A PRAGMATIC LANGUAGE FOR SCIENTIFIC PURPOSES

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This manuscript is an effort to provide a viable solution for a double concern:

a) the proliferation of models, theories and interpretations that suggest pseudoscientific explanations (e.g., lacking the even theoretical possibility of empiric testability) for not-observable quantities, such as "God", the "quantum brain", "phenomenalistic" accounts of experience, "holistic" accounts of "Nirvana-like" psychological states, "observer-based information", "string theories", "quantum loop gravity" theories, and so on.
b) the attitude of scientists to generalize their results beyond their own experimental observations. For example, it is easy to read, in the CONCLUSIONS of good papers, claims such as: "we demonstrated that some Primates acquired the vision of the red; this occurred because this novel ability gave them the evolutionary benefit to detect red soft fruits in the green bushes' background".

In order to avoid the inconsistencies that undermine the (otherwise good) legitimacy of scientific claims and to make them as accurate as possible, here we provide a few suggestions concerning the very structure of scientific propositions.
Our formulation of the required language for scientific propositions wants to be as simple as possible and, at the same time, to encompass syntactic, semantic and pragmatic concerns. We take into account the claims of several Authors and sources who tackled the difficult issue to cope with the structure of scientific language: Galileo, Mach, Frege, Brower, Carnap, Popper, Quine, Godel, Zermelo and Fraenkel, Brigdman, Feyerabend, Kellogg and Bourland, Kripke, Gadamer, McGinn, Badiou.

We suggest, so as to describe facts and observables of our physical and social environment, to make use of phrases written or spoken according to the following rules (provided in sparse order):

1) **Never use the verb "to be", including all its conjugations, contractions and archaic forms. Indeed, the misuse of this verb might give rise to a "deity mode of speech" that allows people "to transform their opinions magically into god-like pronouncements on the nature of things" (Kellogg and Bourland, 1990-91)**
2) **Clearly define the universe of discourse in which your proposition is located.**
3) **Define your concepts not in abstract terms, but in terms either of observables, or, if observables are not properly definable, in a language as closest to observable quantities as possible.**
4) **Do not compare and mix sets and subsets in the same context (e.g., cat and feline).**
5) **Do not use the first order logic (based on universals described in the very premises of the propositions), rather describe just the relationships between the observables you are coping with.**
6) **Use (at least qualitative) terms that indicate the probability of an event.**
7) **Describe events or things that are (at least in principle) testable. Otherwise, state clearly that yours is just a speculation.**
8) **Do not generalize your descriptions, but take into account just the specific content of what you are assessing.**
9) **Be as vague as possible about cause/effect relationships.**
10) **Do not make inferences not supported by your data.**
11) **Do not use too formal or specialized languages.**
12) **Try you hidden your own theory-laden approach and your personal considerations.**

Here we provide a few practical examples.

John is nice.
A lot of people state that John looks pleasant.

$E=mc^2$
In our Universe, it has been demonstrated that a given experimentally measured value of energy corresponds to a experimentally measured value of mass at rest, multiplied for the fixed value of the speed light constant.

The brain is equipped with a functional and anatomical network consisting of edges and nodes, termed the connectome.
When researchers experimentally assess brain activity and anatomy in terms of network theory, they find anatomical and functional structures that fully fit their theoretical framework and that they term the "connectome".

John is ill, because he took the flu.
John suffers an alteration of his statistically normal biological parameters, because his Medical Doctor diagnosed, based on clinical and epidemiological findings, the highly-probable occurrence of an infection due to the Influenza virus.

Scientific studies of the brain must take into account the first-person, epistemological phenomenalistic standpoint, because the latter is the only way to gain sure knowledge.
Some scientists and philosophers believe, in touch with the accounts of the philosophical mainstream of the "phenomenalism", that the better way to gain knowledge from neuroscientific experimental procedures is to assess the subjective first-person account, rather than the individual-unrelated experimental findings detectable by objective operational procedures.

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