

our beliefs. The synergy of information and analysis brings about the answer to the question and produces the knowledge.

Knowledge: Justified True Belief

Knowledge is a good and elevated word. Philosophers have chewed on it for centuries. At least in the Western philosophical tradition, philosophers came to the conclusion that it is “justified true belief” Philosophers, more than any other people, worry about knowledge, what it is, and how to acquire it. They call that discipline epistemology – the theory of knowledge.

In the 1901 edition of Baldwin’s Dictionary of Philosophy and Psychology, C.S. Peirce defines knowledge as follows:

This word is used in logic in two senses: 1) as a synonym for Cognition, and (2), and more usefully, to signify a perfect cognition, that is, a cognition fulfilling three conditions: first, that it holds for true a proposition that really is true; second, that it is perfectly self-satisfied and free from the uneasiness of doubt; third, that some character of this satisfaction is such that it would be logically impossible that this character should ever belong to satisfaction in a proposition not true. (Peirce 5.605)

Pierce’s formulation is in keeping with the traditional definition used by philosophers:

Since Plato, nearly all western philosophers have accepted this deceptively simple statement of the three necessary (and jointly sufficient) conditions for knowledge. That is, I know if and only if I sincerely affirm the proposition, the proposition is true, and my affirmation is genuinely based upon its truth.⁷

To say that you know something is to make a sincere affirmation of a proposition. Maybe you believe something because some authority (like your mother or a priest) tells you that it is true. Maybe you believe something because you experience it yourself. The “empiricists”, proponents of the kind of philosophy that most people in the United States carry around with them, believe that knowledge is what you experience. If your belief is a product of doing knowledge work, it comes from synthesizing, comparing, judging, eliminating, and coordinating. In this process, your belief grows because you are able to justify the belief and can provide evidence for what you believe. Justified beliefs are generally more valu-

⁷ <http://www.philosophypages.com/dy/k9.htm>.

able than unjustified beliefs. For a belief to be knowledge it must be justified (or justifiable) by some kind of evidence. Not all beliefs are justified. In fact, we might think that something we used to believe was justified and later turns out to be wrong. If there is evidence that leads us to a new belief, there is nothing wrong about changing one's mind.

This definition/understanding of knowledge as justified true belief is richer than that used by information managers such as Thomas Davenport and Lawrence Prusak:

Knowledge is a fluid mix of framed experience, values, contextual information, and expert insight that provides a framework for evaluating and incorporating new experiences and information. It originates and is applied in the minds of knowers. In organizations, it often becomes embedded not only in documents and repositories, but also in organizational routines, processes, practices, and norms. (Davenport and Prusak 1998, 5)

Knowledge is not just a “mix” of information. It is a belief arrived through experience and reasoning using a process called abduction. A belief is a conclusion you come to for some reason or for no reason at all. Some beliefs may be better than others. In the realm of knowledge work what separates the good beliefs from the not so good beliefs is the justification given to support the belief.

A body of knowledge is a collection of justified true beliefs that are the result of experiments, discussions, disputes, and examination of evidence that leads to conclusions. The conclusions, taken together, become a “body of knowledge”. That is what we learn when we go to school or training where we are taught which beliefs are justified and, if it is good training, why they are justified. As we shall see in the next chapter, a “body of knowledge” is created by and sustained by a community of practice.

The worlds we live in change over time. Sometimes our knowledge of the world does change, but often beliefs last much longer than the justification for the belief. Much of our common sense is unexamined. Peirce pointed out the importance of developing what he called “critical commonsensism”. Knowledge changes over time, sometimes because the world changes, but more often because we gain new knowledge and justifications for these new beliefs. At any given time, we are quite certain that what we believe is correct. We need to be certain of our knowledge before we act. We build bridges. We practice medicine. We dance. We make ball bearings. In order to *do* something, we need to *know* something. Knowledge enables us to act. Knowledge enables work.

Notice that we sometimes say something like “I used to believe ‘x’”. “Now I know I was wrong, and I know ‘y’.” Present knowledge (justified belief) replaces former belief (belief that is no longer justified). In the past, however, we probably

said, “I *know* ‘x’”. We revise how we speak of that previous “knowledge” in the light of new evidence.

Occasionally we say that we “do not know”. If we really do not know, then we are frozen. We cannot act. Knowledge enables action. Lack of knowledge hampers action. Usually we wind up acting on our best belief of the moment. Life goes on and we continue to collect justifications that a belief is true and therefore is knowledge. It is a spiral process.

So there has to be some sort of justification for a belief in order for it to be knowledge. Even more than that, the belief needs to be *true* to satisfy the middle part of the definition – justified true belief.

Saying that something is true has a kind of arrogance about it. Unless you believe something is true enough to act on it, then you really can’t claim to be a professional knowledge worker. Believing something does not make it true. We all know that advertising is built on the premise that beliefs can often be formed without reference to the truth. Knowledge requires more than belief. It must also be true with evidence for the belief.

Knowledge is more than just an opinion. It is an opinion (belief) that a professional renders based on evidence. It is true. The mechanic who says, “This plane is ready to fly” knows what he or she is talking about. The artist who says “You should use the blue color” is knowledgeable and knows more about colors than most of us. The farmer who can look at a herd and say “That bull or cow is better for breeding” knows something that others do not know.

My knowledge is your information. Your knowledge is my information and we rely on each other’s judgments to get our work done. Your information becomes my knowledge if having examined it against my own experience, skills, and knowledge, it “fits” into my body of knowledge and passes the truth test. What is true in your world may not be true in mine and different communities may come to different conclusions. But as communities overlap, their conclusions are called into question, and out of that interchange often comes new knowledge. Truth is not just a matter of opinion, but what is true may depend on our perspective, on where we are, how we see things, and on what works in different situations.

As we live, we “know” some things to be true because we act on them, and if they work, they are considered true. If my bridge stands, the information which I based the design on is now called knowledge (justified, true belief). If I jump out the window believing I can fly based on the “truth” of an LSD trip and die, in retrospect that belief is now “known” to have been just a belief and not “true” since it does not conform with reality.

Reality is a harsh judge of truth. Knowledge statements need to be true. What we believe to be truth and knowledge today may, in the course of events, turn out not to be true, in which case I will no longer know what I thought I knew. Making

judgments about what is true and what is not true is at the heart of knowledge work. A true belief is the best judgment, based on evidence, which we make at a point in time.

Therefore, the traditional definition of knowledge as “justified true belief” seems to serve us well and “truth” is without doubt the most important and most elusive part of our definition of knowledge.

Knowledge, Information and Data – Some Distinctions

Knowledge is often confused with information or even data. Information work and knowledge work are very different – and managing knowledge and managing information are often different activities.

As we have pointed out, knowledge is *related* to data and information. Knowledge is the result of someone’s (or a community’s) judgments based on data and information.

Data is the set of discrete, objective facts about events in today’s world. Data often resides in computers, in databases, and other electronic records.

Information is data that is given relevance and purpose and contextualized or sorted, evaluated, and “given shape” by what is included or what is excluded in a collection of information. A judgment is applied to the data. Information has meaning. Knowledge is the beliefs that come from taking information and forming judgments, based on available evidence. Knowledge is competence in doing work. A knowledgeable worker is a professional who “knows” what to do. The professional’s work is taking information and data and making knowledge, a creative act to produce something of value that requires understanding.

What we call knowledge, therefore, is not just a matter of local competence; it depends also on the orientation of these practices within broader constellations... Knowing in practice involves an interaction between the local and the global. (Wenger 1998, 14)

Knowledge work adds value. It is done for a purpose. It connects things and puts them into a context. Knowledge work is the creative “leap” that unites means and ends, tools and goals.

Wisdom – the Other Side of Knowledge

Wisdom is beyond knowledge. It is the “other side”. Wisdom seldom comes with justification and goes beyond belief to a kind of certainty that comes not from

criticism and examination, but from revelation or long experience. We test beliefs by living, learning, observing, and understanding how the world works.

Wise people are often, but not always, very knowledgeable. Some say that wisdom comes with age, but we all know that few are truly wise, regardless of the number of years on this earth. Wisdom is imbued with mystery and awe.

That is why wisdom is often the purview of the enlightened and the religious who know and understand Truth and Justice and the Good. Wisdom speaks with capital letters. It is on a higher plane and relates to insights that reveal connections not readily grasped or understood, even by those who are very knowledgeable. The wise seldom rely on knowledge for their wisdom.

We can speak of knowledge workers, but it makes little sense to speak of wisdom workers. For you do not “make” wisdom. Neither do you make wisdom for a living. If you are lucky, you have wisdom and live wisely.

That is why hermeneutics, the art and science of understanding, is even more important in the realm of wisdom than knowledge. Beauty and truth are revealed. Through the ages men and women have found sacred texts to be the “source” of wisdom. Interpreting and understanding these texts is often the purview of a class of people who are not of this world.

Wisdom is, truly, “other worldly”. It is not the purview of this book, nor is wisdom something that comes from accumulating knowledge, any more than knowledge comes from accumulating information.

We leave the world of wisdom to others. Understanding knowledge and the nature of knowledge work is a knotty enough task.

Work and Activity

Developing a new work culture more suited to knowledge work begins with the recognition that there is a fundamental difference between activity and work. One observer of business life described the process in a pithy little book about the transformation of work when something happens to change the work environment. He describes how a mouse adjusts to a new environment when the cheese is moved. He calls his book *Who Moved the Cheese?* (Spencer 1998) In our work life we are often confronted with situations where we wonder who moved our cheese.

We need to get real answers to real questions in order to do knowledge work. One engineer demonstrates this principle by going to a wall and pushing against it. He says, “I can push on this wall all day long, do it with skill, put in great effort, follow directions, be creative in how I push, but unless the wall moves, no work is done.” Of course, this assumes that the work is to move the wall. If the purpose

of the work is to test the wall to see if it will stand pressure, then pushing on the wall would indeed be work, because it achieves a goal.

Knowledge work involves action, but work is a particular kind of activity, one of movement. Something happens when you do knowledge work. You engage. The world changes. Work involves accomplishing something. We learned the formula: Work = Force times Distance ($W = F \times D$) in high school physics. Work is that part of what we *do* (doing is the “F” in the equation) that moves us toward our goal (our mission, our vision is the “D” in the equation). Work adds value to an activity – something *happens*.

Knowledge is sometimes contrasted with action. “Those who cannot do, think.” Actually, with our definition, knowing is a particular kind of action. It requires moving objects (ideas) from place to place in order to do something, to answer questions like “Is it a good idea to...?” To make something of value.

The knowledge worker provides results – the products of thinking. Knowledge work is more than just being at work. It is creating something of value to others.

Much work is preparatory in nature – seldom does a person or even a group of people perform work from beginning to end. Value of labor resides in its use value, not just immediately, but as products for others to use in their work.

Work has value and its value is determined, over time, through the exchange process. The products of labor and labor itself are valued, because it is worth something to someone else. The market, when it operates correctly and fairly is the place where labor values are defined and quantified. Markets do not always act correctly and fairly. Thus creating and operating markets require regulating rules about how the communities interact and how the values are fixed and created.

Going to Work

The distinction between “free” and “work” time is at the heart of what we call the industrial mode of production. This is replaced in the knowledge age by a professional attitude toward work. For many of us, work connotes doing the things we do not really want to do. In other words, we have to work so we can have “free” time. Work time is the time someone else organizes and controls. Free time is ours.

This act of “going to work” is the essence of the industrial mode of production:

- work is separate from leisure
- there is “work time” and “free time”