

# Objectivity and subjectivity in science and psychology

*Objetividad y subjetividad en la ciencia y en la psicología*

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## ABSTRACT

Despite the achievements of the sciences in the last three or four centuries, the erroneous view is still current that the sciences lack objectivity and stability. This view is clearly not based upon concrete observation and analysis, but rather upon absolutistic metaphysical beliefs. It is in order then to examine this situation as it applies to psychology and the other sciences. It is suggested that by considering some selected problems of science and psychology, the issue of objectivity versus subjectivity will be considerably illuminated.

The essential message of this article is the need to banish all versions of absolutism and extremism from the domains of existence and knowledge. Absolutism and extremism lead to transcendentalism which has no place in science, including psychology. The present discussion is addressed to the particular version of transcendentalism which holds that objectivity and stability are absent from science, that all is haphazard and omnivalent in contrast to the efforts and achievements of all the various scientific disciplines. The nonobjective pronouncements reflect a religious and metaphysical attitude that is blind to the obvious detailed interbehaviors of scientists with inorganic, organic, and cultural objects and events. As we have indicated in the text, when observation and analysis of the work and results of concrete investigation are reviewed, there is nothing to support any mythical and mysterious subjectivity and internality in science or in scientific psychology.

**DESCRIPTORS:** Objectivity, subjectivity, science, psychology, interbehavioral psychology.

## RESUMEN

*A pesar de los logros de las ciencias en los últimos tres o cuatro siglos existe todavía la opinión errónea de que las ciencias no tienen objetividad y estabilidad. Claramente,*

*esta opinión no está basada en observación y análisis concretos, sino más bien en creencias metafísicas absolutísticas. Es necesario entonces examinar esta situación conforme se aplica a la psicología y a otras ciencias. Se sugiere que al considerar algunos problemas seleccionados de la ciencia y de la psicología, el problema de la objetividad versus la subjetividad será considerablemente iluminado.*

*El mensaje esencial de este artículo es la necesidad de desterrar todas las versiones de absolutismo y extremismo de los dominios de la existencia y el conocimiento. El absolutismo y el extremismo lleva al trascendentalismo que no tiene lugar en la ciencia, incluyendo la psicología. La presente discusión está dirigida a la versión particular del trascendentalismo que mantiene que la objetividad y la estabilidad están ausentes en la ciencia, que todo es casual y omnivalente, en contraste con los esfuerzos y logros de todas las diversas disciplinas científicas. Las pronunciaciiones no objetivas reflejan una actitud religiosa y metafísica que es ciega a las obvias detalladas interconductas de los científicos con los objetos y eventos inorgánicos, orgánicos y culturales. Como hemos indicado en el texto, cuando se revisan la observación y el análisis del trabajo y los resultados de la investigación concreta, no hay nada que apoye cualquier subjetividad e internalidad mítica y misteriosa en la ciencia o en la psicología científica.*

*DESCRIPTORES: objetividad, subjetividad, ciencia, psicología, psicología inter-conductual.*

## HISTORICAL ORIGIN OF OBJECTIVITY PROBLEM

When the church fathers of old transmuted Plato's differentiation between ideas or formulae and things, and helped to establish what is now called psychology, they projected problemas that have plagued the intellectual world from their time to this.

From that transmutation has come the metaphysical problem of appearance and reality, the dualistic inner and outer of organisms and persons, the contrasting objectivity and subjectivity, privacy and publicity, and many others. In general, the church savants established a detrimental form of humanism versus science whenever human behavior and cultural institutions are studied. So far as psychology is concerned, there is a flagrant confusion of constructs and events with a consequent misinterpretation of both. Interbehavior of organisms with other organisms and objects have since been cast in the guise of succeeding styles of soul or mind in action. The early form made soul or mind operate independently as a dominant controller of the behavior of persons. Later, the soul became paralleled with a body.<sup>1</sup> For example, even today perceiving or differential responses are described as psychic integrations of nonexistent mentalistic sensations and images. This gossamer is supposedly supported by the brain as abstracted from the body. The outcome of such thinking is the transformation of a complicated organ into an invented psychological entity with many nonbiological but rather substituted pseudofunctions, like thinking, remembering, and so on. Brain becomes confounded with mind and consciousness.

Of the many false problems that can be attributed to the above mentioned

<sup>1</sup> As by St. Thomas, who rebaptized Aristotle's psyche or living principle of organisms into a spiritistic accompaniment to a body.

transformation, the present article is mainly concerned to analyze the problem of objectivity and subjectivity with concrete illustrations, partially from science in general and the rest from psychology. There exists the view that scientists like journalists are basically unconcerned with objectivity.<sup>2</sup>

### OBJECTIVITY IN SCIENCE

In the context of science, objectivity is no problem since science is the untrammelled investigation of some object, organism, or other available event as well as the behavior or changes of the components of particular event fields plus the interrelations of authentic event fields. The formula  $F = G \frac{MM^1}{r^2}$  is a reference to the interbehavior of a) particles or b) astronomical and terrestrial objects such as the sun, earth, and moon. Similarly, the formula  $PV = C$  represents the reciprocal proportion of pressures and expansion of gases. Again, the formula  $V = \frac{Wn_2 - Wn_1}{h}$  serves as a description of radiation, and so on through the Handbooks of Physics. In biology, there is the symbolism  $R = f(m)$ , in biochemistry,  $CH_2(NH_2)COOH$  describes an amino acid, and in psychology,  $PE = C(k, sf, rf, hi, st, md)$  (Kantor, 1959). In all cases, obviously the elements and compounds preexist any observation, analysis, or interpretation and application. As we have said, no problem exists about the objectivity of a) the formulae or b) descriptions.

Of course, individual scientists may differ from each other because of difference in point of observation, emphasis or certain variables, but in each case there can be no departure from the interbehavior of a worker with some object or objects. It must be pseudoscience otherwise. Science is evolutionary and not fixed. Objects and their behavior may change from time to time, and also new postulates or apparatus may be developed.

Never, however, must constructions be confused with events. There are biochemists and other scientists who recognize no barrier between a) scientific work and b) faith or belief in creationism or other supernaturalism. Examples are appearing in the pages of *Science*, the prestigious scientific journal. In connection with the current advocacy of teaching creationism in the schools, Dr. Hildemann (1982) proposes a compromise between science and religion on the ground that "evolution is God's awesome method for achieving the creative process-in other words, adaptive diversity of species." Further, he writes in his letter "the evidence of evolution does not and cannot reveal the source of the basic chemical elements or the primal source of life," (ibid.) Again, "the extensive evidence of evolution is not necessarily in 'opposition' to religious concepts of creation by a supreme being," (ibid.) Following the above, Dr. Hickman (1982) suggests that while religion and

<sup>2</sup> Cf. an article in the *American Psychologist*, 1982, 37, 576-579.

science are different, there is a possible complementarity between evolutionism and creationism.

### SCIENTIFIC OBJECTIVITY ON TRIAL

Despite all the obvious objectivity in science, there are those who think they can dispute the stability of science and the effectiveness of scientific investigations and achievement. Such is the power of spiritistic tradition which is presumed to outweigh actual events. It is interesting to consider the grounds of such contrary beliefs. For one thing, there is the acceptance of absoluteness instead of considering the complexity and variability of things and events which display resistance to probing and analysis. Then there is the need for the surrogates in financial support and availability of instrumentation. One must think of the investigative facility of the telescope and the microscope which increasingly helped when the light instrument was added to by the electronic microscope.

To inquire as to the intellectual basis for this scepticism and denial about objectivity is to reach back to the views of the early Church Fathers. It is to find mysteries and uncertainties within the natural world and to dabble in the inscrutability of the supernatural.

### ALLEGED SUBJECTIVITY IN PSYCHOLOGY

The so-called objectivity problem can very effectively be analyzed in the discipline of psychology because of the easy availability of the events of that discipline. Psychology is essentially a science of interbehavior of organisms with the things and events of their ambiance. Such interbehaviors can be intimately and expertly observed, first in the mother-child relation and in the constant and uninterrupted copresence of adults in the many encounters of gregarious existence. It is our plan to consider the objectivity problem in several representative psychological situations. We begin with perceiving.

*Perceiving.* Whenever objectivity problems come up and objectivity is denied, there must be presupposed another substitute, namely subjectivity. But subjectivity must be critically analyzed. Can anything worthy of the name subjectivity be discovered in the perceiving event than that a particular organism is reacting to some particular stimulus object? But here, of course, those who cling to subjectivity are referring to some sort of inner process called mental which is compounded of simpler mentalities, such as sensations and images. Consider now the grand Helmholtz and his description of visual or auditory perceiving. The entire picture consists of, as everyone knows, of light rays or air waves impinging upon the anatomical retina or eardrums. And in those anatomical parts set up electrochemical processes which are conducted over neural pathways to centers in the brain with the arousal of

percepts in the mind. Here it is noteworthy to indicate how in more recent times, such an experimenter as Gibson (1979) has developed what he thinks is a new dispensation. He called it ecological perceiving. Essentially, perceiving for him consists of adaptations to environmental things and processes. On the basis of this newer form of interpretation of perceiving, no room is left for anything like inner processes. As we have already said, the behavior field is simply an interaction between an integral organism and the object to which the organism is adapting itself.

In this connection, we may point out that Woodworth insisted upon the psychological formula of SOR. He intended to insist upon an entity between the stimulus and response. Now if he had intended that the O should be an organism without duality, the formula might have been acceptable. However, for him the O is dualistic, that is, it consists of mind and body, the mind being reducible to consciousness, which is a construct directly traceable to the spirituality of the Church Fathers. It is clear that the Woodworth formula opens the way to all sorts of inner processes.

From a strictly scientific standpoint, the so-called subjectivity of perceiving is intimately related to the singularity of any organism when it performs digestive or crude overt muscular reactions. Both of these are physiological or biological processes, subject to inspection. The entire construct of introspection is completely redundant.

*Remembering.* The interbehavior called remembering which is usually confused with memorizing appears to many psychologists as an indication of internality and subjectivism. Early in the history of psychology, the point was stressed that the storage and retrieval of ideas was a matter of connections and associations of ideas with other ideas. Later, under the impact of biology, a closer description of how memorizing operates induced philosophers to make use of the brain as a basis for the impression, storage, and recovery of ideas, thoughts, or words. However, it is clear that both memorizing and authentic remembering cannot be explained by invented function of the brain. What has to be resorted to is some imaginary homunculus which places ideas in given pigeonholes and pulls them out upon given occasions. However, there are descriptions of the difference between memorizing and remembering as well as the authentic operation of both in terms of organisms interacting with stimulus objects of various sorts through the process of substitute stimulus objects and functions (Kantor and Smith, 1975).

Examples of subjectivity or internality are freely furnished by the history of psychology. As is well known, Herbart built up for his purposes a completely imitative system of static and dynamic processes in which psychic ideas or mental representations are presumed to represent the behavior of organisms when they perceive or think. The public today are fairly familiar with the pseudopsychology of Freud, who made use of a Herbartian type of dynamics in order to explain maladjustment or misbehavior. In the latter case, it is interesting to note the obvious flight from the actual behavior of individuals to the juggling of verbalistic fables.

### ALLEGED SUBJECTIVITY OF ILLUSIONS

Because illusions can readily be interpreted as displaying a hiatus between a) the dimensions and qualities of stimulus objects and b) the way the objects appear to persons reacting to them, the tradition was grown that illusions are evidence of uncertainty and nonobjectivity. So far has this view penetrated that illusions are regarded by many art historians and critics as central features of art, especially painting where three dimensional objects are seen though actually are projected upon two dimensional planes. Gombrich may be quoted as an outstanding advocate of this view. Although Gombrich, who is not a psychologist but an art historian, declares that he never thought art was built on illusion (1973), his large work seems to be written on just such a thesis (1960). He rested his position on mentalistic psychological principles and leant heavily upon Gibson (1950) as well as upon psychoanalytic traditions. Gibson, however, turned toward an ecological or somewhat more behavioral view. Gombrich (1960) seems disappointed that Gibson departed some distance from subjectivistic psychology.

### NO SUBJECTIVITY IN ILLUSION

All so-called subjectivity in what are called illusion situations must give way to the observation and analysis of events. We must declare that the variation between the actual dimensions of objects and the way they appear must be attributed to concrete circumstances without any suggestion of mystery or lack of objectivity, for example, the perennial bent stick in water requires no further description or explanation than that the differences between the pathway of light rays in air and in water. In a similar way, attention to two investigative guidelines clear all illusion situations from mythical uncertainties and irregularities. These are, first, to treasure the principle of making use of the right sort of postulates and second, to analyze out the actual conditions or circumstances which make certain objects appear different to vision than they actually are in their physiochemical constitution, and spatiotemporal coordinates.

### NO SUBJECTIVITY IN SCIENTIFIC INVESTIGATION

The subject of illusion is not by far the most invalid approach to nonobjectivity. Involved also is the entire enormous subject of scientific methodology. For example, umbrage must be taken to the view that there is such a process or event as Artificial Intelligence. The striking example, of course, is to regard the amazing computer instruments as persons. Actually, the great feats performed by computers are always the product of the intelligence of the inventor and the programmer. There is a question of how much

analogy is allowable in scientific work. What justification can be offered for calling the human brain a computer? To do so is only a whim of the perpetrator though it may help his adaptation to the use of complex machines as definite scientific surrogates. We are constrained to reject all the licenses to manipulate and transmute things and events for whatever advantage that can be secured by such behavior.

### PRIVACY AS NONOBJECTIVITY IN PSYCHOLOGY

Those who entertain belief in psychological nonobjectivity allege as evidence the occurrence of private processes such as thinking, feeling, and other subtle interactions. Surely such allegations are based upon a mind or consciousness theory. All psychological events are as objective and public as any event in the domain of physics, geology, chemistry, or biology. The privacy claim is completely a matter of assertion and not of events and their observation. The only support such a view can possibly obtain is the prevalence of so many believers. Still, some small minority of psychologists appreciate that psychological privacy is nothing more than the uniqueness of performance. The thinking, feeling, or remembering of A is not the behavior of B or anyone else. As Kantor has argued in 1922 (Kantor, 1922), psychological privacy is simply specificity of occurrence. Also, Observer (1981) has indicated that the same principle applies to all other events. "Every leaf that falls is a unique fall and every stone when dropped constitutes a singular event." To assume that singularity, specificity, or uniqueness amounts to nonobjectivity is a flagrant misinterpretation of events.

Among the few psychologists who decidedly emphasize the objectivity of events we may quote Ratliff (1962) to the effect that "my toothache is no more private than is 'my light' when I turn on a lamp." Again, Zuriff (1972) states that loudness is "private in the same way that a hiccup is the hiccup that I omit can belong to no one else but me." To which may be added that my sorrow, anger, digestion, belief, or judging behavior are only private in a definitely objective way.

### RECAPITULATION

Current psychology as the descendant of the spiritistic view of the Church Fathers, who transmuted the objective approach of the Greco-Roman period of intellectual history, still carries on the tradition that psychological events include nonobjective elements. Yet it is clear that psychology should be a science on a par with the other disciplines, and concern itself only with objectively observed events.

Accordingly, the present article critically examines a brief series of problems alleged to be supportive of inner subjective happenings. The result is

to advocate a radical departure from nonobservable supernatural entities. Among the topics treated were perception, remembering, "illusions," and privacy.

The conclusion reached is that none of the topics treated can properly be interpreted as internal mental or subjective processes. All psychological events can only properly be interpreted as independent and objective events and not projected psychic or spiritistic happenings. Scientific psychology operates as does physics or any other naturalistic discipline. Not only do all proceed on the basis of events observed, but also by interacting with events can infer the existence of other events prior to observation or knowledge of them. An example is the circumstance in which the physicist Pauli was forced to propound the hypothesis of a new particle which later received the name "neutron."

Basic to all notions of nonobjectivity in psychology or any other discipline is the dualistic cultural institution established after the naturalistic era of Greece and Rome. At that time was inaugurated the intellectualistic institution of verbalistic concern with supernatural powers and essences with a neglect of the confrontable things and processes which gradually come to be known.

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