

Professor Feigl asserts that in the language of data or from a radically empirical point of view, the question about the evolution of consciousness and animal life cannot be raised. Only in the language of constructs is the question significant and answerable, the physical space and presumably also time in which such evolution occurs being themselves constructs. Now, my problem is this: what does the constructing of a construct? What constructs constructions? It seems to me that this constructing agency would be a *conceiving* (mental) or logical operation of some sort, such that physical space and time, according to positivism, are *resultants* of the kind of activity we call mental. In short, before there can be physical space and time—the conditions of evolution—there must be logical or mental agency. And, if the positivist is right, the question of the origin of consciousness itself (the *constructing* agency) cannot be significantly raised in any sense whatever, *particularly not in the language of constructs*. How then are we to speak significantly of the evolution of consciousness or of that agency which constructs physical space and time?

Will Professor Feigl help to see the light by answering these questions one by one? I have a genuine suspicion that my critical questions are terribly old-fashioned, perhaps even nonsensical. In which case, I want only to be shown why I should never have asked them.

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Dear Sir:

Professor Aldrich's question concerning my view of the location of a color-datum in *physical space* involves the danger of the very confusion of syntactically incongruent languages which I was so anxious to eliminate. The hopeless condition of traditional epistemological discussion, especially as regards the location of *sensa*, and more generally, the relation of the knowing subject to the known objective world, etc., can be overcome only by closer attention to the ways in which "languages express meanings," i.e., to the syntaxes of our conceptual systems. If two languages are as heterogeneous as the Language of Data and the Language of Physical Constructs, greatest care must be taken in transferring concepts typical of the one language into the other. The two languages do not have as simple a relation of one-to-one correspondence as, for example, English and German so nearly exhibit. But as there

is the possibility of translation it can very legitimately be asked what the physicalistic equivalent would be for a proposition describing the location of a colored patch in visual space. Translation in this case would yield a proposition dealing with the condition in the nervous system, which as we usually say, "is the neuro-physiological basis" of color and space-perception. That the detailed nature of this condition is scientifically still to be determined detracts nothing from the practical certainty that it *is* a proposition concerning neurophysiological processes in my body which is the translation-equivalent of the introspectively established and phenomenologically formulated proposition about my color-experience. To use for a moment the less stilted idiom of ordinary scientific realism, we might justify the statement just made as follows: In order to see a color it is not necessary that there be an extradermal stimulus. Eidetic imagery, dreams, hallucinations, and other "abnormal" forms of visual experience prove sufficiently that there can be color-data located in visual space phenomenally very nearly, if not exactly, like in "veridical," "normal" perception. That is one of the evidences, practically cogent to the scientific mind, for the doctrine of the localization of our sensations within our organisms (not necessarily in the brain only). The ensuing difficulties of a reconciliation of this *scientific* view with the equally cogent, apparently contradictory claims of immediate experience constitute a problem of long standing. The first more decisive steps in the right direction toward a solution seem to me to have been made by Avenarius, Poincaré and then by some critical realists (viz., the epistemologically dualistic but psycho-physically monistic group) especially Riehl, the earlier Schlick, Strong, Drake, and from the point of view of psychology, Koehler. Most recently an excellent discussion, also in connection with a critique of Lovejoy's revolt against psycho-physical monism, has been given from this angle by the brilliant French critical realist R. Ruyer in his article, "Les Sensations, sont-elles dans notre tête?" (*Journal de Psychologie*, XXXI, 7-8, 1934, p. 555ff.) That minimum of ontological metaphysics, which even the most critical of critical realists (Schlick until 1925 and Ruyer) have not been able to avoid has been successfully eliminated (or transformed into legitimate expression) by the New Positivism. This view, as already indicated, provides for complete intertranslatability of phenomenal and physical language—in our problem the intertranslatability of the geometry of visual space and that of physical space.

The question, Is visual space located in physical space? has at best a vague pictorial appeal, but is, as Mr. Aldrich himself suspects, *factually*

*meaningless.* A study of the syntactical structure of the question reveals this very clearly. The relations of spatial inclusion are defined *within* the syntactical frame of both geometries. But to ask whether the whole of visual space is spatially included in physical space is nonsensical because it violates the logic of types (the unproblematic part of Russell's theory). Although I am aware of the dangers in the use of analogies, I will illustrate the crucial point by an analogy which in this one respect seems to me quite pertinent. As is fully appreciated today the *geocentric system* (not the original one of Ptolemy but its complete and adequately corrected form) and the *heliocentric system* (again not the historical one of Copernicus but its modern corrected version) are *equivalent*—at least as far as kinematics goes—descriptions “of one and the same fact.” They differ in the choice of the coördinate system—but there are definite transformation equations by means of which we can translate the geocentric language into the heliocentric language. But as the choice of the coördinate system in this case involves rather striking differences in the “organization” of the facts the perfect logical equivalence of the two descriptions was not immediately recognized. (People who held that the heliocentric view was true were persecuted.) From our modern viewpoint—after Einstein has taught us that the two systems are also dynamically, physically equivalent—we see that the only relevant difference of the two views lies in the greater conceptual convenience, the greater descriptive simplicity of the heliocentric system. My point now is, of course, this: A philosopher might argue, How can the two systems describe the same fact, if the orbits of the planets are so different in the two systems. He might ask to be shown *where* exactly Ptolemaic epicycles are to be found in the heliocentric system. Well, it so happens, there are none there. The point of the analogy is clear: The different organization of the “facts” (not a third unknowable entity but the thing “known as” one or the other “perspective”) as they are rendered in the syntactically incongruent languages provokes the pseudo-problems of psycho-physical dualism. Of course, the color as seen, and as described in the phenomenal language, can be found neither in the brain-as-seen nor in the physical surface properties of the perceived object. Now, that in the ontogenetic (and possibly phylogenetic) experience of the eye-equipped organisms a coördination develops between the motor-tendencies directed toward parts of the environment and the visual receptor processes is as good a scientific fact as any. It is precisely this coördination which is the physicalistic equivalent to the immediate experience of the adult mind (“color-out-there”). It is very

regrettable that this by no means mysterious situation has been obscured by the use of the unfortunate concept “projection”—which if not very carefully handled (Strong, Drake, Santayana and others are not quite free from misleading formulations of their otherwise very sound view of the matter) stirs up hopeless pseudo-problems.

I hope that these, necessarily sketchy, observations will convey some insight into the reason why psychological and physical spatiality, although correlated (intertranslatable) must not be confused by violations of the rules and definitions that establish their very meanings. In other words, questions regarding their mutual relation can be asked only under full consideration of the key of translation.

This same caution is indispensable also in tackling the problems stated in the concluding part of Professor Aldrich’s remarks. Before asking questions it is necessary to make sure of the “reference system,” “the universe of discourse” (i.e., the language) relative to which our question makes sense. As we have just seen, although there may be logical equivalents to such questions in several other languages, “*the*” specific question (in its characteristic conceptual expression and emotive connotations) is meaningful (i.e. in accordance with the syntax) only in one of them. To Professor Aldrich’s problem (Who or what does the construction of the constructs?) at least two interpretations can be given. (1) It may be meant as a question within the realm of “*logical analysis*” (i.e., the science of logical syntax). There the question is indeed out of place (strictly meaningless), because the only type of problem with which syntactical studies are concerned are the logical relations of propositions, concepts, hierarchies of logical levels, etc. (2) It may mean the *psychological* question as to the agency and procedure of our intellectual adjustment to the surrounding world. Here it makes perfect sense, and the answer can be given on the basis of the results that the psychology of learning and thought has as yet achieved. This answer can then be expressed either in the language of data or (preferably) in the language of constructs (i.e., in terms of biological, bio-physical, and bio-social concepts): It is the human organism acquiring certain verbal habits and manners and tendencies of action which is the “agency that constructs logical constructions.”

But here Professor Aldrich will say: “Organism,” “habits,” “actions”—all these are logical constructions, too—who constructed these? Must I point out that we have here the confusion of distinct realms of discourse? Has the scandal of Psychologism in Logic not taught us, that we must not confuse a purely logical question, such as regarding the

order of logical constructs, with the empirical one, as to the origin of those mental activities which are the vehicles of logical operations?

That the whole physical world in space and time, *in the context of logical analysis* "is" a logical construction of a rather high level of abstraction with its basis in immediate experience is not in the least incompatible with the fact that *in the light of scientific investigation* the constructors of those constructions are small parts and late products of that physical world. Each view is correct in its own right and the question "Which is really true?" is just as profound as the question "Ptolemy or Copernicus?"

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