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So I introduce the main parts of the contents of this book, and estimate it highly, especially because of its fundamental character of grasping the world as it is, guarding itself against running to polarization.

The most unique point of his plan for the establishment of an international order, I understand, is to put "The International Executive" under the influence of territorial communities. That is very good for the democratic structure.

Granting the positive contribution of MacIver's study, I may note one question on this point; that is, how can it be possible to bring the nature of territorial communities into harmony with that of the international executive association in the same member of the "Executive"? However, it is perhaps expecting too much of a short treatise to attempt to tackle this problem.

Figural After-Effect

Toshiro Yoshida

For some time psychologists in the field of visual perception have come to pay attention to the facts that might be included under the name of *figural after effects*. These phenomena are observed whenever a figure is inspected for a certain period in appropriate circumstances.

The investigations of figural after effects originated from the experiment made by J.J. Gibson in 1933. He discovered two facts, according to his terminology, *adaptation* and *after effect*. A slightly curved line becoming less curved during prolonged inspection is the former, and straight line presented afterwards in place of the curved line appearing curved in the opposite direction is the latter. Gibson tries

to interpretate these discoveries as follows. In comparison with curves, the vertical straight line takes the role of norm in visual space. Any figure which represents a deviation from some norm, undergoes a process of adaptation, when inspection is prolonged. A curve thus approaches a straight line. But the norm itself is also affected by this process. Therefore, if a straight line corresponding to the norm is presented after adaptation has been developed, it should appear altered in the sense in which the curve was changed by adaptation, and this distortion is the after effect. In fact, Gibson demonstrated that the amount of after effect, measured right after the inspection, is equal to the amount of adaptation, which has occurred during the inspection. Thus it seems clear that Gibson regards as primary importance adaptation which is, in his opinion, a result of *normalization*.

In 1944, W. Köhler and H. Wallach threw a light from an entirely different point of view, to the phenomena reported by Gibson 10 years before. In contrast to Gibson, they employed as a figure to be inspected (I-figure) not only curves but also squares, oblongs, circles etc., and found that these figures influence squares, lines, dots, and the like (T-figure) which are presented after inspection. Several symptoms of the influence (the figural after effect) have been observed, but the most important one is the change of location of T-figure. If a T-figure is presented in an appropriate temporal and spatial relationship to an I-figure, the displacement always occurs irrespective of the shape of I-figure, and then the concept "displacement" comes to the fore. By summarizing many phenomenal observations and going through elaborated theoretical considerations, they came to these conclusions. First, the physiological process which goes with the perception of I-figure can not be adequately described in terms of nerve impulses which travel along individual nerve fibers, and it is essentially a "rela-

tionally determined figure process" as they call it. Secondly, the figure process alters conditions within the medium in which it occurs, and when I-figure disappears the medium seems for sometime to remain in its changed condition. They gave the name *satiation* to this state of affairs. Thirdly, the figure process which underlies the perception of T-figure tends to recede from regions in which a high degree of satiation has been established. The displacement always takes the direction from a highly satiated region to a less satiated one. Fourthly, the point where the maximum amount of displacement occurs, is not in regions of maximum satiation but at some distance from these regions. Consequently, the displacement of a T-figure tends to be larger, within certain limits, when it is presented somewhat further apart from the point in which an I-figure has been inspected. (They called this phenomenon *distance paradox*.) In this frame of reference, Köhler and Wallach regard the Gibson effect could be derived from the general principles of displacement and distant paradox. Accordingly, it is needless to assume normalization as Gibson did.

As the processes underlying object perception always establish satiation, no theory of these processes can be satisfactory, unless it provides with explanation to satiation and its indicator, the figural after effect. It is natural, therefore, that figural after effect has come to be the center of interest among psychologists, and a great amount of experimental work has been published. Reviewing these literatures, broad and in Japan, I have been made to believe that there are several experimental data, which contradict the concept of displacement from a highly satiated region to a less satiated one. For instance, as I discovered in one of my experiments which was published in the Japanese Journal of Psychology, 1953, vol. XXIII, dots do not displace according to the principle of displacement, if they are presented at the

left side of an I-figure, a curve which is convex to the left. The fact suggests that normalization takes place during the inspection. I found out in Nozawa's experiments some evidences which seem to support this hypothesis. The figural after effect is a highly complicated process, and it is not surprising to find, that the process is under the influence of different factors, such as satiation, normalization and so forth.