



Chapter 11

Can Information Philosophy



The Problem of Meaning

The “meaning” of any word, concept, or object is different for different individuals, depending on the information (knowledge) about the word, concept, or object currently available to them. All meaning is “contextual” and the most important context is what is currently in the individual’s mind. This obviously includes the immediate external context, for example, a puzzling word being heard or read is surrounded by text, both explicitly and implicitly. *Explicit* text includes the words preceding the word whose meaning is not yet clear. Structural linguists call this the diachronic dimension. *Implicit* words are synonyms and other words that might come to mind as substitutes for the questionable word. This is the synchronic dimension - those alternative words that could *substitute* with little change in meaning.

How exactly does our information-based model of the mind generate meaning? It is the past experiences that are reproduced (played back) from the *experience recorder and reproducer* (ERR) that provide most of the meaningful context for a word or object. For example, if the agent has had no past experiences that resemble the current experience in some way, the agent may not find any meaning at all. The simplest case would be a new word, seen for the very first time. Worst case would be listening to an unknown foreign language.

If the word is not isolated, the meanings of familiar surrounding text may bring back their own past uses clearly enough to allow the agent to guess the meaning of the new word, in that context. In any case this fresh experience with the word will be stored away along with that context for future reference.

The problem of the “Meaning of Meaning” has a rich history in the past century or two of analytic language philosophy. Three centuries ago, GOTTFRIED LEIBNIZ hoped for an ambiguity-free ideal language with exactly one term for each concept. It would reduce language to a kind of mathematics where the meaning of complex combinations of terms could be “calculated” precisely. In



the middle of the nineteenth century, JOHN STUART MILL tried to simplify proper nouns by insisting that they are just names for the things we are talking about in sentences or propositions. Nouns are subjects, predicates are the attributes of the subject.

Leibniz and Mill were inspirations for BERTRAND RUSSELL, whose logical positivism imagined “logical atoms” of meaning that could be combined following strict rules to form complex concepts - “logical molecules.” But Russell and the great logician GOTTLIB FREGE tangled over exactly how words describe, denote, or refer to concepts and objects. How do words mean?

Is the absolute meaning to be found in the dictionary definitions of how a word refers to an object, independent of the intentions of a speaker or inferences of the hearer? Frege distinguished between the straight reference of a word and what he called the “sense.” Why does the statement “Aristotle is the author of *De Anima*” carry more information than the identity statement “Aristotle is Aristotle.” Our information theory of meaning finds the answer in the reader’s past experience (or none) of *De Anima*.

Russell’s young collaborator in early logical positivism, LUDWIG WITTGENSTEIN, eventually broke with Russell and insisted that meaning depends on the *use* to which a word is being put. There is no objective independent meaning for a word as the object it “stands for.” Wittgenstein’s relativism became more extreme when JACQUES DERRIDA showed how the meaning of a word can be deferred and “disseminated,” shifting according to words following it in time - in the diachronic dimension.

CHARLES SANDERS PEIRCE, and the great linguist and inventor of structuralism, FERDINAND DE SAUSSURE, had accepted straightforward connections between words and objects, like Peirce’s triad “concept-percept-object” and Saussure’s dual “signifier/signified” (s/S) for an arbitrary symbol and its object. These were captured in the C. K. OGDEN and I. A. RICHARDS book, “*The Meaning of Meaning*,” as their “semantic triangle,” symbol (word), reference (thought/concept), and object.



WILLARD VAN ORMAN QUINE thought he could escape ambiguities in meaning. In his book *Word and Object*, he urged the “naturalizing” of epistemology by focusing on the empirical connections made by speakers when they say what they mean. Favoring extensionality over intentionality, he said to look at how a speaker of another language shows what a word means, or how a baby learns the meaning of new words, by a process of behavioral conditioning and ostension (pointing at things). Quine said one may not be a behaviorist in psychology, but cannot avoid being a behaviorist in linguistics. But behaviorists are determinist and materialist.

Post-moderns like Derrida and ROLAND BARTHES showed that fundamental ambiguities of language cannot be removed, that the dictionary definitions summarizing the past uses in a community of discourse only trap meaning in a “circle of signifiers” without a referent object (s/Z). New uses are always being created, a consequence of our theory of humans as “co-creators” of our universe.

Are we then living in a Humpty Dumpty world of “When I use a word, it means just what I choose it to mean - neither more nor less.” H. P. GRICE insisted that the *intentions* of the “utterer” are carrying the meaning. Or do we need to consider the “reader response” to any text, where meaning is generated by the reader and any supposed author intentions are deliberately ignored.

In CLAUDE SHANNON’s theory of the communication of information, the emphasis is on the new information arriving at the receiver carried in the message from the sender. But Shannon never claimed the meaning was carried in the message itself. So it is with our information theory of meaning.

The information theory of meaning starts with the information model of the mind, which asserts that the *immaterial* mind *is* the abstract information being processed by the brain. The brain is a material information structure, which works as a biological information processor and experience recorder.¹

The meaning in a message incoming to the mind (which could be just a perception of sensations from the environment and not

1 See appendix E on the experience recorder and reproducer.



necessarily words from another human being with intentions) is completely dependent on the past experiences of the agent that are brought to mind by the content of the message. This nicely captures the subjectivism or relativism of meaning, since it so greatly depends on the content of the individual's mind.

Our model for the mind also gets close to answering THOMAS NAGEL's provocative question "*What Is It Like To Be a Bat?*"² The past experiences reproduced by the ERR, complete with their feelings, depends on what has been recorded and what can be reproduced (played back). A frog cannot play back the experience of concave objects flying by, because the frog's eye has filtered them out, preventing them from reaching the frog's brain and its experience recorder.

The bat's current experiences are beyond human comprehension just because we lack the past experiences of what life has been like for a bat.

Meaning in the Theory of Information

Although Shannon's 1948 theory of the communication of information explicitly denied that it had anything to do with the meaning of the information communicated, other information theorists made efforts to connect abstract information with real objects, with their structural content, and even with concepts that humans use to "represent" objects and concepts.

DONALD MACKEY, R.A. FISHER, and DENNIS GABOR had independently made efforts before Shannon, just at the end of World War II, to define an "amount of information."³

Gabor suggested that a signal occupying an elementary area of $\Delta f \Delta t = 1$ could be regarded as a 'unit of information', which he termed a 'logon'. Multiplied by Planck's constant h , this corresponds to Heisenberg's minimum uncertainty in a physical measurement.

Fisher had proposed a measure of 'information' in a statistical sample, which in the simplest case amounted to the reciprocal of the variance. MacKay interpreted Fisher's measure as the "weight of evidence," proposing that for a probability of 1/2, it should be termed a "metron."

2 Mortal Questions, p.165

3 *Information, Mechanism, and Meaning*, pp. 4-5



MacKay defined his “amount of information” as the number of yes/no questions that need to be answered to extract the information in a “representation,” which he defined as a structure which has some abstract features in common with something else it purports to represent. This is very close to our definition of *intrinsic* information⁴ and somewhat similar to the idea of “logical atomism” that knowledge is the total of true statements, if each provides one bit.

Of course, all these attempts to quantify *intrinsic* information scientifically do not get close to the meaning or *significance* that a Peircean *interpretant* may find in a perception or in a message, given the surrounding *context*, as ROMAN JAKOBSON said would be needed to add meaning to Shannon’s theory.

We can use Shannon’s famous diagram on the communication of information to integrate the thinking about meaning by many great philosophers, linguists, and literary critics.

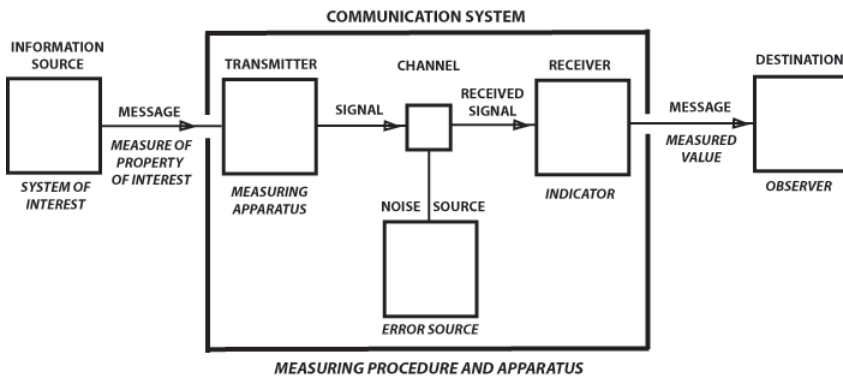


Figure 11-3. Claude Shannon’s communication of information diagram.

To begin with, we must think of the above flow of information as another flow of negative entropy, the ultimate source of all value in the universe.⁵ See appendix B on cosmic, solar, biological, and human entropy flows and the second law of thermodynamics.

We need to see Shannon’s “information source” as a speaker or writer creating a new message that has more than just the generic meaning or “sense” that anyone familiar with the language would interpret in the message. It also carries the intentions of the message sender, which may or may not be clear to the receiver.

We must also interpret Shannon’s destination and observer as something more than a communications device. It is an intelligent

4 See chapter 2 on identity as intrinsic information.
 5 See chapter 5 on negative entropy as value.



agent who will find meaning in the message by *interpreting* it, drawing *inferences* from the message content and context, which includes knowing the sender and thus the sender's possible implications.

EDMUND HUSSERL, perhaps following FRANZ BRENTANO, said meaning depends on the *intentions*, the implications, of a speaker. Among twentieth-century logicians, C.I. LEWIS insisted that the meaning in logical implication must be more than the "material implication" that Russell, Wittgenstein, Carnap, and Quine saw in any "if p, then q" statement. In the *Principia Mathematica*, q is true even if the antecedent p is false and totally unrelated to the consequent q. This turns out to work well for mathematics and computer logic, but is bizarre and non-intuitive for human communications. Lewis insisted that "strict implication" would be intensional, not extensional. Quine fought Lewis and historically won the argument.

It was the greatest American logician, CHARLES SANDERS PEIRCE, who stressed the role of the message receiver, whom Peirce called the *interpretant*. Post-modern literary critics have come to say all meaning in a text depends only on the receiver, the "reader-response" theory, but this clearly goes too far. JACQUES DERRIDA's idea that the meaning of any word is diachronically deferred, his "*differance*," is actually quite insightful. We cannot discern the meaning until a message is complete.

Most logicians follow GOTTLOB FREGE's distinction between the reference (denotation, name) and the sense (meaning) of a word. But few know that Frege limited the "sense" to the everyday meaning attached to a word by the users of the language. Frege also described the "idea" or "representation" (*Vorstellung*) that would form in the mind of the message receiver. This, he said, would be *different* in every mind, since it is dependent on the peculiar experiences of each person. This fits perfectly with our experience recorder and reproducer (ERR) as a model of mind, memory, and knowledge.

We revise Shannon's diagram to center the "message" between sender and receiver and also center it vertically between the context below (e.g, an object) and the concept (the idea) above).



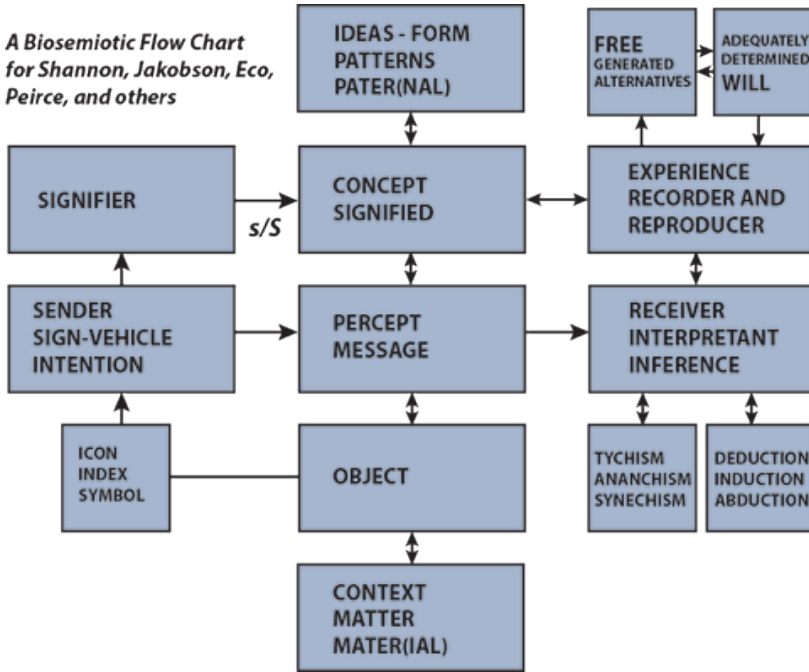


Figure 11-4. Shannon’s diagram enhanced with semiotic information flows.

This reflects our triad of worlds, material, biological, and ideal as well as Peirce’s object, percept, and concept. The various flow arrows represent *recursive* paths in the complicated process of extracting meaning

Our information theory of meaning combines all three of Wittgenstein’s theories - meaning as a *picture* (Peirce’s *icon*), meaning as *verification* (Peirce’s *abduction*), and meaning as *use* (Peirce’s *interpretant*). It is only weakly related to the logical empiricists (e.g., Carnap, Quine) who viewed the meaning of a word as the *extension* of things in the world of which the term is “true” (independent of any users) and to the modern logicians (e.g, Kripke and Putnam) who think meaning is found in the *necessity* of naming.⁶

They could at most get Frege’s “sense,” not ideas in minds,⁷ which, as materialists, they dismissed as “psychological.”

6 See chapter 2 on the metaphysics of necessity.

7 See chapter 12 on our information model of the mind.

