.
When the Tao is absent from the universe,
War horses are bred outside the city.*

*There is no greater sin than desire,
No greater curse than discontent,
No greater misfortune than wanting something for oneself.
Therefore [one] who knows that enough is enough will always have enough.²⁶
(Chapter 46)*

And throughout all of it is a kind of mystical experience of the nothingness that underlies all existence, the insubstantiality that is the fundamental ontological characteristic of the world. This insubstantiality, far from being a deficit or lack, provides endless nourishment:

*Returning is the motion of the Tao.
Yielding is the way of the Tao.
The ten thousand things are born of being.
Being is born of not being.²⁷ (Chapter 40)*

*The breath of life moves through a deathless valley
Of mysterious motherhood
Which conceives and bears the universal seed,
The seeming of a world never to end,
Breath for [people] to draw from as they will:
And the more they take of it, the more remains.²⁸ (Chapter 6)*

²⁵ *Tao Te Ching* chapter 37, tr. Ames and Hall, p 134..

²⁶ *Tao Te Ching* chapter 46, tr. Feng and English.

²⁷ *Tao Te Ching* chapter 40, tr. Feng and English.

²⁸ *Tao Te Ching* chapter 6, tr. Bynner, p. 28.

Summary

Both contemporary process metaphysics, exemplified by the philosophy of Alfred North Whitehead, and the ancient world-view of the Chinese, captured eloquently, if enigmatically, in the *Tao Te Ching*, have similar things to say about the world and the humans who occupy it.

The world is a web of interconnected processes, constantly changing, in which enduring objects, including people, are patterns rather than unchanging substance.

The human being is not separate from the world, but intimately embedded within it, enmeshed in and constituted by patterns of relationship.

The human being always brings the possibility of novelty, creativity and freedom to each moment. The human being is neither fully determined by the past nor fully free to break out of it. The human opportunity is to include the given-ness of the past into a new creation of beauty and harmony in the present.

This is not mere subjectivity, nor egotistic individualism. In order to create beauty and harmony within one's experience, one must of necessity create beauty and harmony, to the best of one's ability, in the world because the world is the content of one's experience.

In this effort, success lies in deference and humility. There is far greater wisdom in the movement of the whole pattern than in any attempt to impose one's own will on events.

The knowledge of these principles and the skill to put them into practice is the proper goal of anyone who wishes to live a fulfilling life.

Appendix: Whitehead's Process Philosophy

This section gives a more detailed account of Whitehead's metaphysics than in the body of the paper, but it does not do justice to the immense and sophisticated body of thought that is Whitehead's enduring contribution to the world.

For Whitehead, the fundamental unit of reality is what he calls an "occasion of experience."²⁹ Actuality is not made up of inert substances that are extended in space and time and only externally related to each other. Instead, it is made up of atomic or momentary events, each of which in some primordial way experiences its past and its present surroundings. These events, called "actual occasions," are "the final real things of which the world is made up."³⁰ Each actual occasion experiences the past in the form of its predecessors and the present in the form of its contemporaries, and anticipates the future. It comes into being, goes through a sequence of internal phases and finally passes away, becoming fixed, a datum for the next event. The final phase of this process is not fully determined by the beginning. There is room for novelty, for the possibility of something new coming into being. This sequence of phases, which Whitehead calls "conscrescence,"³¹ meaning "growing together," culminates in an entity no longer alive, existing only as a memory, as it were, for its successors, only as an echo of the past in events in the present which are all that are real.

You can think of actual occasions as analogous to atoms or subatomic particles, especially since we now know that atoms are not indestructible units but are composed of smaller elements, which are dynamically in process. Science tells us that things that appear to be solid entities like tables and chairs, rocks, trees and people, are really composed of many tiny atoms. For Whitehead, even subatomic particles are not particles but are made up of serially ordered strings – he calls them "societies" – of momentary actual occasions, each flowing into the next and giving the illusion of something that is continuously extended in time, just as the rapid succession of individual frames in a movie appears as a continuous picture. A single electron is a series of momentary electron-occasions.

A series of actual occasions forms an enduring object, a simple individual.³² These combine into two different kinds of higher-order collections, depending on how the proto-experiences of the simple individuals interact. The first is aggregation, a collection without unity of internal experience. Perceptible things such as rocks and telephones are examples of aggregations. The proto-experiences of all the component simple individuals randomly cancel each other out, and no higher-level, inclusive experience arises.³³

²⁹ Whitehead, *Adventures of Ideas*, p. 221.

³⁰ Whitehead, *Process and Reality*, p. 27.

³¹ *Ibid.*, p. 33 ff.

³² Griffin, *Whitehead's Radically Different Postmodern Philosophy*, p. 58.

³³ *Ibid.*, p. 59.

The other kind of collection is compound individual³⁴, in which the proto-experiences of the components bind together and reinforce each other, giving birth to a higher-level experience, a dominant member of the society. Subatomic particles form atoms; atoms form molecules; molecules form cells; and cells form plants and animals, including humans. Humans, when they are awake, are richly conscious of their surroundings and, awake or asleep, have a unity over time of subjective experience, intention and agency. Whitehead suggests that something like that coherence of internality extends all the way down to the most primitive unit of reality. He calls his system a “Philosophy of Organism,”³⁵ as organism is a better and more inclusive metaphor for how entities in the world are related than mere arrangement of inert substance.

The distinction between aggregations and compound individuals is the familiar distinction between non-living and living beings. What is new and unique here is the claim that even non-living beings, even at the tiniest, most elementary level, have some sort of primordial experience. I like to say that everything has an inside and an outside, the inside being the world as experienced by the entity and the outside being the way that the entity is experienced by other entities. This theory is known technically as “pan-experientialism” or “pan-protopsychism.”³⁶

Another way of saying this is that to be real is to have an effect. If you think of something that has no effect, then what you are thinking of cannot be real. The minimal effect something has is to be detected by something else. We never find something being real without something else being real as well. Relatedness, as well as process and interiority, is fundamental to the way things are.

Verification

In what sense can a metaphysical system such as this be verified or considered true? Whitehead suggests four criteria: applicability, adequacy, coherence and logical consistency. A theory is applicable if it covers some items of experience and adequate if it covers all of them. It is coherent if it all hangs together, if its fundamental notions cannot be abstracted from each other. And it is logically consistent if it contains no contradictions and its inferences are valid.³⁷ This list does not include experimental verification. Nevertheless, findings in contemporary science at least support, if not prove, the process view of reality.

Here is an interesting passage commenting on pictorial representations of the genome:

[T]he lesson of twentieth-century physics [is that] there's nothing but trouble when we imagine our theoretical entities and constructs at the submicroscopic level as if they were "made of" anything like the matter of our everyday

³⁴ Idem. The notion of Compound Individual is an elaboration of Whitehead's thought by Charles Hartshorne, one of his students. See Hartshorne, “The Compound Individual,” pp. 215-217.

³⁵ Whitehead, *Process and Reality*, p. v et. passim.

³⁶ The more usual term in the history of philosophy, panpsychism, is apt only if we do not take “psyche” to mean a fully-developed mind like humans have but merely some sort of interiority or private experience.

³⁷ Whitehead, *Process and Reality*, pp. 4-5.

experience. At the atomic and molecular level our descriptions have more to do with centers of force and the intricate play of forces than with anything like the physical stuff of our common experience. And if this is true, then any graphic depiction of a nucleosome must be an attempt to hint at the momentary "shape" and equilibrium of innumerable intersecting forces – not the form of something like an infinitesimal lump of clay. The interactions of these forces with our sophisticated instrumentation – and not the images we unavoidably form based on our routine perceptions of the macroscopic world – are all we know of the molecular realm.³⁸

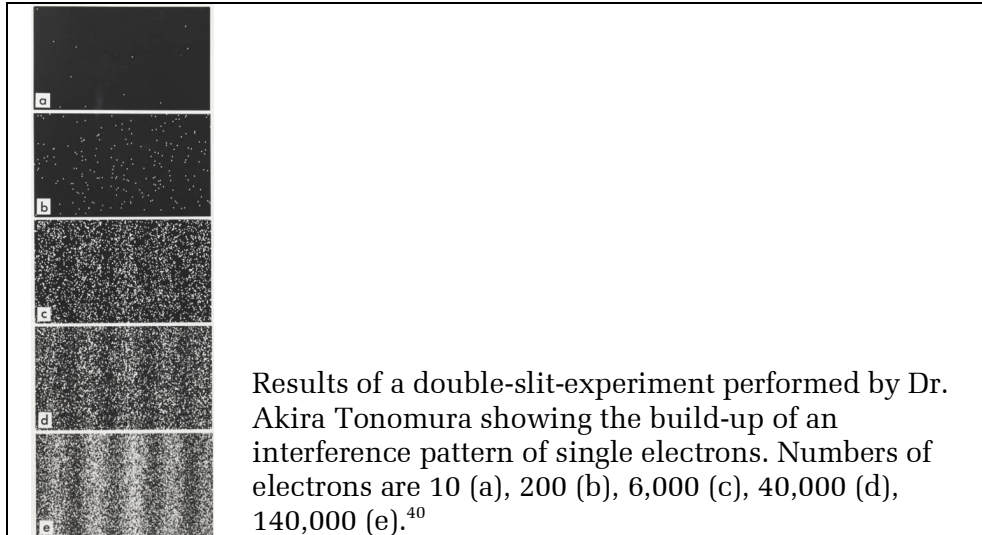
There is a famous experiment in quantum physics, replicated many times, that supports the theory of quantum indeterminacy, that events at the quantum level are not completely causally determined by past events. This is the Double Slit experiment.³⁹ One fires photons of coherent light at a double slit and records where they land on the other side. Except it turns out that photons are not actually particles that land somewhere.

If it were done on the macroscopic level of everyday experience, one would fire rapid bursts of pellets from a pellet gun at a board with two vertical slits in it and a solid board, the target, on the other side. Some pellets would bounce off, and some would go through the slits. On the other side, they would hit the target and make two vertical stripes. But that is not what happens at the quantum level, where the pellets are photons of light and the target is photographic paper. Instead, the result is a strong vertical stripe in the middle, the expected stripes on the left and right, and then dimmer stripes extending outward at intervals in each direction. Light in this case acts like waves that cause interference patterns. That is, when a crest meets a crest, a more intense crest results; and when a crest meets a trough they cancel out. The stripes of light are from the crests reinforcing each other, and the darkness in between is the from crests and troughs canceling each other out.

Even more interesting, when light is emitted one photon at a time and aimed at the two slits, it shows the same interference pattern. One would expect that a photon, if it were an enduring particle, would go through one slit or the other. In fact it appears to act like a wave that goes through both slits, interferes with itself, and results in an impression in one and only one of the stripes. One cannot predict in advance in which stripe the photon will make an impression. In between the photon's being emitted and its being detected on the other side, it is in an indeterminate state. There is only a probability, not a certainty, that it will be detected at any given site.

³⁸ Talbott, "On Making The Genome Whole."

³⁹ Wikipedia, "Double-Slit Experiment."



This gives credence to the idea that enduring objects are actually series of events. A photon is emitted. It comes into being on the near side of the two slits, with a certain velocity and direction and a dim awareness – Whitehead calls it a “prehension”⁴¹ – of the possibility of going through one slit or the other. Then it perishes. The succeeding event comes into being on the other side. It inherits its velocity and direction from its predecessor and has a dim awareness of being on the far side of the two slits. But where? Here I am anthropomorphizing quite a bit, but one can imagine that it simply decides to come into being at a certain place within the realm of possibilities, that it simply arbitrarily picks a spot.

If this is true then novelty, creativity and freedom – as well as awareness – are elements of reality at the most fundamental level, and it is not surprising that these are real possibilities for humans as well.

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⁴⁰ http://en.wikipedia.org/wiki/File:Double-slit_experiment_results_Tanamura_2.jpg.

⁴¹ Whitehead, *Process and Reality*, pp. 27-28, et passim.

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Revision History

Version	Date	Author	Change
1.0	29 July 2009	Bill Meacham	First draft
1.1	24 September 2010	Bill Meacham	Add Hartshorne reference.
1.2	25 July 2017	Bill Meacham	Fixed footnote 22