FUNCTIONAL OPTOMETRIC PHILOSOPHY

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What are the fundamentals of functional optometry? We start our concept with a hypothesis that characteristically the human being is born with a gene matrix for his physical development. By physical I mean bone, organs, venous system, arterial system, ultimate construction of brain, myelination of nerve, all of which is sheer growth. Beyond that, anything that he does as a human being is acquired as the result of behavior. He starts out, fundamentally, by motion. We know that a muscle can move before a nerve reaches it. It has the power of motion and contraction in itself, but it is undirected until it becomes attached.

We have the child starting out with mass movement and then gradually he refines that movement. It is our hypothesis that with the mechanism he has, so far as vision is concerned, he has a highly specialized receptor to be activated by a certain band of radiant energy. At first, since he has no experience, the light distribution on the retina has no significance to him except as variations in light, and that is all. Gradually, by experience, he begins to single things out. One of them brings him food and warmth. Gradually, he gets separation that one is mother and one is father, and on and on. That development has been laid out in the literature.

Finally, as experience goes on, he refines movement until he gets an understanding, through experience, of what things are, where they are, and how far they are from him. In other words, he builds an understanding of the world around him by the use of a physiological optics system which is a good one, which provides a definite and necessary good light distribution on retina which has always carried the name "retinal image". That light sets up a series of variations of ionic exchange along a nerve. He has learned, by memory traces of experience, to use that as a means of making a search for meaning. Since all learning, according to Lashley and those who follow him, is originally "direction of motion!" and then ultimately synthesized and abstracted, he reconstructs or builds that again in the same motion pattern. He builds a total movement pattern in the process we know as vision. The fundamental reason for having vision is that a person can get meaning out of the world that he must inhabit. He must know what things are, whether they are good for him or not good for him, how he can find them, how he can pursue them, where they are in relationship to himself and everything else.

Being a member of the genus homo, ultimately through association in his environment and through association with other people, he learns language. Words come to be a vector which bring about a synthesis and abstraction of larger groups of experience than any of his own individual sense modality vectors. Again, since he is a member of the genus homo, the time comes when he makes another step. He can use

the contrast patterns of light that we call words and symbols (whether it is the cuneiform writing of the Assyrians, the hieroglyphics of the Egyptian or the discrete letters of the Chinese or our own cursive writing), where, by an a green-lent within an ethnic, we agree that this symbol, and arrangements of those symbols, have certain meanings which bring about a still further elaboration of synthesis and abstraction of experience. It is our belief that, left alone and allowed to grow and carry on through with all the activity that he should have, a child will build and become an adult with a visual mechanism adequate to his needs in the demand of the culture. It is our further belief that there are two factors that we can lay out that will bring about a visual "disadvantaging", as I use the term. What the proportions of them are, I do not know, but I believe there is a certainty that if we continue on an activity within a small range over periods of time, we set up an avoidance reaction within the organism.

At the present time we can lay it as a postulate that when the search for meaning is in a degree that he cannot do it easily and facilely in time, it will set up a dissonance in the total circuiting of vision. I think the two of them, together, probably interweave in a way that nobody will ever quite separate out, bring distortions and disjunction in the visual process, which slows down the search for meaning and brings about a difficulty ultimate1y in problem solving. Again, we come back to the fact that the optical system is not a free-floating optical system unattached to anything. The optical system, the visual process is a part of the organism, part of its total biochemical and biophysical make-up. It is not free of relationship to the total supporting structure. The development of the higher processes in man did not excuse him from the maintenance of a good biological organism. If you put him under a bodily distortion, where the geometry of the task is skewed from the straight rectilinear relationship between the spatial and bodily coordinates, he will organize the visual performance and the visual movement pattern in accordance with that stress geometry. Characteristically he will express that skew or torque in the external visual mechanisms (the eyes) and will develop those conditions which we have observed and have called ocular defects, astigmatism, anisometropia, myopia, as a combination both of the near demands and probably some predisposition biochemically and biophysically to meet certain types of adaptation.

We believe that every part of the visual mechanism is accessible to change. We do not think any part is immutable. We believe that genetically the degrees of freedom, or latitudes, or ranges which would be developed in the growing member of the species, if he were not in our culture, or were free of our culture demands, would be the degrees of freedom necessary for him to survive as he meets the sudden shifts in biochemistry that come to the

primitive person who is suddenly confronted with danger, suddenly confronted with crucial situations where he has to make all the biochemical shifts we know of. We believe those degrees of freedom are put in the visual process to meet those survival demands. We believe that those degrees of freedom that are built to meet the survival demands are fundamentally not adequate to not alone meet them in the organism but meet the increased demands of the culture.

Consequently, we see the absorption of degrees of freedom. We think these absorptions of the degrees of freedom in the subsystems of centering and identification are those things which bring change in the findings. We observe these changes in findings when we use prisms and spheres. We observe the relationship within these subsystems. Out of that emerge the findings that we make when we take ductions, phorias, positive and negative fusional reserve findings and all the rest of them. We believe that the absorption of those degrees of freedom likewise show up in the distortions in the skills battery. We believe that fundamentally and basically this is a biochemical organism. We do not believe the visual process is separated from that biochemical and biophysical organism. We believe that fundamentally, biochemically and biophysically, the maintenance over periods of time of the socially compulsive visually near centered task will set up what is fundamentally an avoidance reaction. We believe that the organism's drive, as a simple organism, would be to get out of there and get away from it. Since he cannot, in our culture, he is going to warp the ocular machinery in his effort to do so.

We believe that the fundamental value of a convex lens is how it relocalizes in space. We believe the lenses we put on people are to enable the organism in space. We believe the lenses we put on people are to enable the organism to meet that biochemical and biophysical demand which is expressed in an avoidance reaction. We believe that when this stress continues over periods of time, it becomes strain, and in order to meet that, the organism will change structure. We believe this change in structure takes place in the total body, in bone, and in the cross section of muscle. We believe it can take place in that enormously elaborate interplay that is the visual process in the central nervous system.

We believe that we put lenses on people to relieve that demand by the organism to meet that stress by avoidance. We believe that it is necessary to give him visual training to build additional degrees of freedom to absorb stress. We believe that when the stress is taken off by giving him additional degrees of freedom, if not already too deeply embedded in change in structure, the organism will do as any organism will do, which is tend to revert to the normal. Given a chance, any organism tends to

revert to a norm. We measure how much latitude we have, the degree of freedom remaining, what potential of shift is available to us with our plus lens measurements. We put that plus lens on him.

If he has embedded his degrees of change, as expressed in ocular defects, to the degree that they are well structured in, we shall supply that amount of lens necessary to provide perceptual rapport. We believe that when he wears the appropriate lens, that lens will enable him to meet the demands of the culture, which are primarily socially compulsive visually near centered tasks. When we have built sufficient degrees of freedom in him, we shall free him from the distortions in the total performance which limit the degree in which he can continue to develop further organization of units of experience and therefore more and more ability at problem solving, whether it is merely the problem of where a chair is in relation to him in the room or whether it is the highest kind of equation handed to in modern imaginative mathematics. That is what I think are the fundamental hypotheses of the functional optometric philosophy.