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FUNCTIONALISM AND INVERTED SPECTRA

ABSTRACT. Functionalism, a philosophical theory, has empirical consequences. Functionalism predicts that where systematic transformations of sensory input occur and are followed by behavioral accommodation in which normal function of the organism is restored such that the causes and effects of the subject's psychological states return to those of the period prior to the transformation, there will be a return of qualia or subjective experiences to those present prior to the transform. A transformation of this type that has long been of philosophical interest is the possibility of an inverted spectrum. Hilary Putnam argues that the physical possibility of *acquired* spectrum inversion refutes functionalism. I argue, however, that in the absence of empirical results no *a priori* arguments against functionalism, such as Putnam's, can be cogent. I sketch an experimental situation which would produce acquired spectrum inversion. The mere existence of qualia inversion would constitute no refutation of functionalism; only its persistence after behavioral accommodation to the inversion would properly count against functionalism. The cumulative empirical evidence from experiments on image inversion suggests that the results of actual spectrum inversion would confirm rather than refute functionalism.

Functionalism is attractive because it solves certain ontological problems of type-type identity theory while at the same time satisfying the intuitions which made some behavioristic analyses of mental states plausible, holding that there are essential connections between context/stimuli, behavior, and mental states. The connections are causal and thus functionalism reflects the new respectability of causality in philosophical theories. But functionalism is not bound by what now appears to have been a bugbear of behaviorism, namely the methodological prohibition of the inner.

I shall argue here that functionalism is also closely connected with specific experimental outcomes: functionalism predicts that where systematic transformations of sensory input occur and are followed by behavioral accommodation in which normal function of the organism is restored such that the causes and effects of the subject's psychological states return to those of the period prior to the transformation, there will be a return of qualia to those prior to the transform. Qualia are the conscious subjective sensory experiences characteristically had in perception but also present in hallucination and afterimages. Here a

systematic transformation is one that preserves information and so is reversible, such as shifting all auditory input up in pitch an octave, for example, by using a frequency doubler.

A transformation of this type that has long been of philosophical interest is the possibility of an inverted spectrum. This possibility has been of interest especially for epistemological reasons: it poses a problem for our *knowledge* of other minds. How can I know that those who behave, in all respects, just as I do have subjective mental experiences that are the same (type identical) with my own? Might they not have quite different qualia? The intuitive possibility of an inverted spectrum thus appears as a counterexample to behaviorism. But the alleged possibility of undetectable variation in subjective states, such as the inverted spectrum, also raises questions regarding the semantics of color words. It suggests that the meaning of these terms is not provided by the subjective and this is supportive of logical behaviorism.

More recently, critics of functionalism allege that the problem posed by the possibility of inverted spectra carries over to this successor of behaviorism. Among these critics is Hilary Putnam (1981), who argues that the physical possibility of acquired spectrum inversion refutes functionalism. I shall argue, however, that functionalism makes specific empirical predictions regarding Acquired Inversion of the Qualia Spectrum (AIQS), and that in the absence of empirical results no *a priori* arguments against functionalism, such as Putnam's, can be cogent. I will sketch an experimental situation which would produce AIQS, and I will suggest that prior experience with visual image inversion appears to confirm functionalism. My argument and the existing evidence suggests that while AIQS is both logically and physically possible, its mere existence would constitute no refutation of functionalism; only its persistence after behavioral accommodation to the inversion would properly count against functionalism. The cumulative empirical evidence from related experiments thus suggests that spectrum inversion would confirm rather than refute functionalism.

The form of functionalism that I take to be empirically corroborated is pure functionalism. By contrast, some, such as Shoemaker, have allowed that the possibility of the inverted qualia spectrum suggests that functionalism should be weakened to recognize not just functional properties but also underlying physiological properties as determinants of the character of qualia. Stephen White (1986) contends that this departure from pure functionalism is unsatisfactory as a solution to the