

these Helmholtz is led into æsthetical and psychological discussions, clearly distinguishing between such principles as are inherent in natural, physical, and physiological relations, and such others as depend on the inventions of genius and the gradual changes brought about by external requirements and ingrained by habit and education.¹

The physiology of seeing had yet more remarkable consequences for the history of Thought. We may say that through Helmholtz's analysis of the formation of our space perceptions by the eye in connection with the tactile and muscular senses, psychology and metaphysics were brought into immediate contact with physics and physiology. It is here that Helmholtz takes up an entirely different, and, previously, isolated line of reasoning, which centres in Kant's theory of space and time as innate forms of perception—the so-called subjectivity or ideality of time and space. The studies of this subject had been somewhat prepared by the writings of Herbart and Lotze. The teachings of Kant have had an influence in the direction indicated through two distinct channels,—through Johannes Müller's Physiology and through Herbart's Psychology: the latter seems to have had

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and Kant.

¹ See the closing words of the 13th chapter of Helmholtz's work: "As the fundamental principle for the development of the European tonal system, we shall assume that the whole mass of tones and the connection of harmonics must stand in a close and always distinctly perceptible relationship to some arbitrarily selected tonic, and that the mass of tone which forms the whole composition must be developed from this tonic, and must finally return to it. The ancient world developed this principle in

homophonic music, the modern world in harmonic music. But it is evident that this is merely an æsthetical principle, not a natural law. The correctness of this principle cannot be established *a priori*. It must be tested by its results. The origin of such æsthetical principles should not be ascribed to a natural necessity. They are the inventions of genius, as we previously endeavoured to illustrate by a reference to the principles of architectural style."