An Introduction to Language Faculty Science
Some Quotations plus alpha

Guess-Compute-Compare

"O.K., that is the present situation. Now I am going to discuss how we would look for a new law.

In general, we look for a new law by the following process. First we **guess** it. Then we **compute** the consequences of the guess to see what would be implied if this law that we guessed is right. Then we **compare** the result of the computation to nature, with experiment or experience, compare it directly with observation, to see if it works. If it disagrees with experiment, it is wrong. In that simple statement is the key to science. It does not make any difference how beautiful your guess is. It does not make any difference how smart you are, who made the guess, or what his name is—if it disagrees with the experiment, it is wrong. That's all there is to it." (Feynman 1965/94: 150)

Feynman, Richard. 1965/1994. *The character of physical law*, The Modern Library, New York. (The page references are to the 1994 edition.)

"Another thing I must point out is that you cannot prove a vague theory wrong. If the guess that you make is poorly expressed and rather vague, and the method that you use for figuring out the consequences is a little vague—you are not sure, and you say, "I think everything's right because it's all due to so and so, and such and such do this and that more or less, and I can sort of explain how this works …", then you see that this theory is good, because it cannot be proved wrong! Also if the process of computing the consequences is indefinite, then with a little skill any experimental results can be made to look like the expected consequences." (Feynman 1965/94: 152–153)

Feynman, Richard. 1965/1994. *The character of physical law*, The Modern Library, New York. (The page references are to the 1994 edition.)

"By having a vague theory it is possible to get either result. The cure for this one is the following. If it were possible to state exactly, ahead of time, how much love is not enough, and how much love is over-indulgent, then you could make tests. It is usually said when this is pointed out, 'When you are dealing with psychological matters things can't be defined so precisely'. Yes, but then you cannot claim to know anything about it." (Feynman 1965/94: 153)

Feynman, Richard. 1965/1994. *The character of physical law*, The Modern Library, New York. (The page references are to the 1994 edition.)

“During all that time the theory [i.e., Newton’s laws, HH] had not been proved wrong, and could be taken temporarily to be right. But it could never be proved right, because tomorrow’s experiment might succeed in proving wrong what you thought was right. We never are definitely right, we can only be sure we are wrong. However, it is rather remarkable how we can have some ideas which will last so long.”

“… In other words we are trying to prove ourselves wrong as quickly as possible, because only in that way can we find progress.”
(Feynman 1965/94: 152)

Feynman, Richard. 1965/1994. *The character of physical law*, The Modern Library, New York. (The page references are to the 1994 edition.)

(Referring to Tycho Brahe’s “outfit[ing] his island with great brass circles and special observing position, and record[ing] night after night the position of the planets”)

“It is only through such hard work that we can find out anything.”

(Feynman 1965/94: 6)

Feynman, Richard. 1965/1994. *The character of physical law*, The Modern Library, New York. (The page references are to the 1994 edition.)

Aim of Science in Einstein's words

"The aim of science is, on the one hand, a comprehension, as *complete* as possible, of the connection between the sense experiences in their totality, and, on the other hand, the accomplishment of this aim *by the use of a minimum of primary concepts and relations*." Einstein (1936: 293)

Einstein, A., 1936. Physics and Reality. *The Journal of the Franklin Institute*; Reprinted in: *Ideas and Opinions*. 1955. Crown Publishers, New York. (The page references are to its 1982 edition, Crown Trade Paper Backs.)

Note: The emphases are as in the original.

The Importance of “Compare” in Einstein’s Words

“Science uses the totality of the primary concepts, i.e., concepts directly connected with sense experiences, and propositions connecting them. In its first stage of development, science does not contain anything else. Our everyday thinking is satisfied on the whole with this level. Such a state of affairs cannot, however, satisfy a spirit that is really scientifically minded; because the totality of concepts and relations obtained in this manner is utterly lacking in logical unity. In order to supplement this deficiency, one invents a system poorer in concepts and relations, a system retaining the primary concepts and relations of the "first layer" as logically derived concepts and relations. The new "secondary system" pays for its higher logical unity by having elementary concepts (concepts of the second layer), which are no longer directly connected with complexes of sense experiences. Further striving for logical unity brings us to a tertiary system, still poorer in concepts and relations, for the deduction of the concepts and relations of the secondary (and so indirectly of the primary) layer. Thus the story goes on until we have arrived at a system of the greatest conceivable unity, which is still compatible with the observations made by our senses.” (Einstein (1936: 293-294))

Einstein, A., 1936. Physics and Reality. *The Journal of the Franklin Institute*; Reprinted in: *Ideas and Opinions*. 1955. Crown Publishers, New York. (The page references are to its 1982 edition, Crown Trade Paper Backs.)

The Importance of “Compare” in Einstein’s Words (continued)

Immediately after “Thus the story goes on until we have arrived at a system of the greatest conceivable unity, which is still compatible with the observations made by our senses,” Einstein remarks:

“We do not know whether or not this ambition will ever result in a definitive system. If one is asked for his opinion, he is inclined to answer no. While wrestling with the problems, however, one will never give up the hope that this greatest of all aims can really be attained to a very high degree.”

(1) The Basic Scientific Method (I)

a. Guess-Compute
   Deduce a *definite* and *testable* consequence as an entailment of hypotheses.
b. Compare
   Obtain *definite* experimental results and compare them with the consequence in (1a).

(2) The Basic Scientific Method (II)
   Methodological Completism:
   The empirical coverage (and the theoretical deduction of the predictions) should be as *complete* as possible.

(3) The Basic Scientific Method (III)
   Methodological Minimalism:
   Among its consequences is: The number of primitive concepts should be minimal.

(4) Our point of departure:
   Underlying our ability to relate linguistic sounds/signs to meaning is the language faculty.

How do you think one can study the language faculty by the basic scientific method indicated in (1)-(3)?
Your answer is due the end of next week.

“The example of Hooke” serves “to show what a distance there is between a truth that is glimpsed and a truth that is demonstrated.”
(Attributed to Alexis Clariaut at https://en.wikipedia.org/wiki/Robert_Hooke)

If you glimpse someone or something, you see them very briefly and not very well. A glimpse of something is a brief experience of it or an idea about it that helps you understand or appreciate it better. (From Collins COBUILD Dictionary on CD-ROM 2006)

In the terms of the above, a truth cannot be just glimpsed about gravitational waves; the detection of gravitational waves is part of the demonstration of a truth. It seems possible to glimpse a truth in language faculty science.