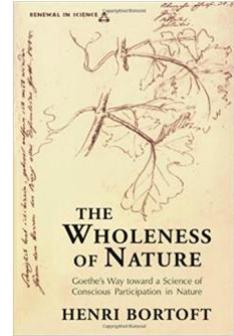


The Wholeness of Nature by Henri Bortoft (1996)

What if the whole is in the part?

"The heart has its reasons in which reason cannot understand." -Blaise Pascal



EXAMPLES OF WHOLES

- **Holograms** are wholes. They are photographic plates that project 3 dimensional images. If broken, any part can still project the whole image. Thus the whole holographic image is on every part of the plate. (
- One author says that each person is a **fractal** and contains the essence of all humankind. Fractal geometry is that geometry which employs the same formula to generate the whole graphic as it employs to generate each new part. (
- **The Golden Ratio** is found in parts of the human body, as well as throughout nature. As DaVinci used the golden ratio in painting the Mona Lisa, we also see these proportions in the sunflower, the pine cone, the conch, and scores of other natural and man-made objects. (
- Certain **leaves** will root if put in water, thus they have rooting abilities up in the leaves. So, a property of the whole tree is in a separate part. (
- The **ear** belongs only to your body. It has the nature of your whole body in it, although it is only a part of the body. Try pin the ear on the human (like the children's game, pin the tail on the donkey). Would someone else's ears look right on your head? (
- It is said that the whole of the animal kingdom is in each **human**. Try playing the game, which animal does your body (or just your head - or one specific body part) remind you of? (
- **Books**. The whole meaning of a book, without seeing its totality, can sometimes be sensed by reading a small part. Therefore the whole book is not the sum of its parts - it is in each part. You could say that the meaning of text is holographic. (
- **Geoffrey Chew**, a holistic philosopher, has a 'bootstrap' philosophy that says that the properties of any one particle is determined by all other particles. So you could 'bootstrap' or start up the universe (like 'booting up' a computer) from any one particle. This may be similar to cloning a whole animal from a small part of DNA. In Chew's own words, "every particle consists of all particles". (
- **Mach & Einstein**, in working out the theory of relativity, say that matter's mass is a reflection

of the rest of the universe. These are physics observations that are similar to Chew's philosophical observations. (

INFINITY & ETERNITY

Time & Space are wholes that can be found in parts. One author says, "see the eternal element in every single thing." This is another case of the whole contained in the part ... whole = [eternal] ... part = [every single thing]. Said another way, **the timeless is in each moment**. This also means that **time does not exist without the timeless** since every moment has eternity or the timeless in it. How about space? Just as there is a timeless state that you could

say is either outside of time or is all of time ... there is also a formless state. The formless state is either outside of form (or space) or is all of space. And again the whole is in the part. You could say **the formless is in each form**. Another way to say this is that the immaterial is in the material. And again this means that **form does not exist without the formless**.

THE STARRY SKY Concurrence of objects ... it is possible to focus numbers of light rays going through a narrow point such as the iris in a camera (or a telescope or in our own eyes). Let's say you take a picture of the stars. The light from each star that ends up in the final image must have overlapped as it came through the iris. So each star's light was concurrent and blended while in the iris, yet each retained its individual properties as it emerged from the other side of the iris. Thus the whole of the starry sky's light was in one, small part of your camera.

The Role of Experimentation

- **HISTORICAL MODEL of our EXPERIMENTS:** In ancient times, seeing went out and almost touched that which you looked at. People didn't just passively receive information from it. The human race was more in touch with each other and with nature. (
- An example of an HISTORICAL experiment might be to plant a tree with tender loving care, believing that the tree sensed the way we look at it and feel toward it. **PRESENT MODEL of our EXPERIMENTS** (Now we analyze. We take everything apart as if the answers are in the parts. (
- **an·a·lyze** (n-lz) (Psychology, Medicine) tr.v. **an·a·lyzed, an·a·lyz·ing, an·a·lyz·es:** To examine in detail; the process of breaking up a whole into its parts to determine their nature. - **National Center for Education Statistics** (
- An example of a PRESENT experiment might be to plant a tree with measurement devices attached to it to see if its vital signs improve according to the human caretaker's thoughts, feelings, and actions. (
- To experiment in this century is to question nature. We seem to be waking up to the realization that we play a larger role in creating and re-creating our environment. (

- You may have heard the expression, "Watch out what you ask for, for you'll get it!" In other words, you change things by experimenting - and the change is affected by your wishes and expectations. (
- For example, consider an experiment between two people who love each other ... person A wants to see what will anger person B. Person A makes fun of person B. In addition to angering person B, person A has just lost a little trust and lowered the quality of their relationship. In the **PRESENT MODEL of our EXPERIMENTS**, the experiment was a success - it answered the question, "Does person B like to be made fun of?" (
- But, knowing that we change things according to which questions we ask, shouldn't we grow to learn a better way of experimenting? (**A POSSIBLE FUTURE MODEL of our EXPERIMENTS** (
- Step 1. **Observation:** To be aware of a phenomenon without thinking about it. (
- Step 2. **Imagination:** Repeat, in your mind, exactly what you observed. Replay it like a movie. Goethe called it, "Recreating in the wake of ever-creating nature." Repeat this step several times (- not adding or leaving anything out. See the observation, itself - do not think about it. (
- **How can our future be different? How is this an EXPERIMENT?:** Goethe's active **Observation** step, then repeating **Imagination** step gives thinking the quality of perception - and sensory observation more the quality of thinking. Goethe is suggesting that the **observer** affects the **observed!** So, future experimentation would become much more conscious of what and how we observe and experiment and ask questions. For example, future marketing and advertising of products would become conscious that they are changing what people are like. Does this sound a little like The Observer Effect in Quantum Physics? (Here read about "The Observer Effect".)
- An example of a FUTURE experiment might be to plant a tree after asking the other trees permission, then watch the tree as it grows. By Goethean observations and repeated imaginations we would hope to be guided by the tree as much as by our own desires. Goethe called this, 'reading from the book of nature.' (
- **Key:** resist temptation to go beyond phenomenon by making up hidden mechanisms. For example ... Bortoft says, when Goethe said color is "the deeds and sufferings of light"; that this is as precise in the science of quality as any math expression is in the science of quantity. But "the deeds and sufferings of light" is a second-degree polarity. The primary polarity is light and dark, where "and" means light needs dark and vice versa. (Here read about Goethe's Colour Theory.) (

Goethe to Plato - If this most famous of philosophical metaphors is seen as through the lens of **Goethe's future experiments**, then one can read Plato as if it is a recipe for cooking a delicious feast. Perhaps Plato is recommending how our scientists – and indeed all of us – could perform this great human experiment in our current time period!

Plato's Cave Analogy

- The premise is that there are slaves in a cave. There is a fire behind the slaves. People coming and going in the cave walk between the fire and the slaves, throwing shadows onto the cave wall in front of the slaves. (
- Slaves think shadows from firelight in the cave are real since it's all they see. (
- One slave is freed and brought to the real fire and real people. It is painful to get used to (the real. The slave wants the old shadows. (
- A freed slave is brought out of the cave to the real Sun and real world. More pains and (longing for the old familiar ensue. The freed slave acclimates and likes the real (world better. He remembers friends in the dark – and goes back to help them. (
- Back in the cave, the slave is disoriented by dark – ridiculed by other slaves. The other (slaves would even kill one who suggests going up to the Sun. (
- **Key to Ponder:** Later in Plato's Republic, he describes a possible scenario where people decide what role to have in life before they have a life – but they go to the "Plane of Forgetting" before starting life. What if you were in the light before you started your life? Would you have a longer period of disorientation than someone who had not seen it? Would you have a distant remembering of it? (
- **General versus Universal:** To see the **general** is to see the **unity of the intellectual mind** ... to see the **unity of the intuitive mind** is to see the **universal**. Seeing the wholeness is seeing in a holistic way. It is an intense seeing the One in the many. Therefore it includes differences. Eradicating differences is necessary in order to see the general or to generalize. (
- **Connections:** Hume said that there must be **no connections** among phenomena. Bortoft believes that Hume said this because he was using a predominantly **analytical mind**. Goethe said that there are **necessary connections** among phenomena; but they can only be seen **intuitively**.

Knowing: Goethe says that the act of knowing actually affects the phenomenon. He says that the knower is not merely an onlooker. The knower is a producer of phenomena through

conscious activity.

In fact, Goethe says that the phenomenon itself is not complete until it has been known. The process goes like this.

A person can **observe** something in a deep way where the observer enters into the thing being observed. (

- Then the person can reflect on the observation by replaying it in the mind, thus coming to **know** it. (
- But since this changes (actually completes) that which was just observed, there is an unbroken cycle in which the **knower** and the **known** are one. (

Thus the **knower** and the **known** are an indivisible **whole**.

Experiments: Intellectual, **analytical** thinking in **Galileo's** "The Assayer" says that secondary qualities of phenomena are subjective. Whereas **intuitive** thinking in **Goethe's** "The Experiment as Mediator between Subject and Object" states that many experiments are needed to relate two phenomena.

Other books by Henri Bortoft: *Taking Appearances Seriously* (2012).

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