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PAVLOV'S VIEW OF THE INHERITANCE OF ACQUIRED CHARACTERISTICS AS IT RELATES TO THESES CONCERNING SCIENTIFIC CHANGE

ABSTRACT. Pavlov's position on the inheritance of acquired characteristics was used to test selected theses of Laudan et al. (1986) concerning scientific change. It was determined that, despite negative experimental findings, Pavlov continued to accept the possibility of the inheritance of acquired habits. This confirms the main thesis I that, once accepted, theories persist despite negative experimental evidence. Pavlov's adherence to the concept of inheritance of acquired characteristics might possibly be explained by his early experiences. Adolescent readings of a popularized version of Darwin's theory, which included the concept of inheritance of acquired characteristics, profoundly influenced Pavlov's subsequent intellectual life. Overwhelmed by the theory, as originally presented, Pavlov was unable to alter his views in light of contrary findings.

The prominence of science in the modern era has prompted the development of systems of thought, or theories of science, designed to explain scientific change. Theories of scientific change have recently been based upon actual historical events associated with the rise of scientific theories. The proliferation of theories of scientific change prompted Laudan et al. (1986) to construct a schema based upon the similarities found in these theories. Our purpose is to examine aspects of the schema of Laudan et al. by analyzing the case of inheritance of acquired characteristics as it appears in the work of Ivan P. Pavlov. We have chosen those theses of Laudan et al. which allowed for meaningful comparison between the theses and Pavlov's view. Although it may be maintained that a single case approach to the issue of scientific change is too restrictive to permit valid generalization, it should be realized that Pavlov's scientific eminence had a considerable impact upon his numerous disciples' work in an original branch of science. It will be shown that, despite repeated failures to find experimental evidence in support of the hypothesis of the inheritance of acquired characteristics, Pavlov continued to accept the hypothesis to the end of his life, thus supporting certain of the Laudan et al. theses. In addition, an explanation will be offered for the continuing adherence by Pavlov to the

concept of the inheritance of acquired characteristics, despite contrary experimental evidence.

RELEVANT CLAIMS AND THESES

The Laudan et al. schema postulates a number of general claims and specific theses in a number of areas. One of the general claims, about which there is much agreement, is that:

Guiding assumptions, once accepted, are rarely if ever abandoned simply because they face empirical difficulties. They tend to endure in spite of negative experimental or observational tests. (Laudan et al., p. 154)

Another general claim is that:

Theories are always confronted with apparent empirical difficulties, and are never abandoned simply because of those difficulties. (Laudan et al., p. 155)

In addition to these general claims, Laudan et al. (pp. 165–66, 173–75) postulate a number of specific theses against which Pavlov's notion of inheritance of acquired characteristics can be tested. These theses (with the corresponding number given by Laudan et al.), are as follows:

(6) When a set of guiding assumptions runs into empirical difficulties:
(6.2) scientists are prepared to leave the difficulties unresolved for years.
(6.3) scientists often refuse to change those assumptions.

(23) Empirical difficulties confronting a theory:
(23.1) are never sufficient to cause the rejection of that theory.
(23.4) are rarely regarded as unsolvable by proponents of that theory.
(23.6) raise doubts about all the collateral assumptions involved in deriving the failed prediction, as well as for the theory.

(28) Empirical data:
(28.6) are theory-laden.
(28.12) will be accepted as authentic only after prolonged scrutiny, unless anticipated by theory.

To test these theses, it is necessary to describe briefly Pavlov's scientific training, elaborate on the general tenets of his theory of the higher nervous activity, and then show their link to the concept of the inheritance of acquired characteristics.

PAVLOV'S BACKGROUND AND THEORY

Pavlov entered the University of St. Petersburg to study physiology in 1870 and received his M.D. degree in 1883. During the next two years