Perceptual and Motor Skills, 1985, 61, 329-330.

COMMENT ON THE "PHANTOM PLATEAU"

WILLIAM T. POWERS

Northbrook, Illinois[1]

Summary.—Increased variability between plateaus in learning curves may be a clue to how reorganization works.

The (crude) game of mine to which Robertson and Glines refer, and upon which they have considerably improved, was inspired by some apparatus I saw on a visit to J. G. Miller's group at his University of Michigan Mental Health Research Institute, some time in the late 1950s. I am pleased to see that the authors have disinterred this approach and shown us how to begin using it as a research tool.

Although the use of reaction time makes it seem that delay of response is the central issue, in fact reaction time is only an ancillary device for roughly identifying changes in the manner of behavior during the task. The principal point is that during the learning of a complex task that can be approached at many levels, there are periods of no visible progress, separated by periods of highly variable behavior, after which a new level of skill is apparent. That period of increased variability can be seen as a time of reorganization (which always entails some momentary disorganization). In my 1960 paper (with Clark and McFarland, in this journal), I proposed the existence of a "negentropy system," falling prey to the notion that giving something a suggestive name improves our understanding of it. However, the idea that reorganizing is carried out by a basic learning capability in an organism can stand without any vague allusions to information theory.

Two research issues are raised: first, what do these "levels" of skill signify, and second what conditions affect reorganization of measurable skills? I have proposed that the levels of skill correspond to levels of control, the control being exerted by setting reference-levels or goals for control systems of lower level. If that were so, we should be able to find similar levels of control showing up in quite different tasks and eventually hope to discover any species-wide levels that really exist in human or other brains. I have also proposed that reorganization represents continuous small alterations in characteristics of existing behavioral systems (almost a definition), and more productively that the rate of reorganization, in changes per unit time, corresponds to the degree of intrinsic error—amount of deviation of important variables from organism-specified states. This picture of learning is conceptually different from reinforcement theory, in that where reinforcement theory claims the occurrence of some

[1]1138 Whitfield Road, Northbrook, IL 60062.

critical input freezes behavior into whatever form it had at the moment of reinforcement (or tends to), reorganization theory says that the lack of the critical input is what produces the changes in behavior in the first place, via some hypothetical reorganizing system. Naturally when the lack is corrected the rate of reorganization of behavior drops to zero or some low background rate.

Experiments on the lines demonstrated in the Robertson and Glines paper should eventually be able to tell us much both about any levels of control that really exist and about the conditions under which reorganization begins and ends.

REFERENCES

POWERS, W. T., CLARK, R. K., & MCFARLAND, R. L. A general feedback theory of human behavior: Part I. *Perceptual and Motor Skills*, 1960, 11, 71-88.

POWERS, W. T., CLARK, R. K., & MCFARLAND, R. L. A general feedback theory of human behavior: Part II. *Perceptual and Motor Skills*, 1960, 11, 309-323.

ROBERTSON, R. J., & GLINES, L. A. The phantom plateau returns. *Perceptual and Motor Skills*, 1985, 61, 55-64.

Accepted May 31, 1985.