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Humphry Davy: Science, Authorship, and the Changing Romantic

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A thesis submitted to the faculty of
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ABSTRACT

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In the mid to late 1700s, men of letters became more and more interested in the natural world. From studies in astronomy to biology, chemistry, and medicine, these "philosophers" pioneered what would become our current scientific categories. While the significance of their contributions to these fields has been widely appreciated historically, the interconnection between these men and their literary counterparts has not. A study of the "Romantic man of science" reveals how much that figure has in common with the traditional "Romantic" literary figure embodied by poets like William Wordsworth and Samuel Taylor Coleridge.

This thesis interrogates connections between Romantic literature and science by examining the figure of the "Romantic" author. In his 1969 essay "What is an Author?" Foucault called into question the way we think about authorship. Foucault states that before the late eighteenth-century, what we call "literary" texts "were accepted, put into circulation and valorized without any question about the identity of the author" (108). Simultaneously, scientific texts "were accepted in the Middle Ages, [. . .] only when marked with the name of their author" (109). Foucault argues that norms of authorship underwent a reversal in the eighteenth century. The result of this shift is that "literary discourses came to be accepted only when endowed with the author function" while in the sciences, the author function faded away (109).

A case study of the scientist Humphry Davy disrupts Foucault's suggestion that a total reversal in the workings of the author function was achieved by the Romantic period. I argue that Davy is an exception to Foucault's history of authorship and that Davy's authorial identity in the sciences as "the public man of science" is equal to the author function of literary figures of the same period. Davy pioneered the "public man of science," a figure who corresponds nearly perfectly with the emerging figure of the "author" in the literary sphere. Ultimately we see Davy as a figure who embodies and reconstructs the "Romantic I" and requires us to reconsider the category of scientific authorship and the figure of the scientist as author.

Keywords: authorship, author function, Foucault, Humphry Davy, literature, science

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HUMPHRY DAVY: SCIENCE, AUTHORSHIP, AND THE CHANGING "ROMANTIC I"

In June 1800, the English chemist Humphry Davy published his first book, *Researches Chemical and Philosophical Chiefly Concerning Nitrous Oxide or Dephlogisticated Nitrous Air, and its Respiration.* Notably, the book was issued in London by Joseph Johnson, who also published such liberal authors as Godwin, Wollstonecraft, Coleridge and Wordsworth. In joining this list of authors, Davy established himself as part of a circle of thinkers who were simultaneously literary, philosophical, and radical in reputation and character. Davy had been writing poetry and publishing scientific essays since his early days in Cornwall, and in the late 1790s his friendships with Samuel Taylor Coleridge and Robert Southey led him to engage poetry more seriously and to help edit both the second edition of the *Lyrical Ballads* and Southey's *Thalaba.* In 1800, Davy also agreed to help Southey edit a third volume of the poetry collection the *Annual Anthology* (Holmes 275).

Given Davy's close relationship with key members of the "Lake School," it seems he might be called a Romantic literary figure. He and Coleridge developed a symbiotic relationship, where theories of poetry and chemistry were exchanged almost as if they were actually theoretical components of the same discipline. Davy's scientific writings often read like poetry and suggest that he saw even scientific processes with a literary eye. Describing his experiments, he wrote in November 1800, "I have made some important galvanic discoveries which seem to lead to the door of the temple of life" (qtd. in Holmes 274). Similarly, Coleridge's ambitious thirst for knowledge often led him beyond literature, and he studied science in order to make his poetry more vivid and realistic. In a letter to Davy written on July 15, 1800, he describes the feeling that the "new poetry and the new science are so closely entwined that they must somehow merge" (qtd. in Holmes 274). When he invited Davy to move nearer to him and

establish his own laboratory in the Lake District, he promised that if Davy did so Coleridge himself would take up chemistry. In his memorable words he claimed, "I shall attack Chemistry, like a Shark" (Coleridge, *Letters* 339).

These collaborations between literary and scientific men mark distinct intersections between discourse systems that have traditionally been thought of as separate and incompatible. Such an intersection between Romantic poetry and science may cause us to question the boundaries between the "author" and the "scientist." During the Romantic period, of course, notions of authorship were very much in flux. On the one hand, Romantic authorship had in many cases taken on the character of what Jack Stillinger has called the "myth of solitary genius," which is fueled by ideas of a unique individualism, a return to nature, an emphasis on the notion that writing takes place in private, and a desire to communicate in a more personal register than traditional poetry had previously employed. Beyond this, there was a sharp focus on the "spontaneous overflow of powerful feelings" (Wordsworth 407), as evidenced most clearly by the theoretical writings of William Wordsworth and Samuel Taylor Coleridge's insistence that poetry should be written in "organic" form (Coleridge, "Shakespeare" 359). On the other hand, the Romantic "author" figure was not clearly defined, and the title was not used to refer exclusively to a particular group or genre. Indeed, the figures of the "author" and "scientist" as we think of them today were only beginning to emerge.

With all these developments as its background, this thesis will argue that Davy, a brilliant chemist who wrote lab notes in verse and edited the literary papers of major Romantic poets, presents an opportune place for reconsidering how we construct the identity and figure of the "author." I will begin by recapping shifts in authorship from before, during, and after the Romantic period, specifically using Foucault's historical model for the spread of what he calls

"the author function" as a starting place for reconstructing the parameters of the author figure. From there, I will turn to Davy as an exception to Foucault's theory and as a case study for how the "Romantic" scientist can be seen as further evidence of the presence of an "author" figure that is not exclusively literary (when even the definition of that term was also in transition). Specifically, I will examine how Davy positioned himself as scientist, author, and man of letters even in his most "scientific" writings. Through an analysis of Davy's life and writing, this thesis will reconstruct the author through the lens Davy himself gives. As a result of such a reconstruction, we will see that our current conception of the Romantic author figure requires a broader definition. Beyond that, I will show how literary and academic studies might benefit from adopting a redefinition of the artificial binary between literature and science that has existed from the nineteenth century to the present.

The Rise of Romantic Authorship in Literature

In his preface to the 1800 edition of *Lyrical Ballads*, William Wordsworth famously asks, "What is a Poet?" (399). Romantic notions of independence, the value of a solitary journey to truth, strong emotions, nature, and the self all fueled a new view of the poet as a distinct figure. In seeking to define what a poet is, the Romantic poets struck upon what would become our modern conception of the "author" figure. In her survey of the history of authorship, Christine Haynes notes that, in his 1840 lecture "The Hero as Man of Letters," Thomas Carlyle "crystallized this Romantic image of the author, which had been developing in English, German, and French aesthetic theory and creative writing since the mid-eighteenth century. Like most commentators on the subject during this era, he defined the author as an autonomous individual inspired by 'originality,' 'sincerity,' or 'genius'" (287). Haynes claims that Carlyle is "arguing that the Man of Letters had replaced the Hero-God, Prophet, Poet, and Priest as the predominant

form of heroism in the modern age" (287). Carlyle emphasizes the recent transformation of the author in these words: "He is new, I say; he has hardly lasted above a century in the world yet. Never, till about a hundred years ago, was there seen any figure of a Great Soul living apart in that anomalous manner; endeavoring to speak-forth the inspiration that was in him by Printed Books, and find place and subsistence by what the world would please to give him for doing that" (154). Here, Carlyle has hit upon one of the major factors in the transformation of the man of letters into the modern author. Rather than merely recording what he observes and thinks, the author has a "place and subsistence," or, in other words, a vocation.

The Romantic poets of the day are ideal candidates for assuming the label of "author." Poets like Keats, Shelley, and Byron explored these emotions and extremes, striving for an unaffected representation of nature as picturesque, free from restraint, and meditative, even as they participated in the new literary economy; the author now had a presence in the marketplace as well as the human soul. Wordsworth's description of poetry as the "spontaneous overflow of powerful feelings" (407) is a precursor to Northrop Frye's Romantic hero in *A Study of English Romanticism*, a figure who is often "placed outside the structure of civilization and therefore represents the force of physical nature, amoral or ruthless, yet with a sense of power, and often leadership, that society has impoverished itself by rejecting" (41). This placement outside the mores of society dictates that the Romantic individual or "I" possess traits of introspection and leadership. With these qualities in mind, the poet Robert Southey sarcastically stated in *Letters from England* (1808), "A remarkable peculiarity is that they (the English) always write the personal pronoun I with a capital letter. May we not consider this Great I as an unintended proof how much an Englishman thinks of his own consequence?" (171). However, even Southey with his conservative ideal of modesty fits the ideal of the genius striving to express himself and the

world through poetry. These concepts of the self figure heavily in the novels and autobiographies written in the period and are reified in characters such as Byron's Don Juan, and Childe Harold.

The collaboration of Wordsworth and Coleridge on *Lyrical Ballads* in 1798 is one such product of the Romantic constructed concept of the self. Although the "Advertisement" for the volume states that the purpose of the work is chiefly "to ascertain how far the language of conversation in the middle and lower classes of society is adapted to the purposes of poetic pleasure," in many ways it is also an attempt to secure for each poet evidence of his own Romantic genius and authorship (Wordsworth and Coleridge 21). This can be seen in Wordsworth's justifications of the project in his later "Preface to *Lyrical Ballads.*" Similarly, in *Biographia Literaria*, Coleridge equates poetry with the poet, and it seems plausible that he saw the success of his poetry as a confirmation of his own identity as an author (Wordsworth and Coleridge 173). The implication here is that the writings of the Romantic poets are not just exercises in autonomy or poetry, but are actually exercises in asserting the self as author (confirming Keats' diagnosis of Wordsworth's poetry as the "egotistical sublime").

This "solitary genius" construction of the author has persisted in the public consciousness for two centuries, and has, despite many criticisms and theories to the contrary, very often defied attempts at re- or deconstruction. Questions about what an author is and does have been discussed at length in seminal essays by Wimsatt and Beardsley ("The Intentional Fallacy," 1946), Barthes ("The Death of the Author," 1967), and Foucault ("What is an Author?," 1969). The last four decades in particular have seen a more concerted effort to question and examine authorship in new ways, with the intent to at least add to the ways we conceive of the figure of the author. As Haynes points out, new authorship theory "has highlighted the collaborative and derivative nature of much writing. In this context, it is high time to reassess the Romantic

depiction of the author as an individual and original 'genius'" (288). In addition, recent scholarship that broadens definitions of literary authorship also suggests that we need to reassess not only the Romantic depiction of the author as an original genius but also what and whom we define as "author."

In "What is an Author?," Foucault dissects everything from how authorship is constructed to the theoretical implications attached to those constructions. Foucault rightly points out that preoccupation with authorship and the figure of the author may obscure or cloud our understanding of the work itself. However, as Andrew Bennett states, crucial theories like Foucault's "have in equal measure been applauded for their radical reinterpretation of authorship and criticized for their alleged incoherence, inaccuracies, and anachronisms" (5). While Foucault's history of authorship is generally descriptive, it does not accurately describe the way authorship in the Romantic sciences was changing. In part, this thesis seeks to qualify one of the inaccuracies in Foucault's theory by specifically examining notions of scientific authorship between 1790 and 1810 when the modern category of "author" was being forged for the first time. I intend to interrogate and interpret Davy's career as brilliant chemist and world famous "philosopher" via theories of authorship in the Romantic period. In doing so, I also hope to show that while Davy is an important exception to Foucault's history of authorship, he is not the only exception. Understanding the state of authorship in the seventeenth and eighteenth centuries allows us to see Davy and his scientific contemporaries as possessing an author function in the sciences that is similar to the one we recognize in literature.

While Foucault's theory of the literary author function has been dissected many times, it has usually been discussed for its historical inaccuracies and exceptions. The philosophical part of his argument, which examines the changing constructions of authorship in scientific texts,

requires more careful thinking about the underexplored intersections between literature and science in the Romantic period. It is vital to understand that the figure of the author and what Foucault calls the "author function" were being constructed and discussed in various disciplines during the Romantic period. Foucault states that before the late eighteenth century, while texts that we call "literary" "were accepted, put into circulation and valorized without any question about the identity of the author," the texts that we call scientific (texts discussing the natural sciences and geography) "were accepted in the Middle Ages, and accepted as 'true,' only when marked with the name of their author" (109). In modernity, Foucault claims practices of authorship were revolutionized. He posits that in the latter part of the eighteenth century, "scientific discourses began to be received for themselves, in the anonymity of an established or always redemonstrable truth" (109). In other words, because scientific projects can be reproduced by anyone who follows a systematic procedure, they do not require that credit be given to a specific author. Foucault continues: "while the author function faded away" in the sciences, "literary discourses came to be accepted only when endowed with the author function" (109). He suggests that the shift in author function from the sciences to literature took place in the seventeenth and eighteenth centuries.

In the wake of Foucault, scholars such as Roger Chartier, Richard Sher, and Robert Griffin have challenged this history of authorship. Among other concerns, these scholars have suggested that Foucault's model is too sweeping, neglects cases of collaboration and multiple authorship, and fails to account for instances where authors straddled the literary-scientific divide. Foucault too broadly suggests that a total reversal in the workings of the author function in literary and scientific discourse was achieved by the Romantic period. Using this suggestion to trace the trajectory of Foucault's argument, my main focus will be that while this evolving

concept of authorship may seem to describe our current understanding of the late eighteenth century, an analysis of responses to Foucault's "author function" theory and a case study of the scientific community in the eighteenth and nineteenth centuries through Humphry Davy challenge the claim that a total reversal in the author function was achieved by the Romantic period.

Of course, one further complication here is defining what exactly the phrase "literary authorship" means. Raymond Williams' *Keywords* addresses the historical evolution and ambiguity as well as current complications of the term "literature." According to Williams, from the fourteenth century the term *literature* referred to "polite learning through reading," and in the early seventeenth century the "literati were the highly educated" (184). It wasn't until the eighteenth century that the term *literary* "was extended [. . .] to refer to the practice and profession of writing" (185), as seen in the use of the terms "literary merit" (Goldsmith 1759) and "literary reputation" (Johnson 1773). Williams also points out that a similar usage of the term appears to be closely connected with a "heightened self-consciousness of the profession of authorship" (185). The emergence of the term "literature" as its own category, distinct from general book learning, is significant as it corresponds with the emergence of the unique category of author in the same period. The change and link between the two is made by Dr. Johnson in the span of only a few years between his works. Williams continues, "Where Johnson had used *literature* in the sense of being highly literate in his *Life of Milton*, in his *Life of Cowley* he wrote, in the newly objective sense: 'an author whose pregnancy of imagination and elegance of language have deservedly set him high in the ranks of literature'" (185). Here, the author is directly linked with language. The concept of English Literature as we know it fully developed later, as national literatures formed on the continent from the late 1700s on, and as notions of

categories of writing became more specialized, separating into imaginative, creative, critical, popular, and sub-literatures. Peter Widdowson's work on the changing notions of "Literature" engages these same points, seeking to follow the historical trajectory of the problematic term and in some sense "re-accredit" the term that he argues has not lost but actually never rightfully claimed a specific and universal meaning. He points out that until the last two centuries scientific writing was also labeled and thought of as "literature" in the earlier sense. Widdowson allows for complications even in our current use of the term to mean everything from printed reading material to the concentrated study of works that have been aesthetically approved as "art."

All of this bears on our discussion of authorship because it is precisely this disaggregation of literature and science that continues to result in confusion about authorship. The shift from general learning, knowledge, and ownership to specific, specialized, and categorized disciplines causes some to claim that the figure and role of the author disappeared in the sciences in the nineteenth century and became applicable exclusively to authors of "literature." In fact, as Humphry Davy shows, it may be that the category of author has been unnecessarily dissected and homogenized to signify only those who write in what we now call the "literary" sphere rather than expanded to include anyone who contributes to the universal human project of acquiring knowledge and seeking truth.

Authorship in the Sciences

A closer look at the development of scientific authorship allows us to see the similarities between the figure of the author in literature and science. Beginning in the mid to late 1700s with philosophers like Joseph Banks, men and women of letters became more and more interested in the natural world and its inner workings. Richard Holmes' book *The Age of Wonder* presents chapters on nine scientific figures from what he claims is "the second scientific revolution,"

which occurred during the Romantic period in Britain (xv). In the two years since its publication, Holmes' book has been widely praised and frequently cited, and many have suggested that this book might very well have lasting effects on how we read and think about scientists in the Romantic period. Holmes brings to light the extent to which educated men began exploring, describing, and experimenting with the way the world's systems function. Charles Taylor writes in his book *A Secular Age* that "until the end of the eighteenth century there was sufficient intellectual homogeneity for men to share certain assumptions in varying degrees" (353).

However, during the Romantic period, the scientific fields exploded into a frenzy of experimentation and observation. From studies in astronomy to biology, chemistry, electromagnetics, medicine, and physics, these "philosophers" pioneered what would become our current scientific categories. While the significance of their contributions to these fields has been widely appreciated historically, the interconnection between these men and their literary counterparts has not. A study of the "Romantic man of science" reveals how much that figure has in common with the traditional "Romantic" literary figure embodied by poets like Wordsworth and Coleridge. These similarities cause us to ask the question, "Why are we so aware of Romantic poets and so ignorant of Romantic scientists?" I suggest that it is perhaps our recognition of the Romantic poets as "authors" and the Romantic scientists as a generic mass that limits our understanding of the second category. Holmes' book and works like his begin to identify individuals and separate them from the mass. While each of the men and women in the book is important from a scientific standpoint, Davy shines as the main hero of Holmes' tale. This may be because, while he certainly is important to the scientific world, Davy is also an embodiment of the Romantic period's culture and society. Holmes highlights the play between

scientific and literary discourse systems, and because Davy fits into both, he is the ideal figure to show the connection between the two.

Humphry Davy was born on 17 December 1778 in Penzance, Cornwall. His father was a wood carver and craftsman, and his mother came from an old mining family. At Penzance Grammar School Davy developed an interest in natural history and was "articulate and adventurous, and became famed for 'spouting' stories and poems. On summer evenings he would sometimes stand on the porch of the White Hart Inn and deliver 'speeches'" (Holmes 239). He later linked his love of science to his fascination with story-telling. In his memoirs, he describes his desire to record what he learned in a literary way: "After reading a few books, I was seized with the desire to *narrate* . . . I gradually began to invent, and form stories of my own. Perhaps this passion has produced all my originality. I never loved to imitate, but always to invent: this has been the case in all the sciences I have studied" (H. Davy, *Collected* 68). The desire to create rather than imitate is often seen as the key difference between pre-Romantic and Romantic poets and places Davy squarely in the category Holmes coins of "Romantic Scientist." Clearly, the beginnings of Davy's career in literature and science came from the same seeds.

In February 1795, Davy was indentured for seven years to John Bingham Borlase, the leading surgeon-apothecary in Penzance, and while there he wrote many sonnets while simultaneously learning the intricacies of medicine and science. He also learned French, the language of love, poetry, and Enlightenment science. Davy read incessantly and began to work his way through the large scientific library of a new friend, Davies Giddy. He read classical authors like Homer and Aristotle, in addition to English poets like Milton; he also read the French science writers Buffon, Cuvier, and Lavoisier. He kept a journal, wrote poetry, and began a series of essays on religion versus materialism. In 1797, he developed a fascination with

chemistry, the popular Romantic science. He excitedly wrote in his notebook: "Chemistry, which arose from the ruins of alchemy, to be bound with the fetters of phlogiston, has been liberated, and adorned with a beautiful philosophic theory. The numerous discoveries of Priestley, Black, Lavoisier, and other European philosophers in this branch of science, afford splendid proofs of the increasing energies of the human mind" (H. Davy, *Collected* 2:6). Davy saw chemistry primarily as an expression of growing mental power and of creative hope. He also appreciated the precise technical challenge chemistry presented (Holmes 247).

While he intended to take a medical degree at Oxford, instead he went to work with Dr. Thomas Beddoes as an assistant chemist experimenting with gas and medicine at Beddoes's new Bristol Pneumatic Medical Institute, a kind of democratic clinic where people of all socio-economic levels were welcome for treatment. Here Davy experimented with new theories of combustion and respiration, gases, and the effects of each on the body (Lamont-Brown). In the winter of 1798, Beddoes published Davy's earliest "speculative essays on the chemistry of heat and starlight, which followed Lavoisier's ideas on 'oxygen' but also challenged his concept of 'the imaginary fluid caloric'" (Holmes 254). The essays were included in Beddoes' annual anthology, which was published by Joseph Cottle – the Bristol publisher who the same autumn had printed an anonymous book of poems entitled *Lyrical Ballads* (J. Davy, *Fragmentary* 21).

In 1799, Davy experimented with nitrous oxide, inhaling the gas himself and then writing his observations both before and after his numerous experiments. With the publication in 1800 of his first book on the subject, *Researches,* Davy gained more professional attention. Sir Joseph Banks and the Committee of the Royal Institution were impressed with his empirical mind and knowledge of chemistry, as well as his excitement and scientific versatility. In Clifton in 1800, Davy began his first electrical experiments. His papers on galvanism were published in

Nicholson's Journal and were much discussed in London. In 1801, Davy visited London and was officially interviewed by Banks, Benjamin Thompson, and Henry Cavendish for a professorship in chemistry. He was offered and accepted a post as Assistant Lecturer in Chemistry and Director of the Chemical Laboratory at the Royal Institution, and in 1811 a collection of a decade of Davy's Royal Institution lectures, *Elements of Chemical Philosophy*, was published.

The climax of Davy's scientific career was his invention of the mining safety lamp. In the summer of 1815, after a series of mining explosions, Davy invented a lamp that held open flame away from methane gas by covering it with iron gauze. He gained national and international acclaim for his invention and refused his right to take out a patent, giving his invention freely to the public. Along with international recognition, Davy received the Rumford Medal from the Royal Society in 1817 and was made a baronet by the Prince Regent in 1818.

In 1820, Davy was appointed president of the Royal Society in London. In September 1826, he began to suffer from symptoms of progressive heart disease and had a series of strokes. In his last years, Davy wrote and published two books. When he suffered a fatal stroke on May 28, 1829, Davy's brother John became his biographer and publisher.

Authorial Concepts of Self

Understanding Davy's scientific career is helpful in establishing him as an extraordinarily prolific man of letters; however, in order to establish Davy as an "author" figure, it is necessary to examine both the way he conceived of authorship and how he saw himself as an author in his own writing. By examining the collected works of Davy chronologically, beginning with his scientific lectures, notes, and observations, we get a sense of his authorship as a scientist participating in the Royal Society and in the scientific community (J. Davy, *Collected* 87). Davy also explored and experimented with autobiographical and imaginative writings, including

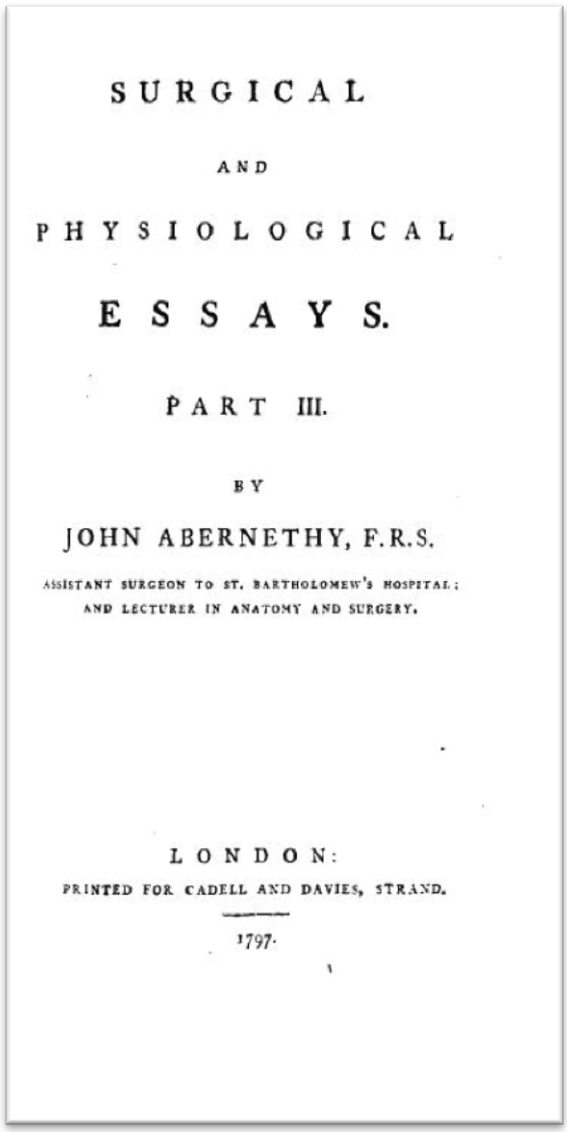
poetry and two novel-length works, *Salmonia* and *Consolation in Travel*. In these, we see that Davy's function and presence as an author extends well beyond the scientific, reaching into the subjective and expressive. However, what is perhaps most interesting and most important about Davy is the fact that he constructed himself as "author" even in his earliest publications and produced a literal blend of empirical, scientific writing with writing that was simultaneously imaginative and theoretical.

While Davy's hybrid style and subject matter set him apart from many of his scientific colleagues, there are several ways in which Davy's habits were consistent with scientific publishing norms of the period. First, most scientific publications between 1790 and 1800 consisted of lectures, reports, and letters written by a single scientific author whose name appeared on the title page—an individual who was affiliated in some way with an institution or professional organization. Often, though not always, the title of the institution was also named on the title page, though featured less prominently than that of the author. In published dissertations, the candidate's name was listed first, followed by the name of the college. Usually, a list of those serving on the committee of defense also appeared. From this, we can infer that an author function of sorts was present in the sciences in the years when Davy began his career. It was common for the name of the scientist to be listed first, as well as to be attached to credentials, especially to an institute or organization. Here we see a clear departure from Foucault's premise that by the late eighteenth century "scientific discourses began to be received for themselves, in the anonymity of an established or always redemonstrable truth" (109). On the contrary, it is very common to find the author's name listed as the primary identifier for a published work.

While important, the name of the institution or society to which the scientist belonged is not as prominently displayed (see figures 1-2). Davy's contemporary Erasmus Darwin published

his *Zoonomia* in 1800, and the title page significantly referred to him as "author" of another work (see figure 3). In this way, we see evidence that the scientific community as well as the general reading public recognized a work by its author, rather than the scientific institution by or for which it was published. Davy's publications follow these publishing norms, and his name appears prominently even on the title page of his first experimental work, *Researches* (see figure 4). While identification of a work by author is not necessarily unusual, the fact that Davy gained recognition for that work from such a young and inexperienced position is. Most young scientists would not be recognized for their work in the way Davy was unless it was attached to a specific and important institution

Second, most scientific publications from 1790–1810 contain a preface of a few pages, and many are in a narrative style. The preface seeks to justify the project and give reasons for the publication of the report. However, the end of the preface is usually also the end of any prose that resembles narrative. In the first chapter, most papers embark on a catalogue of experiments or observations and continue in a scientific, empirical, and precise way through the end of the publication (as seen in figure 5, where much of the text is a description and chart of an experiment with gasses). It is in the content of the prefaces and chapters of scientific publications that Davy departs from traditional scientific publication norms. While he follows the conventional style of scientific publication by including such details and figures of his experiments, it is his writing style and the construction of himself as a present author foregrounding his own subjectivity that sets him apart from most contemporary scientists and their publications. Closer examination of figures 6 and 7, both taken from Davy's *Researches*, shows that even while he is describing his experiments in a specific, scientific way, Davy



SURGICAL

AND

PHYSIOLOGICAL

ESSAYS.

PART III.

BY

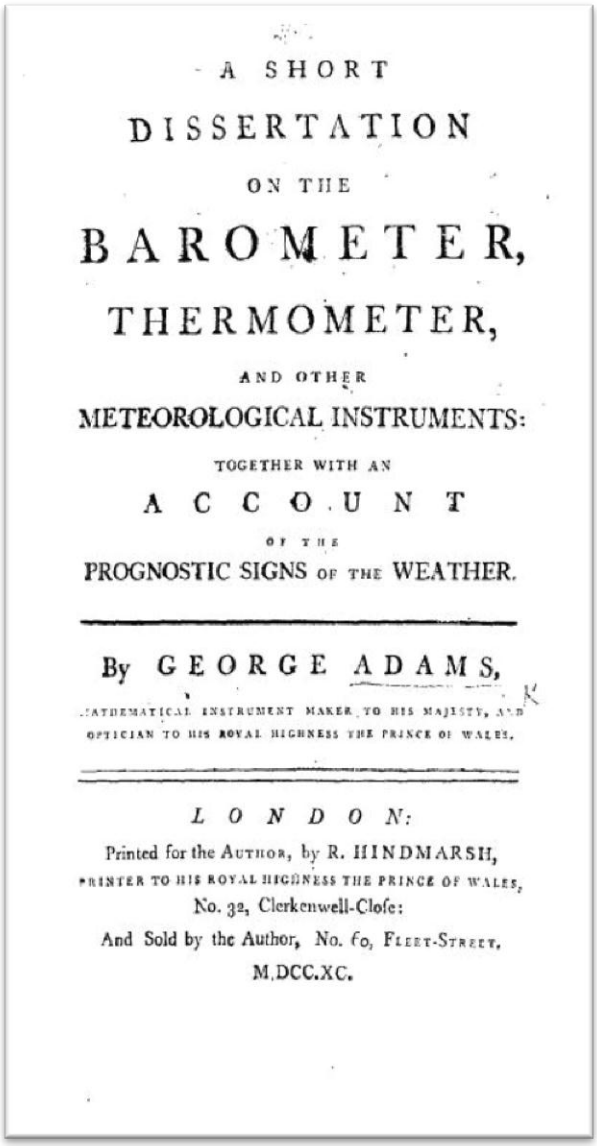
JOHN ABERNETHY, F.R.S.

ASSISTANT SURGEON TO ST. BARTHOLOMEW'S HOSPITAL;
AND LECTURER IN ANATOMY AND SURGERY.

LONDON:
PRINTED FOR CADELL AND DAVIES, STRAND.

1797.

figure 1 (Abernethy)



A SHORT

DISSERTATION

ON THE

BAROMETER,

THERMOMETER,

AND OTHER

METEOROLOGICAL INSTRUMENTS:

TOGETHER WITH AN

ACCOUNT

OF THE

PROGNOSTIC SIGNS OF THE WEATHER.

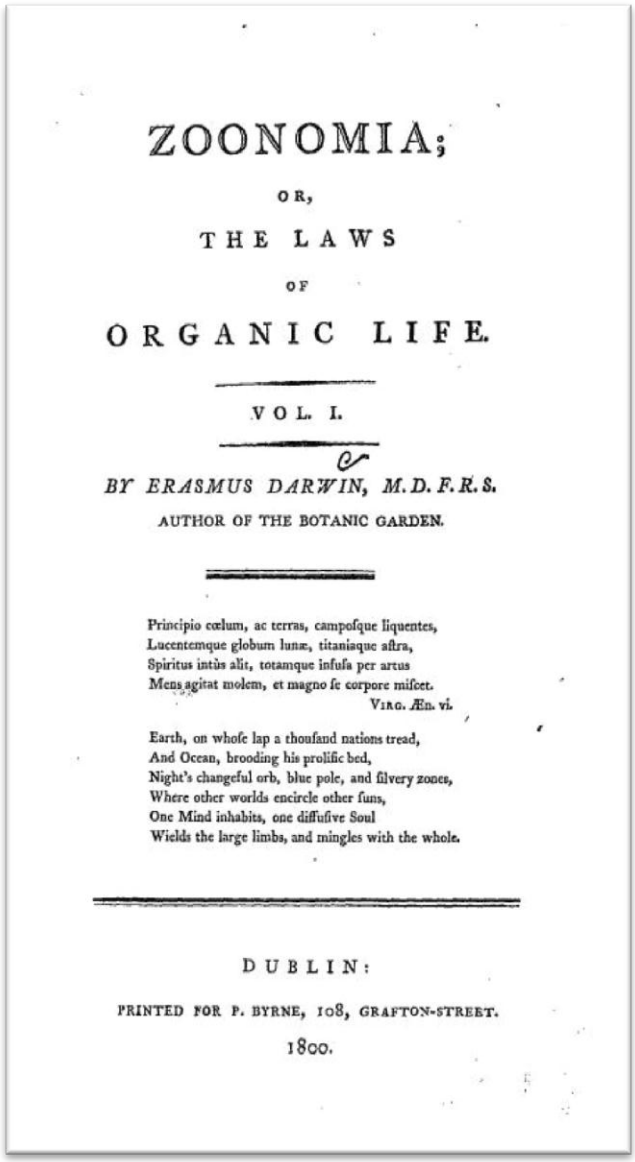
By GEORGE ADAMS,

MATHEMATICAL INSTRUMENT MAKER TO HIS MAJESTY, AND
OPTICIAN TO HIS ROYAL HIGHNESS THE PRINCE OF WALES.

LONDON:

Printed for the AUTHOR, by R. HINDMARSH,
PRINTER TO HIS ROYAL HIGHNESS THE PRINCE OF WALES,
No. 32, Clerkenwell-Close:
And Sold by the Author, No. 60, FLEET-STREET.
M,DCC,XC.

figure 2 (Adams)



ZOONOMIA;

OR,

THE LAWS

OF

ORGANIC LIFE.

VOL. I.

BY ERASMUS DARWIN, M.D. F.R.S.

AUTHOR OF THE BOTANIC GARDEN.

Principio cœlum, ac terras, camposque liquentes,
Lucentemque globum lunæ, titaniaque astra,
Spiritus intùs alit, totamque infusa per artus
Mens agitat molem, et magno se corpore miscet.
VIRG. Æn. vi.

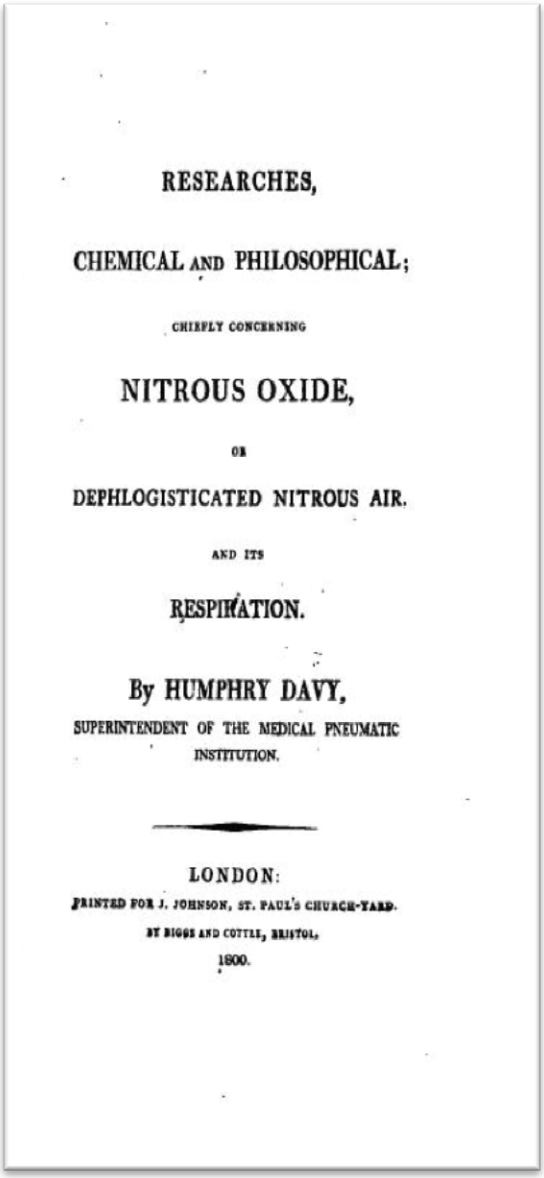
Earth, on whose lap a thousand nations tread,
And Ocean, brooding his prolific bed,
Night's changeful orb, blue pole, and silvery zones,
Where other worlds encircle other suns,
One Mind inhabits, one diffusive Soul
Wields the large limbs, and mingles with the whole.

DUBLIN:

PRINTED FOR P. BYRNE, 108, GRAFTON-STREET.

1800.

figure 3 (Darwin)



RESEARCHES,

CHEMICAL AND PHILOSOPHICAL;

CHIEFLY CONCERNING

NITROUS OXIDE,

OR

DEPHLOGISTICATED NITROUS AIR.

AND ITS

RESPIRATION.

By HUMPHRY DAVY,

SUPERINTENDENT OF THE MEDICAL PNEUMATIC INSTITUTION.

LONDON:

PRINTED FOR J. JOHNSON, ST. PAUL'S CHURCH-YARD.

BY BIGGS AND COTTLE, BRISTOL.

1800.

figure 4 (Davy, *Researches)*

The vitriolated barytes thus formed, weighed 42 *grains. Now as* 100 *grains of Glaubers salt give, on the addition of a proper quantity of the terra ponderosa salita,* 80 *grains of vitriolated barytes; it is evident that this solution contained* 52 $\frac{1}{4}$ *grains of Glaubers salt, and allowing the* $\frac{1}{4}$ *of a grain to have been produced from the selenite before mentioned to have been contained in this solution,* (C. 5. Obs.) *the whole quantity of Glaubers salt contained in* 8 *pounds of the Caldas water, will be* 64, *and the common salt* 148 *grains.*

From a retrospective view of all the experiments, it appears that 128 *ounces of the Caldas water, examined in the month of April* 1793, *contained,*

Fixed air - - -	$\frac{1}{4}$ *ounce* }	*measure.*
Hepatic air - - -	6 $\frac{1}{4}$ *ounce* }	
Calx aerata - -	12	*grams.*
Magnesia aerata -	3 $\frac{1}{2}$	
Ferrum hepatisatum	2 $\frac{1}{2}$	
Argillaceous earth -	1 $\frac{1}{4}$	
Siliceous earth - -	$\frac{1}{4}$	
Magnesia salita	64	
Selenitic salt -	44	
Glaubers salt -	64	
Common salt -	148.	

figure 5 (Withering 57)

III. *Of the quantities of true Ammoniac in Aqueous Ammoniacal Solutions, of different ſpecific gravities.*

To aſcertain the quantities of ammoniac, ſuch as exiſts in the aëriform ſtate, ſaturated with moiſture, in ſolutions of different ſpecific gravities, I employed the apparatus for abſorption ſo often mentioned. Thermometer being 52°, the mercurial airholder was filled with ammoniacal gas, and the graduated phial, containing 50 grains of pure water, connected with it. During the abſorption of the gas, the phial became warm. When about 30 cubic inches had been paſſed through, it was ſuffered to cool, and weighed: it had gained 5,25 grains, and the fluid filled a ſpace equal to that occupied by 57* grains of water.

* It is neceſſary in theſe experiments, that the greateſt care be obſerved in the introduction and extraction of the capillary tube. If it is introduced dry, there will be a ſource of error from the moiſture adhering to it when taken out. I therefore always wetted it before its introduction, and took care that no more fluid adhered to it after the experiment, than before.

E

figure 6 (H. Davy, *Researches* 65)

c. From what we have lately heard of the curious experiments of Mr. Volta and Mr. Carliſle, it is very probable that the converſion of nitrous gas into nitrous oxide when expoſed to wetted zinc, copper and tin, in contact with mercury, as deſcribed in Ref. I. Div. V. may in ſome meaſure depend on the action of the galvanic fluid. Whilſt I was engaged in the experiments on this converſion, Dr. Beddoes * mentioned to me ſome curious facts noticed by Humboldt and Ritter, relating to the oxydation of metals by the decompoſition of water, which induced me

reſpired and become ſlightly carbonated. At leaſt there is as much probability in the ſuppoſition that carbon in looſe affinity may combine with hydrogene at 98° as that it may combine with oxygene.

* Dr. Beddoes has ſince favoured me with the following account of theſe facts.

" Mr. Humboldt (ueber die gereizte Faſer I. 473, 1797) quotes part of a letter from Dr. Aſh, in which it is ſaid that *if two finely poliſhed plates of homogeneous zinc be moiſtened and laid together, little effect follows—but if zinc and ſilver be tried in the ſame way, the whole ſurface of the ſilver will be covered with oxydated zinc. Lead and quickſilver act as powerfully on each other, and ſo do iron and*

figure 7 (H. Davy, *Researches* 568)

narrates his procedures and comments on their effectiveness and meaning. I will show further evidence and specific examples of Davy's difference as I examine his works chronologically.

Davy as Author

Because Davy's work is extensive, this section will consider the workings of authorship in his most important and representative works. I will examine Davy's writing as evidence of his efforts to position himself as creative author in the texts through conscious and consistent efforts to draw attention to his own role as "author." As we look at Davy's texts through the lens of authorship, we will see the degree to which Davy achieves an author function in both the literary and scientific senses of the term, and how in so doing he adapts the term of "author" to fit into the scientific discipline.

1790-1800

From the vantage point of Davy's scientific publications, his formal history begins in 1800 with the publication of his first book, *Researches* (a collection of papers and observations from his first experiments and interest in science). However, Davy's public scientific observations and lectures were preceded by experiments in poetry. Although his scientific works established Davy as an individual and brilliant scientific author, his poems established him as a different and somehow literary one. Davy's first publications were poems, and even though he was prolific in the scientific world, he continued writing poetry throughout his life.

While it seems that Davy was hesitant to attempt to establish himself generally as a poet or literary author, several of his verses were published in collections edited by Southey and other poets. There were also rumors that as late as 1807 he was preparing to publish his own collection of poetry, although such a collection was never completed. Davy's reputation as a poet and literary man may also be seen in his participation in literary endeavors with the Lake School

Poets as well as his writing the Prologue to "The Honey-Moon," a play by John Tobin. Other literary enterprises include essays written under pseudonyms for Thomas Dibdin's journal, *The Director* (1807). These publications suggest that Davy spent a considerable amount of time and energy writing and collaborating on texts outside of the scientific academy, and his success therein was recognized privately by his literary friends as well as publicly by general audiences who found his work interesting, insightful, and refreshing.

Davy's experiments in poetry are important clues to his self-construction as an author because he saw his friends who were poets as professional authors. Their encouragement gave Davy confidence that his ideas were worthwhile, even if his poetry was still evolving. While Davy's poems are mostly autobiographical, not all are explicitly so, since many of his poems focus chiefly on describing and observing the physical reactions of his experiments both with chemistry and life. Davy seems to have claimed some security in his poetical writing by using science as his subject. While his early poetry tends to focus on nature and other core Romantic motifs, his later poetry is more descriptive and expressive; Davy uses poetry to describe his own reactions to scientific experiments, and also as a mode of expressing secret affection in love poems.

Davy's first poems are written in response to emotional turmoil at home. When he was fourteen, Davy was sent away to Truro Grammar School, where he learned Latin and Greek, but with his father's death in 1794, the family had to sell their Varfell home and move back to Penzance. His father was buried there, and Davy set one of his poems about death and material philosophy in the Ludgvan churchyard. The first and last stanzas read,

My eye is wet with tears

For I see the white stones

That are covered with names

The stones of my forefathers' graves [. . .]

They kindle in the stars,

They dance in the light of suns

Or they live in the comet's white haze [.] (qtd. in Treener 4-5)

The poem does not rhyme; instead it is made up of statements, or factual observations, much like lab notes would be written (Holmes 240). Davy's first attempts at verse reflect his scientific mind, and his writing style is never completely devoid of it even in his later poetry. However, it is not simply the form that makes Davy's work poetry. His attention to detail, emotion, nature, and the interaction of all three in the human soul emphasizes his poetic mind even when writing about something as clinical as experiments with chemical gas.

When Davy began experimenting with nitrous oxide gas, he used verse to describe the sensations he experienced. Holmes describes "On Breathing Nitrous Oxide" (1799) as "very bad verse, but surprisingly precise physiological information" (260). The poem is evidence not only of Davy's experiment, but also of his desire to narrate such experiments in literary form. In an excerpt from his poem on the gas, Davy highlights the reality of the feelings he experienced by denying that they could be the result of dreams or wishful thinking; rather, they are the product of a natural bodily reaction:

Not in the ideal dreams of wild desire

Have I beheld a rapture-waking form;

My bosom burns with no unhallowed fire:

Yet is my cheek with rosy blushes warm

Yet are my eyes with sparkling luster filled

Yet is my mouth replete with murmuring sound

Yet are my limbs with inward transport thrilled

And clad with newborn mightiness around. (qtd. in Fullmer, *Published* 215)

Davy included his Bristol friends in the nitrous oxide gas experiment, asking, among others, Robert Southey, Gregory Watt, Tom Wedgwood, and several members of the Edgeworth family to participate. Southey and Davy formed an important friendship during these Bristol years, and they spent many evenings discussing science, literature, and medicine. The rival claims of poetry and science became a passionate topic between them. Davy showed Southey his poems, and Southey promised to select and publish the best of them. Southey critiqued Davy's poetry, and encouraged him not to abandon the pursuit of poetry. The 1799 *Annual Anthology*, which was published out of Bristol by Biggs and Co., for T. N. Longman and O. Rees in London, included five of Davy's poems. Ironically, Southey's name does not appear on the title page as editor of the anthology. Even in the *literary* marketplace the author function was still evolving and a sense of authorship was only beginning to be established in an inconsistent way.

The most significant aspect of Davy's poetry is that it brought him in contact as an author with the poets of his day, giving him a foundation in literature and writing that he built on for the rest of his life. In the autumn of 1799, Davy first met Samuel Taylor Coleridge. Coleridge had stopped in Bristol for a fortnight before joining the Wordsworths in the Lake District. While Coleridge was in Bristol, he spent several evenings discussing the gas, poetry, and science with Davy. When Davy travelled to London shortly thereafter, a more solid friendship formed between the two men (Holmes 165-67). This significant relationship with Southey and Coleridge is perhaps the factor that motivated Davy to continue his "experiments" with literature, and it eventually gave him the confidence to publish his own scientific and literary works. These early

experiences with writing also armed Davy with the confidence and belief in his own persona of author that would lead to new possibilities of scientific authorship in the next century.

1800-1815

Davy's first book, *Researches, Chemical and Philosophical; Chiefly Concerning Nitrous Oxide,* was published in 1800 and marks the beginning of both his scientific career and his career as a scientific author. The book outlines observations and experiments Davy carried out primarily with nitrous oxide gas; however, the book also philosophizes on the nature of experimentation and the complications that arise from both human observation and the use of humans as research subjects. From beginning to end, Davy is present in the text as an author. For instance, Davy's full name is listed on the title page as author of the text. His title, "Superintendent of the Medical Pneumatic Institution," accompanies his name, adding not only credibility but also a real location and profession to the author. The presence of Davy's name on the title page is especially important here, because Davy attaches his own name to this experimental text, and does so boldly. This construction of authorship shows Davy's own belief in his role as author, no matter the fact that the text is a scientific one. Significantly, it is on the first page of the introduction that we again meet Davy as author. He explains his association with Dr. Beddoes, but shortly thereafter refers to himself as "I" and narrates his experiments in the first-person with surprising honesty of emotion for such a technical work. His second paragraph of the introduction to *Researches* states, "In the course of this investigation, I have met with many difficulties; some arising from the novel and obscure nature of the subject, and others from a want of coincidence in the observations of different experimentalists on the properties and mode of production of the gas" (xii). He goes on to detail his difficulties and to give his opinion on the reason for their existence. Davy's frank, personal tone of admission of difficulty is not

only evidence of his self-identification as an author, but it is also the major factor that allows his audience to read him as one. If his text were merely a scientific observation, objective, impersonal, and strictly in passive third-person, it is unlikely that Davy would have been read and identified as an individual with a constructed authorial role.

Later in the introduction, Davy alludes to experiences outside of science in order to explain his unusual writing style. Sharing his own brand of wisdom with the reader, he says, "Early experience has taught me the folly of hasty generalization" (xiii) before going on to catalogue what can be known through science. He also opportunistically acknowledges the influence of Dr. Beddoes. Davy's tendency to include personal experiences and friendly advice is what sets his writing apart from other scientific publications and suggests that Davy consciously thought of himself as an author in the full sense of the word.

Even this first fully scientific work is written in such a way that a general audience can understand it. This is significant at the time since many non-specialist readers would have been more likely to read the latest scientific works in the period. Throughout *Researches*, Davy maintains the tone of his introduction, blending empirical and theoretical observation in natural language. The arrangement of his observations is organized and his explanations of his own experiments are carefully worded to provide clear explanations for those who are not as familiar with chemistry, gas, and medicine as he and his colleagues would undoubtedly have been.

Davy's style of observation and explanation in his scientific work can be seen in his explanation for a discrepancy between his own experiment and a previous one: "To reconcile these different results is impossible, and the immediate connection of the subject with the production of nitrous oxide, as well as its general importance, obliged me to search for means of accurately determining the composition of nitrous acid in its different degrees of oxygenation"

(4). Such narrative threads in his observations as "obliged me to search for" are significant in that they identify Davy as the present author in the text. Finally, in an effort to construct himself as an author and not just as a scientist, Davy seems to consciously structure his manuscripts in a way that will make his text completely relevant to a general as well as scientific audience. He does this by quoting, paraphrasing, and explaining previous work done in the chemical field. Davy uses names that virtually all readers would at least have been familiar with, such as Cavendish and Lavoisier, and integrates his own findings with theirs to make the entire text a cohesive body proving his point. Similar traits show up later in his brilliant public lectures (Davy, *Researches* 2).

From the publication of his findings on nitrous oxide, Davy's scientific career blossomed. He gave his first lecture in April, choosing the challenging subject of "Galvanism" in order to impress the large crowd that came to hear him. He enthralled the audience, and the *Philosophical Magazine* described how Davy's lectures presented a whole new branch of philosophy:

> [He] held his audience, including many ladies, completely spellbound. Mr. Davy, who seems to be very young, acquitted himself admirably well. From the sparkling intelligence of his eye, his animated manner, and the *tout ensemble*, we have no doubt of him attaining distinguished excellence. (qtd. in Treener 78)

The same year, Davy published his first paper in the Royal Society's journal, and he continued to succeed as a lecturer, drawing in crowds of over 500 people. Davy's success gave him new confidence. As he continued lecturing, writing, and teaching, his popularity and acclaim grew in both the scientific and general public spheres. In 1811, he was knighted by the Prince Regent for his scientific achievements. In 1812, a collection of Davy's experiments and observations, *Elements of Chemical Philosophy*, was published. Shelley ordered the book, as did

many others in London (Holmes). The introduction situated chemistry at the forefront of contemporary science, and the survey of the entire field was brilliant, fair, and interesting. In his lectures, Davy engages the reader directly and works in allusions, analogies, and other literary conventions. His lecture style is apparent in his prose as well, and it is arguably this direct style that allows Davy to blend his writing in a way that takes in both the scientific and literary genres (Foote). In describing his lectures, *The Philosophical Magazine* reported that the audience was "highly gratified" by Davy's presentation. His effect on the audience is described thus:

> Mr. Davy acquitted himself admirably well. From the sparkling intelligence of his eye, his animated manner, and the *tout ensemble*, we have no doubt of his attaining distinguished excellence. 'The sensation created by his first course of lectures at the Institution' says Mr. Perkis, 'and the enthusiastic admiration which they obtained, is at this period hardly to be imagined.' (qtd. in H. Davy, *Collected* 88)

Davy's impact on his audiences further established him in the public mind as "author" of his scientific discoveries.

In his first fifteen years of scientific publication, Davy not only constructed, but established himself as an author to the scientific community as well as to a more general audience. The persona and figure of Humphry Davy as an author grew from his publications to public lectures and recognition by others reinforced Davy's self-concept and presence as a scientific author that includes the idea of the popular or public intellectual or modern-day "academic."

1815–1820

Davy's literary interests grew even as his scientific career blossomed, and he wrote and published his findings and lectures in quick succession. His most important lecture from a public standpoint focused on the safety lamp he invented to avoid the explosion of methane gas in mines. It is in Davy's account of the development of the Safety Lamp that we most easily see the evolution of Davy's construction of himself as both a literary and scientific author. Because Davy had gained popularity as a scientist and lecturer, his account of the Safety Lamp takes on an epic, heroic slant, with the inspired scientist as the hero. In 1815, Davy was asked to solve the problem of mine safety. He experimented with methane gas and its flammability in order to create a device called "the safety lamp" that would separate flame from gas and reduce the possibility of fatal explosions in coal mines. After successfully producing the lamp, Davy gave a lecture on the experiment and result that same year. His experiment and lecture on the lamp were what we might call the "typical" academic or scientific approach to the project, since he took on, developed, and solved the problem in a methodical manner traditional in the Royal Society.

However, what is not traditional is that when in 1817 he published a paper outlining the project he was listed as a fully credentialed and successful philosopher: "Sir H. Davy, LL.D (Doctor of Laws) F.R.S. (Fellow of the Royal Society) V.P.R.I. (Vice President Royal Institute)" (H. Davy, *Safety* 2). While many scientific works list the credentials of the author, the many titles Davy includes here indicate there may be other reasons why they are included. First, by the time the treatise was published, Davy's name and position were widely recognized in London and in many other parts of the world. His titles would not only add credibility, but respectability for him, for the Royal Institute, and for Britain. Second, it may be possible that Davy is keen to assert himself here as a well-established academic and full member of the Royal Society. Davy

had been accused by a Mr. Poole of copying an already existing safety lamp design. Although Davy had refused to take out his own patent on the lamp as a gift to the miners and their families, for many years after its invention, Davy was involved in disputes over the rights and correct origins of his lamp and its design. This controversy may have prompted Davy to be more assertive than ever in his role as author of the documents outlining the lamp project. In this light, it is also important to note the small postscript on the title page of his lecture, as it suggests quite transparently that Davy is acquitting himself of all suggestion of plagiarism. The postscript, taken from one of Davy's lectures dated October 11, 1817, says, "In those Papers (on the Fire-Damp) which I have from time to time submitted to the Royal Society, I have mentioned all the assistance, the slightest aids, which I have received from others; *nothing has been left unacknowledged*"*(*2). The emphasis is Davy's own and suggests how strongly he desired the point to be taken. So far, Davy has asserted himself not only a brilliant scientist, but as *the* author (and perhaps by extension, creator) of the safety lamp. In this way, Davy is evidently trying to separate himself even further from the possibility of his being viewed as a part of a wider general body of scientists. He does not want to be pegged as a cog in the scientific machine, or as a team member on an important assignment. Rather, he continually asserts himself here as the solitary genius, and as such is evidence for the case of Romantic science being authored by specific individuals rather than large anonymous groups.

In his 1818 book-length version of his research, entitled *On the Safety Lamp for Preventing Explosions in Mines, Houses Lighted by Gas, Spirit Warehouses, or Magazines in Ships, &c With Some Researches on Flame,* Davy expands the twenty-page lecture into a 152-page treatise on methane gas, lamp safety, and the multiple uses of the safety lamp. However, Davy's title and credentials have changed again. He has been knighted by the Prince Regent, and

the 1818 and 1825 editions list the author as "Sir Humphry Davy, Bart. President of the Royal Society &c." The 1825 edition also contains an advertisement written by Davy. This advertisement written as a preface for the book suggests that Davy wrote the book, and has allowed it to be republished, in order to "assist the cause of humanity" and to share "some new facts and some practical results" of working with the lamp (4). Davy has now progressed from scientific author to benevolent humanitarian. Throughout the book, his tone suggests that the purpose of this document is to aid others and prevent disaster on a mass scale, rather than to communicate an important scientific discovery about the way gas works. He projects this focus on humanity over science in his preface, saying that the knowledge contained therein has been given "with a hope of presenting a permanent record on this important subject to the practical miner and of enabling the friends of humanity to estimate and apply those resources of science, by which a great and permanently existing evil may be subdued" (6).

The bravado of defending his invention is absent in this work, and in it Davy is transformed from a member of the Royal Society to that body's President. This shift gives him more authority to the society as well as to the public. Many who read Davy's book saw it as a factual account of his brave attempt to save humanity by science. He received letters of thanks from the miners and was welcomed as a hero in every mining town in England. In her introduction to Davy's published works, June Fullmer explains that Davy "was taken as a prime example of a poor boy who catapulted to exalted social rank through hard work and moral rectitude. By refusing to make money from the sale of the [miners' safety] lamps he had done his duty to man-kind and contributed to the progress of the Empire and the world" (*Young* 289). Davy reached the height of his popularity during the years the Safety Lamp was invented, and his fame became international, not only among scientists, but among the general public. With the

publication of his work on the safety lamp, Davy established himself as the author of humanitarian science.

In the twenty years after Davy began publishing his scientific papers, he climbed from an apprentice chemist and medical man to president of the most important scientific institution in Britain. Significantly, his evolution as author followed a similar trajectory. As a young scientist Davy was respected and read, and in that capacity he asserted himself as an individual author, independent of Beddoes, the academy, or any other institution. Similarly, even while later serving as the President of the Royal Society, he included his credentials primarily to assert his own authorial presence on every page of his work, bringing attention to his success and popularity by displaying his credentials. And when he published his novel-length tale of the safety lamp, he constructed himself as the hero of his own master epic, combining the roles of Homer and Odysseus into one.

1820–1830

Davy's most important scientific work was reported in the forty-six papers he presented to the Royal Society between 1801 and 1826. These lectures treated topics on chemical reactions and electricity, the Voltaic battery, electrical properties of the torpedo, and the isolation of the elements of sodium, potassium, barium, strontium, calcium, and magnesium. He also demonstrated the existence of fluorine, aluminum, and boron, as well as the elemental nature of chlorine. Before his death, Davy would write and publish seven books. These works are varied; two are collections of his shorter papers, while his final two take a more autobiographical and novel-like approach. All of his books were translated into at least one other language, and most of them went through several editions and reprintings (Fullmer, *Published* 6). Original manuscripts of these and other Davy writings still survive, and their preservation is evidence of

the popularity his work enjoyed in his lifetime. There are Davy items in libraries all over the world.

In the mid-1820s, Davy's scientific career slowed, and he began to write his last two books, *Salmonia*, a philosophical treatise set as a conversation between friends on a fly-fishing trip, and *Consolation in Travel*, a narrative of his travels and thoughts thereon. In November 1827 Davy resigned his presidency of the Royal Society and departed once more for the Alps and lower Austria, where he spent the rest of his short life. *Salmonia* was published in England in 1828 and received positive reviews by Walter Scott and others. Davy continued writing *Consolation* until May 28, 1829, when he suffered a fatal stroke. His brother John became his biographer and publisher, and his final work, *Consolation*, was published posthumously in 1830 to a wide and receptive audience. Davy's autobiographical literary works prove him to be an even more accomplished and serious literary author, since it is in these works that he unleashes his full arsenal of literary techniques. Davy's autobiographical writings help illustrate how his authorial identity simultaneously mirrors and differs from the authorial constructions of his closest associates. Such associates include the Lake Poets (Coleridge, Southey, Wordsworth, etc.) and his fellow scientists (Banks, Herschel, etc.). In this way, it is possible to see Davy as a case study of a figure who embodies and in turn reconstructs the "Romantic I."

In *Salmonia* Davy borrows literary and dramatic conventions by framing his musings on life as a conversation between four fishermen. In choosing this setting, Davy sets himself to full advantage, since he can write the book using his expertise in the natural world, human nature, and the sport of fly-fishing. Reviews by Sir Walter Scott and Baron Cuvier highlight the work's literary nature by alluding to its scriptural and Platonic qualities of idealism in form and knowledge, and esteem for natural beauty. In an advertisement for the book, Cuvier's *Éloge of*

the Author remarks that Davy's observations about trout and salmon "will render it always of importance in the science of ichthyology" (H. Davy, *Collected* vii). Both reviews refer to the way Davy's *Salmonia* is successful as a *literary* presentation of his ideas and significantly, both also refer to him as "author."

It is not merely the form that Davy uses that makes his writing "literary." Traditional and recognizable literary devices and figures establish *Salmonia* as a literary work. References to Byron, Coleridge, Greek mythology, ancient and modern philosophers, and Romantic literary texts express his insights. He uses poetry and prose quotations and literary allusions to weave a broad web of reference points for his readers to understand more technical or scientific processes. Davy shows his wide literary knowledge through these references. In one place he likens an angler, Izaac Walton, to Lord Byron's Don Juan, and there are later references not only to Plato and Aristotle but also to contemporary female poets and journalists. Davy situates himself among these authors; in the process, his authorship suggests a possible revision of who may claim that title.

The most significant evidence we have for Davy's view of himself as "author" in these pages is the number of times he refers to himself by that label. Every paragraph of the preface uses the word at least once, and Davy's revisions and second edition of the book point out the fact that he has made enlargements and revisions in the capacity of "author" with the intent of making it more acceptable to the public. Ironically, and contrary to Foucault's proposed narrative of a gradual disappearance of the scientific author, Davy only reemphasizes and asserts his authorial persona more strongly over time. His self-construction as an "author" that was apparent in *Researches* cannot be missed in his final works, since he refers to himself as author too often to let the reader forget that he at least sees himself as one even though he is primarily a "scientist."

It is also important to note that reviews and praise of *Salmonia* by literary and other critics treat it seriously as a literary and scientific work, although it has scientific themes and is written by one of the country's most famous men of science. This suggests that perhaps Davy's time was still a moment when a text could occupy both grounds. Public recognition of Davy would foreshadow similar public acclaim for future scientists like Charles Darwin. Davy's palatable and accessible way of conveying science as relevant and fascinating to a non-scientific audience is echoed most powerfully in the narrative style of Darwin's *On the Origin of Species* (1859). Davy received great attention for *Salmonia*, and the book sold well in England (Holmes 423-24). People were anxious to read Davy and found him even more engaging and accessible in this conversational format. Perhaps the greatest asset Davy possessed as an author was his ability to convey complicated processes and information in an understandable way. This quality is even more apparent in Davy's final work, *Consolation in Travel*. In this text, he reflects on people, travel, science, and his own life, now making him human to readers who have previously read him as an immortal voice of wisdom and benevolence.

As the editor explains in the "Advertisement to The First Edition," Davy wrote *Consolation in Travel; or The Last Days of A Philosopher* while he was suffering from heart disease. Although he wasn't able to finish it before he died, he intended his characters to be "seen as ideal, at least in great part" and hoped the incidents and persons would be "viewed only as subordinate and subservient to the sentiments and doctrines" of the author (H. Davy, *Collected* 208). The work has significance and meaning because it is both functional and emotional, and Davy's short preface to the book, written from Rome in February of 1829, emphasizes this combination, explaining that this "exercise of the mind" has produced consolation and pleasure

to him as an author. He adds secondarily that he hopes it will offer the same to "persons in perfect health" (211).

When speaking of *Consolation*, Cuvier observes "that once escaped from the laboratory, [Davy] had resumed the tranquil reveries and sublime thoughts which had formed the delight of his youth: it was in some measure the work of a dying Plato" (H. Davy, *Collected* vii). Again, Davy is cast as a new kind of author, blending scientific precision and observation with the sentiment and narrative traditionally associated with literary works.

Most of these chapters avoid explicit reference to scientific works or processes. Instead of relying on science to describe the world, Davy synthesizes his experiences, experiments, and observations into a philosophical combination of all three. This philosophical rather than scientific lens frames the book as literary and allows Davy more flexibility in the way he constructs and views himself as author rather than scientist. Although Chapter Five, "The Chemical Philosopher," uses the same title as Davy's first collection of lectures and draws on Davy's experience as a chemist and man of letters, he still frames this part of his life as one segment of a longer, more significant journey of finding meaning and searching for truth in all available contexts.

Because *Consolation* was not finished when he died, Davy never knew of the public response to his final work. Though not as popular critically as *Salmonia* had been, it was perhaps more well-liked by general audiences who were familiar with epic and mythological works and were interested in Davy more as a social phenomenon whose meteoric rise had come to an end. Consequently, the book was widely read and Davy was still being read, referenced, and immortalized by the general public well through the nineteenth century.

This singling out of Davy as a scientific genius points to the fact that he was not only a scientist involved in communal projects but that he also paved the way for others to become "public men of science" or "scientists" through their own scientific and written work. Historical evidence suggests that Davy's author function in science can and should still be recognized, since his name rather than that of the scientific academy is still attached to his work. Davy's originality and personality prove him to be a distinct historical figure and to resist classification as a cog in the scientific machine, which would reduce his identity to nothing more than a "scientist in the Romantic period." Indeed, the opposite is true. Davy was a popular figure in society, a superstar of science. His celebrity status in his own time established him firmly in historical sources as well, and his contribution to the scientific world is universally acknowledged. Outside of the scientific world, the fact that Davy was perhaps more recognized in London than almost any of his contemporary literary figures and his writings were widely read in scientific and social circles is further evidence of Davy's author function at play. He appears in many seemingly exclusively literary venues. The Brontë sisters, whose mother was from Cornwall and knew Davy's family, read Davy's *Consolations in Travel*, and Anne Brontë even referenced his book in her novel *The Tenant of Wildfell Hall* (Holmes 455). Sir Walter Scott was acquainted with him through his wife, Jane Apreece Davy, and spoke highly of his literary writings. Additionally, a small book published for children entitled *The Story of Sir Humphry Davy and the Invention of the Safety Lamp* told the heroic story of his invention while other collected works and narratives of his life were published through the 1900s and continue today (Paris).

Davy's authorial identity in the sciences as "the public man of science" is similar to the author function of literary figures of the same period. Contemporaries of Davy read him as an

author in our more modern concept of the word, and later the popularity of Davy's biography and autobiographical writings can actually be seen as a parallel to the popularity of literary figures like Coleridge and Wordsworth. Davy's embodiment of the new "scientist" figure corresponds remarkably well with the emerging figure of the "author" in the literary sphere.

Implications and Conclusion

Davy's career and others like his show the inaccuracy and complications that arise from notions of scientific authorship as only being the product of an institution or group effort. Rather than confirming stereotypical views of scientific authorship, the new, more individualized and specific construction of authorship we see in Davy allows for an individual author figure who is neither purely scientist nor man of letters. Instead, this author can occupy a kind of middle ground that combines the two. Davy's blending of scientific and literary authorship results in a new kind of author, one who can excel in both fields and who crosses the arbitrary and possibly imaginary lines that have been drawn between disciplines. Such incorporation implies that perhaps a scientific-literary hybrid author was possible in the early nineteenth century, with its broader definitions of "literature," but is no longer possible in today's world of disciplines and specialization. However, it seems that current work on the Romantic sciences, such as Holmes's *Age of Wonder* and Denise Gigante's *Life: Organic Form and Romanticism*, reveal that these intersections of literature and science in the Romantic period require a new reading of the author figure and what elements we include in that construction.

I suggest we conduct this new reading in three specific ways. First, in *The Order of Books: Readers, Authors, and Libraries in Europe between the Fourteenth and Eighteenth Centuries*, Roger Chartier proposes a "modification of Foucault's idea that a 'radical reversal' occurred" (31). Contemporary scholarship on the author makes similar cases for re-examination and

qualification of theories by Barthes, Wimsatt and Beardsley, and Foucault. Humphry Davy provides a case for re-examination and re-qualification of whom we name as "author." In the end, this study requires us to reconsider our construction of the figure of the scientist as well as how we read both literary and scientific figures and texts.

Seán Burke suggests that "since there is no theory of literature or the text which does not imply a certain stance towards the author," our past constructions of authorship have been erroneous and thus we need new frameworks to understand clearly how authorship has been and is currently constructed (ix). In reading Romantic scientific texts as literary works and exploring scientific notions of authorship, it seems that Foucault's explanation that "the author function does not affect all discourses in a universal and constant way" (109) is the most useful way of describing Davy and others like him. Gigante suggests that an interdisciplinary approach to organicism is in fact Romantic since Romanticism values emotion, nature, how the two interact, and ultimately the expression of that emotion in poetry or literature. Similarly, such an interdisciplinary approach to literature and science is a beginning point for creating understanding of the author function in the Romantic sciences.

Second, we need to acknowledge that we have set up a false binary between literary and scientific works and authors. As previously noted, work by Widdowson and Williams highlights the gradual narrowing of "literature" from all kinds of polite learning to the distinctly imaginative and print-based discipline of today. Similarly, the development of disciplines, specialization of knowledge, and academic departments has required us in many cases to classify, separate, and limit categories of knowledge in order to make them usable and quantifiable.

However, even in the case of English departments and literature itself as a discipline we find evidence of the blending of literary and scientific elements. In 1924 literary scholars like I.A.

Richards and his Cambridge colleagues were still using features of many disciplines in order to "lay down an explicit theoretical base for literary study." According to Widdowson, Richards' books *The Principles of Literary Criticism* and *Science and Poetry* argue "that criticism should emulate the precision of science in its pursuit of a newly professional methodological identity" (51). Critical movements in literature have followed similar trajectories, seeking in part to quantify, define, and theorize the literary discipline. This can be seen in the formalist, structural, and post-structural movements. In a similar way, the scientific discipline's attempts to make its work accessible and acceptable to the general public through literary and artistic means aids its productivity and simultaneously gives individual scientists an "author function." The popularity of such "mega-scientists" as Stephen Hawking and Richard Dawkins may be due to the fact that they not only produce important scientific discoveries and works, but they popularize them by writing and producing texts and documentaries for public consumption. Similarly, Bill Gates, Steve Jobs, and other technology gurus have name recognition in almost any part of the world, suggesting that it is not just the production of science but the hybrid act of writing, publicizing, and popularizing it through other means that adds to its general appeal.

Finally, contemporary publicity surrounding science and technology shows that a combination rather than separation of disciplines leads to richer meaning and deeper connective associations than are possible otherwise. In *The Mirror and the Lamp,* M.H. Abrams argues that until and through the Renaissance, artists (and those who would later be called authors) sought to imitate nature, seeing art as the mirror that reflects the beauties and truth that nature shows to us. Plato, Barclay, Caxton, Cicero, and even Dr. Samuel Johnson are all cited as subscribing to this view of art or authorship. In a similar way, Davy's use of both disciplines to amplify and explain the other may show us the best way to come to a more complete definition of "truth." Perhaps

the idea of literature and letters in the medieval sense is more compatible with what it means to be "learned," since such a holistic view requires that we know, see, and connect more completely. For Davy, knowing details of the genus *Salmo* makes the experience of fishing for salmon more enjoyable. In similar ways, a greater understanding of the physical world might help us interpret and appreciate the aesthetic beauty of nature more fully, as it did for Keats, Coleridge, and other Romantic poets. It seems that if we subscribe to this view, it may be time to add Humphry Davy to our list of Romantic figures. His Romantic science provides a new lens through which we can more fully understand the nature of authorship as well as contemporary implications of what it means to be an "author" in any discipline.

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