

# ‘Wholeness and the Implicate Order’ by David Bohm – A masterpiece of thinking

BOOK SUMMARIES, SCIENCE



“**Wholeness and the Implicate Order**” is a profound, important book (Rutledge, 1980-83) by the late physicist and philosopher David Bohm, friend of Einstein, Oppenheimer and other great thinkers of the past century. Bohm’s vision of the wholeness of the universe, and the hidden (implicate) order that holds it together, is a masterpiece of thought and exposition. This is a summary of his book.



David Bohm, from Wikipedia

## **Fragmentation and wholeness**

“Fragmentation is now very widespread, not only throughout society, but also in each individual; and this is leading to a kind of general confusion of the mind, which creates an endless series of problems...

“Thus art, science, technology and human work in general, are divided up into specialties, each considered to be separate in essence from the others... Then, society as a whole has developed in such a way that it is broken up into separate nations and different religious political, economic, racial groups, etc. Man’s natural environment has correspondingly been seen as an aggregate of separately existent parts, to be exploited by different groups of people.

“Similarly, each individual human being has been fragmented into a large number of separate and conflicting compartments, according to his different desires, aims, ambitions, loyalties, psychological characteristics, etc., to such an extent that it is generally accepted that some degree of neurosis is

inevitable, while many individuals going beyond the 'normal' limits of fragmentation are classified as paranoid, schizoid, psychotic etc." (pg. 1)

These observations are as true in the 21<sup>st</sup> Century as they were in the latter 20<sup>th</sup> Century. Political conflict, international conflicts, pollution of the natural environment and fragmented technology are all examples of harmful fragmentation today.

Bohm considers the perception that all these fragments are separate is really an illusion leading to "endless conflict and confusion."

### **Thinking about things**

In some ways it is natural for humans to divide things up and separate them to make their interactions with the world and other people manageable. But this has "ultimately led to a wide range of negative and destructive results, because man lost awareness of what he was doing and thus extended the process of division beyond the limits within which it works properly. In essence, the process of division is a way of *thinking about things* that is convenient and useful mainly in the domain of practical, technical and functional activities" (pg. 2) such as the work most of us do to make a living.

**But problems arise when we take "the content of our thought for a 'description of the world as it is.'" (pg. 3)** This is a very important point for Bohm which bears some deeper exploration.

He notes that "in scientific research, a great deal of our thinking is in terms of *theories*. The word 'theory' derives from the Greek 'theoria,' which has the same root as 'theatre', in a word meaning 'to view' or 'to make a spectacle.' Thus it might be said that a theory is primarily a form of *insight*, i.e., a way of looking at the world, and not a form of *knowledge* of how the world is" (pg. 4).

When it comes to human perception and action, "our theoretical insights provide the main source of organization of our factual knowledge. Indeed, our overall experience is shaped in this way" (pg. 5).

It is important to understand that "experience and knowledge are one process, rather than to think that our knowledge is about some sort of separate

experience” (pg. 6). Contemporary research in neuroscience confirms this view that our prior knowledge shapes our current experience and not that we are perceiving objective reality.

Fragmentation is not reality, Bohm insists. “Rather, what should be said is that **wholeness is what is real**, and that fragmentation is the response of this whole to man’s action, guided by illusory perception, which is shaped by fragmentary thought.” (pg. 7)

Thus “it is crucial that man be aware of the activity of his thought *as such*; i.e. as a form of insight, a way of looking, rather than as a ‘true copy of reality as it is.’” (pg. 7).

“What is called for is not an integration of thought, or a kind of imposed unity, for any such imposed point of view would itself be merely another fragment. Rather, all our different ways of thinking are to be considered as different ways of looking at the one reality, each with some domain in which it is clear and adequate... Each view gives only an appearance of the object in one aspect” (pg. 6-7).

So in other words each way of thinking or viewing the world, each theory, is like a tool or window on reality, not reality itself. We can only know reality through different ways of viewing it, but we should always remember that these views are not reality. As the saying goes, “The map is not the territory.”

### **Atomic vs. Quantum Theory**

Bohm notes that the atomic theory was first proposed by Greek philosopher Democritus more than 2,000 years ago. “In essence this theory leads us to look at the world as constituted of atoms, moving in the void.... However, the particular content of atomic theory was such as to be especially conducive to fragmentation, for it was implicit in this content that the entire world of nature, along with the human being, including the brain, his nervous system, his mind, etc., could in principle be understood completely in terms of structures and functions of aggregates of separately existent atoms. The fact that in man’s experiments and general experience this atomic view was confirmed was, of course, then taken as proof of the correctness and indeed

the universal truth of this notion. Thus almost the whole weight of science was put behind the fragmentary approach to reality” (pg. 8-9).

But the newer development of quantum theory “shows that the attempt to describe and follow an atomic particle in precise detail has little meaning.... In a more detailed description the atom is, in many ways, seen to behave as much like a wave as a particle. It can perhaps best be regarded as a poorly defined cloud, dependent for its particular form on the whole environment, including the observing instrument. Thus one can no longer maintain the division between the observer and the observed....” (pg. 9).

Adding Einstein’s Theory of Relativity, “it follows that the concept of a rigid body breaks down.... What is needed in a relativistic theory is to give up altogether the notion that the world is constituted of basic objects or ‘building blocks.’ Rather, one has to view the world in terms of universal flux of events and processes” (pg. 10).

“Relativity and quantum theory agree, in that they both imply the need to look on the world as an *undivided whole*, in which all parts of the universe, including the observer and his instruments, merge and unite in one totality.... The new form of insight can perhaps best be called *Undivided Wholeness in Flowing Movement*.” In this flowing movement, “mind and matter are not separate substances. Rather they are different aspects of one whole and unbroken movement” (pg. 11).

Mankind’s failure to embrace this undivided wholeness, and instead to view reality as fragmented, has led to many of our problems today. “Such a mode of thought implies unending development of chaotic and meaningless conflict, in which the energies of all tend to be lost by movements that are antagonistic or else at cross-purposes” (pg. 16).

Bohm uses the analogy of swirling vortices in a fast-moving stream of water. “The structure and distribution of vortices, which constitute a sort of content of the description of the movement, are not separate from the formative activity of the flowing stream, which creates, maintains, and ultimately dissolves the totality of vortex structures” (pg. 19). This is the view of reality that we need today, not fragmentation, Bohm says.

## Reality and Knowledge Considered as Process

After noting that viewing reality as process goes back to the Greek philosopher Heraclitus, and then was amplified by British philosopher Alfred North Whitehead, Bohm introduces his somewhat different view:

“I regard the essence of the notion of process as given by the statement: Not only is everything changing, but all *is* flux. That is to say, *what is* is the process of becoming itself, while all objects, events, entities, conditions, structures, etc., are forms that can be abstracted from this process” (pg. 48).

Bohm reflects Heraclitus’ analogy of reality/process as a flowing stream, always changing. “On this stream, one may see an ever-changing pattern of vortices, ripples, waves, splashes, etc., which evidently have no independent existence as such. Rather they are abstracted from the flowing movement, arising and vanishing in the total process of flow. (ibid.)”

In the same manner, “knowledge, too, is a process, an abstraction from the one total flux, which latter is therefore the ground both of reality and of knowledge of this reality” (pg. 49).

All knowledge is some form of thought, Bohm says. Some thought is an automatic or mechanical response combining memory and perception of a new situation. But how can we be sure that these thoughts are “relevant or fitting to the actual situation that evokes them,” in other words, accurate and appropriate? “The perception of whether or not any particular thoughts are relevant or fitting requires the operation of an energy that is not mechanical, an energy that we shall call *intelligence*. This latter is able to perceive a new order or a new structure, that is not just a modification of what is already known or present in memory” (pg. 51).

“Intelligence and material process have thus a single origin, which is ultimately the unknown totality of the universal flux. In a certain sense, this implies that what have commonly been called mind and matter are abstractions from the universal flux....” (pg. 53).

Other chapters in the book deal with the mathematics of quantum theory, hidden variables and other complexities beyond the scope of this summary.

# Quantum theory and the implicate order

In a chapter entitled “Quantum theory as an indication of a new order,” Bohm further explores what he means by the book title, “**Wholeness and the Implicate Order.**”

## The Lens and the Hologram

Bohm points out how the development of the lens, which led to the telescope, microscope and other valuable instruments, “greatly strengthened man’s awareness of the various parts of the object and of the relationship between these parts.... However, ... relativity and quantum theory imply undivided wholeness, in which analysis into distinct and well-defined parts is no longer relevant” (pg. 144-5).

He suggests instead that one can obtain insight into wholeness by considering the hologram. The Greek origin *holo-* means whole. A hologram of an object allows the viewer to see “the whole of the original structure, in three dimensions, and from a range of possible points of view.... If we illuminate only a small region of the (holographic) plate, we still see the whole structure, but in somewhat less sharply defined detail” (pg. 145-6).

“What is being suggested here is that the consideration of the difference between lens and hologram can play a significant part in the perception of a new order that is relevant for physical law” (pg. 147).

Bohm then explains what he means by implicate order, meaning order which is enfolded (the root meaning of “implicate”) and later unfolded or made explicate. He gives as an “example of implicate order (which) can be demonstrated in the laboratory, with a transparent container full of a very viscous fluid, such as treacle (syrup), and equipped with a mechanical rotator than can ‘stir’ the fluid very slowly but thoroughly. If an insoluble droplet of ink is placed in the fluid and the stirring device is set in motion, the ink drop is gradually transformed into a thread that extends over the whole fluid. The latter now appears to be distributed more or less at ‘random’ so that it is seen as some shade of grey. But if the mechanical stirring device is now turned in the opposite direction, the transformation is reversed, and the droplet of dye suddenly appears, reconstituted” (pg. 149).

So the order of the droplet in the distribution is “enfolded or implicated in the ‘grey mass’ that is visible in the fluid. Indeed, one could thus ‘enfold’ a whole picture. Different pictures would look indistinguishable (when stirred up) but yet have different implicate orders, which would be revealed when they were explicated” by stirring in the opposite direction (pg. 149-50).

## **The enfolding-unfolding universe and consciousness**

In this seventh chapter of his book, Bohm contrasts mechanistic order with implicate order. In mechanistic order as espoused by classical physics, “the principle feature of this order is that the world is regarded as constituted of entities which are *outside of each other*, in the sense that they exist independently in different regions of space (and time) and interact through forces that do not bring about any changes in their essential natures. The machine gives a typical illustration of such a system of order.... By contrast, in a living organism, for example, each part grows in the context of the whole, so that it does not exist independently, nor can it be said that it merely ‘interacts’ with the others, without itself being essentially affected in this relationship” (pg. 173).

Bohm notes that “the quantum theory presents a much more serious challenge to this mechanistic order, going far beyond that provided by the theory of relativity. He cites three “key features of quantum theory that challenge mechanism:”

1. “Movement is in general *discontinuous*, in the sense that action is constituted of *indivisible quanta* (implying also that an electron, for example, can go from one state to another, without passing through any states in between).
2. “Entities, such as electrons, can show different properties (e.g., particle-like, wavelike, or something in between), depending on the environmental context within which they exist and are subject to observation.
3. “Two entities, such as electrons, which initially combine to form a molecule and then separate, show a peculiar non-local relationship, which can best be

described as a non-causal connection of elements that are far apart (as demonstrated in the experiment of Einstein, Podolsky and Rosen).” The experimenters called this *entanglement*, and Einstein somewhat tongue in cheek called it “spooky action at a distance.”

## **Cosmology and the Implicate Order**

In this section Bohm explores the relationship between cosmology, the science of the origin and development of the universe, with his theory of the implicate order. Based on scientific research, “what we call empty space contains an immense background of energy, and that the matter as we know it is a small, ‘quantized’ wavelike excitation on top of this background, rather like a tiny ripple in a vast sea.... In this connection it may be said that space, which has so much energy, is *full* rather than empty” (pg. 191).

So Bohm says “what we perceive through the senses as empty space is actually the plenum (filled space), which is the ground for the existence of everything, including ourselves. The things that appear to our senses as derivative forms and their true meaning can be seen only when we consider the plenum, in which they are generated and sustained, and into which they must ultimately vanish” (pg. 192). This plenum “is to be understood in terms of a multidimensional implicate order, while the entire universe of matter as we generally observe it is to be treated as a comparatively small pattern of excitation” (*ibid.*).

“With all this in mind let us consider the current generally accepted notion that the universe, as we know it, originated in what is almost a single point in space and time from a ‘big bang’ that happened some ten thousand million years ago. In our approach this ‘big bang’ is to be regarded as actually just a ‘little ripple’ (*ibid.*).

## **Consciousness and the Implicate Order**

Bohm claims that “the implicate order applies both to matter (living and non-living) and to consciousness, and that it can therefore make possible an understanding of the general relationship between these two” (pg. 196).

“To obtain an understanding of the relationship of matter and consciousness has, however, thus far proved to be extremely difficult, and this difficulty has its root in the very great difference in their basic qualities as they present themselves in our experience” (ibid.). He notes that Descartes and other great thinkers over the centuries have struggled with how our consciousness, the thoughts and feelings inside our heads, can apprehend objects in the environment, from rocks and trees to people and planets. He believes that both consciousness and matter are extensions of the implicate order, and thus a connection is realistically possible.

He notes that Karl Pribram, Ph.D., has proposed a concept of a holographic brain. Pribram suggests “that memories are generally recorded all over the brain in such a way that information concerning a given object or quality is not stored in a particular cell or localized part of the brain but rather that all the information is enfolded over the whole. This storage resembles a hologram in its function, but its actual structure is much more complex. We can then suggest that when the ‘holographic’ record in the brain is suitably activated, the response is to create a pattern of nervous energy constituting a partial experience similar to that which produced the ‘hologram’ in the first place. But it is also different in that it is less detailed, in that memories from many different times may merge together, and in that memories may be connected by association and by logical thought to give a further order to the whole pattern” (pg. 198).

Bohm and Pribram became good friends in their later years, and a model of their “geometry of consciousness” can be seen in this [YouTube Video](#) based on a doctoral dissertation by Shelli Joey, Ph.D.

## **Matter, Consciousness and their Common Ground**

The final section of “Wholeness and the Implicate Order” is a section entitled “Matter, Consciousness and their Common Ground.”

Both matter and consciousness can be understood in terms of the implicate order. According to this principle, “there is a relatively independent, recurrent,

stable sub-totally (a part of the whole) which constitutes the explicate order, and which of course, is basically the order that we commonly contact in common experience (extended in certain ways by our scientific experiments). This order has room in it for something like memory, in the sense that previous moments generally leave a trace (usually enfolded) that continues in later moments, though this trace may change and transform almost without limit” (pg. 207-08). Because memory isn’t perfect, we use instruments like cameras, tape recorders and computers to record actual moments more precisely.

Our memories work somewhat like these instruments, but “all that is recorded is held enfolded within the brain cells and the are part of matter in general” (208). Bohm’s concept of the brain as a part of the totality, in which memories are first enfolded and then unfolded during recall, is unique and consistent with his concepts of implicate and explicate order. Everything emerges from and returns to the Whole.

Bohm further proposes “that the more comprehensive, deeper, and more inward actuality is neither mind nor body but rather a yet higher-dimensional actuality, which is their common ground and which is of a nature beyond both” (pg. 209). What we experience consciously is a projection of a higher-dimensional reality onto our lower-dimensional elements.

“In the higher-dimensional ground the implicate order prevails. Thus, within this ground, *what is* is movement which is represented in thought as the co-presence of many phases of the implicate order.... We do not say that mind and body causally affect each other, but rather that the movements of both are the outcome of related projections of a common higher-dimensional ground” (*ibid.*).

## References

This is pdf of the original article at

<https://wiseinsightsforum.com/wholeness-and-the-implicate-order/>

Link to the book: “[Wholeness and the Implicate Order](#)”