

“Goethe’s Theory of Historiography”
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Scholarship on Goethe as a historian has been devoted to reaffirming concepts established early in the twentieth century, few of which have gained the prominence attached to “Polarität.”¹ One of the consequences of this homogeneous tradition in Goethe-scholarship has been a disregard for Goethe’s contribution to the field of historiography. Secondary literature has also drawn upon Goethe’s writings on the history of science for the purpose of explicating his study of nature,² while ignoring his contribution to the historiography of science. In this paper I intend to 1) discuss briefly the stereotyped views on Goethe as a historian and 2) argue new perspectives for evaluating his writings in history.

For alternatives to the homogenous state of Goethe-scholarship I have looked to the literature in historiography³ to establish those areas in which Goethe makes a significant contribution to what are today considered unresolved issues in the field. To this end I would like to comment on the fundamentals of Goethe’s philosophy of history and on the principles basic to his theory of science history. But before elaborating on the importance of these areas for

¹ See, for example, Ewald Boucke’s *Goethe’s Weltanschauung: auf historischer Grundlage*, Stuttgart, 1907, Friedrich Meinecke’s *Die Entstehung des Historismus*, Angelika Groth’s *Goethe als Wissenschaftshistoriker*, Munich, 1972, and the many shorter studies listed in the footnotes to Groth’s dissertation of 1972.

² Listed in Günter Schmid’s *Goethe und die Naturwissenschaften. Eine Bibliographie*, Halle, 1940, are 4500 items on Goethe’s scientific writings. Examples of recent studies which make reference to Goethe’s thoughts on history but do not deal directly with the topic of historiography are H. B. Nisbet’s *Goethe and the Scientific Tradition*, London, 1972, Andreas B. Wachsmuth’s, “Goethe’s Farbenlehre und ihre **Bedeutung** für seine Dichtung und Weltanschauung,” *Goethe* 21 (1959), and Ivan I. Kanaev’s *Goethe als Naturforscher*, Moscow & Leningrad, 1970.

³ Four recent attempts to draw together the literature in historiography include the anthologies *Philosophical Analysis and History*, ed. William Dray, New York, 1966, *The Philosophy of History in our Time*, ed. Hans Meyerhoff, New York, 1959, *The Varieties of History: From Voltaire to the Present*, ed. Fritz Stern, New York, 1972, and most important, *Theories of History*, ed. Patrick Gardiner, New York, 1959.

Goethe's theory of historiography, I would like to look more closely at past scholarship on Goethe as a historian.

Although serious studies on Goethe as a historian began about the turn of this century, emphasis was primarily on integrating Goethe's expository writings with views presented in his poetry into one "Weltanschauung." This approach is reflected as late as 1950 in Heinrich Srbik's *Geist und Geschichte vom Deutschen Humanismus bis zur Gegenwart* which repeats the tenet of at least half a century of scholarship that one can establish the significance of Goethe's contribution to historiography "Nur wenn man das Ganze des Goetheschen Weltbildes zu begreifen sucht."⁴ Shortly after Srbik's survey of global reflections found throughout the Goethean opus, a new phase began in which the *Geschichte der Farbenlehre* was treated as a history of science.

In 1952 John Hennig pointed out in his article "Goethe's interest in the history of British physics,"⁵ that the neglect of Goethe studies in the history of optics is due to the barrage of criticism leveled upon the didactic and polemic sections of the *Farbenlehre*. The first extensive efforts contributing to the study of Goethe as a historian of science are those of Dorothea Kuhn. Especially significant is her editorial work for the Leopoldina edition of Goethe's *Schriften zur Naturwissenschaft*. In 1957 she edited the *Zur Farbenlehre: Historischer Teil* and two years later she and Karl L. Wolf collected into a complementary volume:

- 1) Goethe's research notes to the *Geschichte der Farbenlehre* most of which (276 pages) never entered the published *Farbenlehre: Historischer Teil*.
- 2) Goethe's discussions from diaries, letters, and conversations related to a variety of topics in the history of science, and

⁴ Heinrich Srbik, Munich, 1951, Vol. 2., p. 147.

⁵ John Hennig, *OSIRIS*, 10 (1952), pp. 43-66.

3) Explanations by Kuhn and Wolf clarifying various topics from Goethe's history of science and an index relating the information contained in these two volumes of the Leopoldina edition.

Although Dorothea Kuhn's article "Goethe's Geschichte der Farbenlehre als Werk und Form"⁶ emphasized the need to investigate the *Geschichte der Farbenlehre* for its own merits, Angelika Groth's dissertation *Goethe als Wissenschaftshistoriker*⁷ has been the only major study to make use of the Kuhn and Wolf volumes. While Kuhn has provided Goethe scholarship with the materials and suggestions for new prospects in research, Groth is content to take over concepts from the early part of the century and support them in greater detail. It might be sufficient to trace just one of the more important of these concepts in order to illustrate the homogeneous state of Goethe-scholarship.

As early as 1936 Friedrich Meinecke affirmed in his *Entstehung des Historismus: Goethe* "kann nur in seinen Polaritäten verstanden werden."⁸ In this way he related the concept of polarity developed in Ewald Boucke's *Goethes Weltanschauung*⁹ to Goethe's view of history. Boucke had stated as early as 1907 in his chapter on "Die Kontrastbewegung in der Geschichte" that Goethe was well acquainted with the laws of juxtaposition. He added, however, that Goethe occupied himself with the concept relatively little because of his general lack of interest in historical studies. While Meinecke argued Goethe's extensive interests in history, his conclusions elevated Bouckian polarity into a nebulous realm of eternal flux and flow:

So gelangte Goethe in sich selbst zu einem idealen Gleichgewichte zwischen Werden und Sein, Wandelbarem und Dauerhaftem, Geschichtlichem und Übergeschichtlichen-zeitlosem.¹⁰

⁶ Dorothea Kuhn, *DVjs*, 34 (1960), pp. 367-77.

⁷ Angelika Groth, (see note 1).

⁸ Friedrich Meinecke, (see note 1), p. 524.

⁹ Ewald Boucke, (see note 1), p. 402-11.

¹⁰ Friedrich Meinecke, (see note 1), p. 509.

Groth's use of this concept as late as 1972, seems dated and out of touch with the reality of Goethe's philosophy of history. Almost half a century later she writes:

“So wird beispielweise die Lehre des Plato und des Aristoteles positiv, die Newtons dagegen negativ beurteilt. Alle drei aber stellen eine Autorität dar; also sowohl richtige als auch falsche Lehren können als ein und derselbe Pol einer anderen Polarität auftreten, beziehungsweise umgekehrt kann ein Pol einmal mit dem einen, zum anderen mit dem entgegengesetzten Pol einer zweiten Polarität zusammenfallen.¹¹

Neither Groth's recent study nor any other has attempted to 1) relate Goethe's theory of historiography to the vast literature in the field, or 2) to study the *Geschichte der Farbenlehre* for its significant contribution to the field of science history.¹²

When we compare Goethe's *Geschichte der Farbenlehre* with other histories of science in his day,¹³ Goethe appears remarkably modern in that he integrates important factors not properly considered until our own time. In Goethe's view the logical and systematic processes of scientific thinking are conditioned by personal, societal, and philosophical factors which have become central to, for example, the “external/internal” controversy generated largely by Thomas Kuhn's *The Structure of Scientific Revolutions*,¹⁴ published in 1962. Goethe's theory of historiography is best characterized as the integration of scientific problems with their socio-cultural context. This is illustrated in his introductory comments on Greek science in the *Geschichte der Farbenlehre*:

¹¹ Angelika Groth, (see note 1), p. 113.

¹² The citations in this article will be taken from *Goethe. Die Schriften zur Naturwissenschaft. Zur Farbenlehre. Historischer Teil*, Vol. 6, Leopoldina-Ausgabe, Weimar, 1957. Further references will be designated in the text by LA (Leopoldina_Ausgabe), volume, and page number.

¹³ Compare Goethe's history to, for example, Johann Karl Fischer's *Geschichte der Physik*, 8 vols., Göttingen, 1801-08, Johann Friedrich Gmelin's *Geschichte der Chemie*, 3 vols., Göttingen, 1796-1800, or Joseph Priestly's *The History and Present State of Discoveries Relating to Vision, Light, and Colours*, London, 1772.

¹⁴ Thomas Kuhn, 2nd ed. Chicago, 1970. For further reference to the controversy see, for example, Gerd Buchdal's “A Revolution in Historiography of Science,” *History of Science* 4 (1965), pp. 55-69, A. Rupert Hall's “Merton Revisited,” *History of Science* 2 (1963), pp. 1-16, and *Criticism and the Growth of Knowledge*, eds. Imre Lakatos and Alan Musgrave, Cambridge, England, 1970.

Wie irgend jemand über einen gewissen Fall denke, wird man nur erst recht einsehen, wenn man weiß, wie er überhaupt gesinnt ist. Diese gilt, wenn wir die Meinungen über wissenschaftliche Gegenstände, es sei nun einzelner Menschen oder ganzer Schulen und Jahrhunderte, recht eigentlich erkennen wollen. Daher ist die Geschichte der Wissenschaften mit der Geschichte der Philosophie innigst verbunden, aber eben so auch mit der Geschichte des Lebens und des Charakters er Individuum, so wie der Völker.
(*LA.* 6, 68/69)

I would like to elaborate on the importance of this passage for Goethe's theory of historiography by discussing further his philosophy of history and his theory of science history.

Philosophical points of view fundamental to Goethe's theory of historiography include, for example, the notion that the historical development of science is a process of continuous human activity, and explanations assuming catastrophic change or "revolutionary science"¹⁵ are, at most, periods of extraordinary human effort. Also fundamental is his view that historical explanations must be expressed in individualistic and holistic terms. He writes in his *Geschichte der Farbenlehre*, for example, that only in relationship to the history of all the natural sciences, "Denn zur Einsicht in den geringsten Teil ist die Übersicht des Ganzen nötig." (*LA.*, p. 69) In the research notes to his *Geschichte der Farbenlehre* Goethe integrates the particular with the whole on another level by recognizing that human efforts necessary for the development of theories of color, light, and vision "zugleich die Schicksle vieler andern menschlichen Bemühungen symbolisch darstellen muß." (*LA.* II, 6,4) The significance of this view can be observed by noting the many works in recent historiography addressing the problem. The internal/external problem in the historiography of science mentioned earlier is part of a more general concern among historians, sociologists, philosophers, and a few literary critics. Ernest Gellner's essay on "Holism versus Individualism," for example, is reprinted in Patrick Gardiner's *Theories of History* and in May Bordbeck's *Readings in the Philosophy of Social Sciences*, while William

¹⁵ For criticism of the notion of "revolutionary science" see, for example, Stephen Toulmin's "Does the Distinction between Normal and Revolutionary Science Hold Water?" in *Criticism and the Growth of Knowledge* (see note 14) pp. 39-47.

Dray lists the problem as “one of the four interrelated problems which have been especially prominent in recent philosophical writings about history.”¹⁶

A third view fundamental to his philosophy of history is the notion that advances made in science are ultimately dependent upon the efforts made by the individual scientist. The particular solution achieved in Goethe’s *Geschichte der Farbenlehre* was to maintain a dynamic equilibrium between external and internal factors while at the same time entertaining the question of final explanations in the development of laws and theories of color, light, and vision. In the introduction to the chapter on medieval science, for example, Goethe states that the progress of science “bezieht sich doch nur zuletzt auf ein tüchtigeres Individuum, das alles sammeln, sondern, redigieren und vereinigen soll.” (*LA*. 6,87). In more recent historiography J.W.N. Watkins also argues the case for “rock-bottom explanations...deduced from statements about the dispositions, beliefs, resources and inter-relations of individuals.”¹⁷ Thus, Goethe’s theory of biography becomes basic to **many** of his historical explanations, organized around human prototypes such as Seneca and Johann Baptist Porta, whom Goethe felt typified an aspect of science in a given epoch.

Goethe’s theory of science history states that the development of science is conditioned by personal, societal, and philosophical factors discussed today under concepts such as “Matter theory,” “climate of opinion,” psychology of research,” or “the sociology of knowledge.”¹⁸

¹⁶ William Dray surveys these problems in the introduction to his anthology on *Philosophical Analysis and history* (see note 3), p.1. For Gellner’s important article see Gardiner’s *Theories of History* (see note 3), pp. 489-502, and May Brodbeck’s anthology of *Readings in the Philosophy of the Social Sciences*, London, 1968, pp. 254-68. For further bibliography of studies in literary criticism concerned with integrating holistic and individualistic factors see Norber Fügen’s *Die Hauptrichtungen der Literaturosoziologie und ihre Methoden*, Bonn, 1964.

¹⁷ J.W.N. Watkins, “Historical Explanation in the Social Science,” in *Theories of history* (see note 3) pp.503-514.

¹⁸ For recent treatments of these notions see, for example, *The Sociology of Knowledge: A Reader*, eds. James E. Curtis and John W. Petras, New York, 1970, Lewis S. Feuer’s *The Scientific Intellectual: The psychological and socio-Origins of Modern Science*, New York, 1963, Carl L. Becker’s *The Heavenly City of Eighteenth-Century Philosophers*, New Haven, 1946, and *The concept of Matter in Greek and Medieval Philosophy*, ed. Ernan McMullin, Notre Dame, Indiana, 1965.

Descartes' theory of color and light, for example, was couched in the terminology of traditional atomistic materialism and popular mechanical philosophy. According to Goethe, Descartes preferred a mechanical and corpuscular mode of conception rather than other "Vorstellungsarten" available to the scientist such as the "Moralische Formeln" and "Metaphysische Formeln." The motion of a projected ball, for example, follows a curved rather than a rectilinear path and served as a model for Descartes' explanation of refraction where light is induced "aus seiner geradlinigen Bewegung in eine krummlinige überzugehen." (LA. 6, 260).

Descartes' scientific explanations also lacked the imaginative, subtle terminology which, for example, Grimaldi used to distinguish between object, concept, and language. Like many of his contemporaries, Grimaldi assumed that light was a substance, although the terminology with which he expressed this notion was far superior to others, since it captured the omnipresence of light and color in the universe. Goethe's discussion of Grimaldi's *Physico-mathesis de lumine, coloribus et iride* (Bologna, 1665) illustrates Grimaldi's attempt to show the subtle interaction of a fluid light with porous matter:

In jenen Poren und Irrgängen, wunderlichen Aus- und Einwegen, Schlupflöchern und andern mannigfaltigen Bestimmungen, müdet sich nun das Licht auf oben beschriebene Weise gewaltig ab und erleidet eine Zerstreung (dissipatio), Zerbrechung (diffracti), Zerreiung (disscissio) und natrlicher Weise auch eine Trennung (separatio); dabei denn auch gelegentlich eine Anhufung (glomeratio) statt findet. (LA. 6, 194/95)

As Goethe correctly observed in his interpretation of Grimaldi's writings, Grimaldi's theory of light and color anticipated Newton's, especially in concepts such as "bundles of rays." Other personality factors that Goethe found important to the development of science include Newton's dogmatic character, Kepler's congenial disposition, Francis Bacon's frustration with scientific tradition, and Galileo's passion for his own convictions.

Goethe's view that societal factors affect the development of a system of knowledge is most clearly illustrated in his treatment of eighteenth-century science in the *Geschichte der Farbenlehre*. Goethe discusses over eighty documents, most of them confirming, popularizing, and dogmatizing Newtonian science. In the chapter "Von Newton bis Dollond" Goethe traces, for example, the notion advanced by Newton that it was impossible to improve the dioptric telescope. Newton had maintained a proportional relationship between refraction and dispersion of light, making it impossible to arrest color dispersion without also terminating refraction. As Goethe pointed out, Euler recognized that the eye was achromatic, allowing refraction without color dispersion, and that the dioptric telescope could be improved through the combination of two different kinds of lenses with water contained between them. Goethe describes, however, how this observation came after a long period of ignoring the physiology of the eye in theories of color and light. Throughout the *Geschichte der Farbenlehre* Goethe traces trends and schools of thought and offers historical explanations couched in holistic terms such as "Anglomanie," "Französische Akademiker," and "Deutsche Gelehrte Welt." This is, of course, balanced with recognition of the role of individualistic factors such as "Newtons Persönlichkeit," "Voltairens großes Talent," "Fontenelles Lobrede," and "Oldenbourg's ausgebreitete Verbindungen." Goethe clearly anticipated the sociology of knowledge perspective expressed in recent historiography of science¹⁹ which distinguishes between the individual innovators and the secondary workers in science between the individual innovators and the secondary workers in science.

What then is Goethe's primary contribution to the historiography of science? It lies in the recognition that the history of science is not entirely mechanical and logical, as is commonly

¹⁹ Besides the works mentioned in notes 14 and 18 the reader may find helpful a collection of excerpts on the problem found in *The Rise of Modern Science: External or Internal Factors?* Ed. George Basalla, Lexington, Mass., 1968.

assumed or implied, but is also conditioned by human factors and the socio-cultural context. Goethe attempts to illustrate the actual path of history by tracing schools of thought, social conditions, and individual biases, tastes, passions, and abilities. The history of science is, according to Goethe, a culture of knowledge fostered by human beings who must ultimately be the subject under investigation, if one is to understand the process by which science develops. His investigation of man's struggles in search and research for knowledge distinguishes his approach from histories of his contemporaries, such as those by Joseph Priestly, Abraham Kästner, and Johann Fischer, who viewed the history of science as mechanistic, abstract, and useful primarily as an up-to-date science textbook. For example, in the preface to *Geschichte der Physik*,²⁰ Fischer is proud to offer his history to the scientific community, particularly for the "Erlernung der Physik." Its usefulness, he continues, lies in its presentation of the "Schritt für Schritt" development of scientific concepts. Priestly (see Citation 3) characterizes the questions asked by Goethe's contemporaries and by many modern historians; namely, "What is the constellation of facts, theories, and methods which contributed to the current state of science?"

It will, however, be found, that, though the method I have chosen be historical, it is, at the same time, sufficiently systematical; and, indeed, pretty strictly so with respect to each distinct article in the several periods into which the work is divided; so that any person, if he chuse it, may see, without interruption, all the discoveries that have been made relating to any single head or division of every subject...At the close of each part of the history, I shall endeavour to give a comprehensive view of all the discoveries which have been made in that branch of science to which it is appropriated, pointing out their natural connection, noting what I shall imagine to be the principal *desiderata*, and giving hints for the extension of it.²¹

Goethe himself distinguishes his approach in the introduction to his *Geschichte der Farbenlehre*:

²⁰ Johann Karl Fischer, (see note 13).

²¹ Joseph Priestly, (see note 13), p. vii ff.

Ja eine Geschichte der Wissenschaften, insofern diese durch Menschen behandelt worden, zeigt ein ganz anderes und höchst belehrendes Ansehen, als wenn bloß Entdeckungen und Meinungen and einander gereiht werden. (*LA*. 6, IX/X).

As early as 1798 Schiller correctly observed that Goethe's contribution to the historiography of science had a dual significance: "erstlich die Einsicht in den Gegenstand und dann zweitens die Einsicht in die Operation des Geistes." (*LA*. II, 6, 404) While Schiller recognized the intellectual value of Goethe's theory of science history, Karl von Knebel, emphasizes its importance as a call for the humanization of science, writing about Goethe's *Geschichte der Farbenlehre* that:

Das ganze Reich der Wissenschaften ist in demselben von einem so hohen Standpunkte angesehen und das wesentliche derselben so genau und innig erforscht, daß ich kein Buch hierin diesem Buche gleich zu schätzen weiß. Der Geist wahrer tiefer Humanität herrscht dabei überall, sowohl im Tadel wie im Lobe, und der wissenschaftliche Mensch selbst wird gleichsam aufgerufen, vor allem ein Mensch zu sein. (*LA*, II, 6, 404)

While Goethe's *Geschichte der Farbenlehre* (1810) represents a lasting contribution to the history of science for its perception of the scientist as a human being, his theory of historiography is a pioneer effort in establishing personal, societal, and philosophical factors conditioning man's comprehension of nature. Thus, to come back to the first part of my paper, Goethe's contribution to the historiography of science must be organized around humanistic terminology rather than abstract, fictitious concepts²² such as "Polarität," for as Goethe writes in his *Die Wahlverwandtschaften* which was published one year before the *Geschichte der Farbenlehre*:

Dem Einzelnen bleibe die Freiheit sich mit dem zu beschäftigen, was ihn anzieht, was ihm Freude macht, was ihm nützlich deucht; aber das eigentliche Studium der Menschheit ist der Mensch.²³

²² For a world of fictions found modern scientific thinking see H. Vaihinger's *The Philosophy of 'As if': A System of the Theoretical, Practical and Religious Fictions of Mankind*, Trans. C.K. Ogden, New York, 1924. To this survey one could add the abstract, fictitious concept "Polarität" which has served Goethe-scholarship as an organizing principle for three quarters of a century. Its reality has not been questioned although the originator, Ewald Bocke, (see note 1) made the observation that Goethe seldom referred to the concept.

²³ *Goethes Werke*. Weimarer-Ausgabe, Weimar, 1887-1919, Pt. I, Vol. 20, p. 293.