

Charles Darwin and 19th Century Victorian England
David Bisno

JUST BEFORE
THE ORIGIN:

*Alfred Russel Wallace's
Theory of Evolution*

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How Darwin Completed His Theory

the similarities between the concepts, even the wording, in Wallace's papers and several chapters, but especially chapter IV, in Darwin's 1859 book became increasingly apparent and disturbing. Were these really coincidences of two totally independent conceptions? Or did Darwin somehow profit from Wallace's papers and manuscript?—a possibility to which Darwin gave no recognition, not even a hint. A nagging doubt remained: there were too many similarities.

How does one start toward resolving these doubts? The first question obviously was, When did Darwin formulate the concepts of chapter IV, "Natural Selection," of the *Origin of Species*? The entire manuscript of the *Origin* was written after July 1, 1858, at which time both of Wallace's papers had been made public.

"Divergence" and corrections to chapter VI were written between May 6 and June 12, 1858. This entry, therefore, establishes the dates of composition.

Since most of the troubling similarities to Wallace's work center around "divergence," the next question to be answered was, How extensive were the additions made in May-June 1858? While the diary entry identifies "Divergence" as the subject of the 1858 addition, the reader will recall that the Gray letter of September 1857 identifies a "principle of divergence," which Darwin regarded as important. That letter was written six months after the initial completion of chapter VI.

Darwin had completed the forty-one-folio addition to his chapter VI on June 12, 1858—six days before the date usually assigned for the arrival of the mail bearing Wallace's Ternate manuscript. Darwin's additional text bore similarities to the Ternate manuscript—yet to arrive—but also to Wallace's 1855 "law" paper, which Darwin had already examined several years earlier.

the subjects of extinction, intermediates, and the natural system of affinities in the later chapters of the *Origin of Species* can in large part be identified with the material that Darwin added to chapter VI of the "Natural Selection" manuscript in May-June 1858. In all, the concepts and approaches are remarkably similar to Wallace's views as expressed in 1855.

I shall now summarize briefly what I believe were Darwin's uses of the Wallace 1855 "law" paper, especially of the section in which Wallace had demonstrated how his law "explains and illustrates" all of the known facts of the system of natural affinities. I think that the evidence indicates that Darwin comprehended only some of the implications in, or by, 1857. He apparently did not grasp the significance of other passages until May-June 1858.

Darwin's view of the significance of ecological diversity in causing divergence and then extinction is entirely his own; it has no counterpart in Wallace's conceptions, either in 1855 or in 1858.

What was it that prompted Darwin in May or June 1858 to reread the section of Wallace's 1855 account of his explanation of the role of extinction and divergence in creating the natural patterns of affinity? The most likely stimulus would be Wallace's second manuscript on his theory, written in February of that year and mailed from Ternate on March 9. In that manuscript Wallace presented simple natural dynamics accounting for extinction, divergence, and the origin of new species. Darwin had been struggling for several years to formulate dynamics to account for the same phenomena, but with varying—one might say indifferent—success (see Browne 1980). By September of 1857 he had formulated possible dynamics to account for extinction and divergence and sent them in a letter to Asa Gray. To reiterate these, Darwin postulated that extinction resulted from the extermination of the parent "species" population by a better-adapted variety—through biological competition. Darwin could not, therefore, have profited from Wallace's view that extinction of the parental "species" population resulted from prolonged environmental stress, because he had established a different position in the Gray letter. His 1857 "principle of divergence," on the other hand, was less definitely formulated than that of the May-June 1858 addition. He had postulated that since a plot of land will support more life if the forms of life are diverse, variant populations would seize the most divergent ecological roles they possibly could!

the most likely stimulus for Darwin's restudy of Wallace's 1855 paper, namely, Wallace's concept of the dynamics of the origin of species as elaborated in his Ternate manuscript. This included explicit explanations for extinction and divergence. Darwin's marginal drawing on Wallace's 1855 paper, of simple and divergent lines of descent, is, I believe, the early result of that reexamination.

The role of Wallace's 1858 manuscript in providing one source of Darwin's new thoughts, however, is not a real possibility at all if the presumed receipt date for the Ternate manuscript is correct. Darwin is said to have received it on June 18, six days after he had recorded in his diary that he had completed "Divergence" and the corrections to chapter VI. If one is unable to dismiss as coincidental the extraordinary similarities between the new folios and Wallace's two relevant essays, then one is forced to ask, How firm is the evidence that Wallace's Ternate manuscript was received on June 18, 1858? The earliest indication of a date of receipt is by Francis Darwin (F. Darwin 1887:1473). Charles Darwin's letter to Lyell relating the crushing news of the arrival of Wallace's manuscript was dated only "Down 18th"; but his son, as editor, added "June 1858" in brackets. Although the attribution of a month was his own, Francis Darwin, when describing the long manuscript that he referred to as "The Unfinished Book," stated without a caveat that his father's writing was interrupted by the receipt of Wallace's manuscript in "June, 1858" (p. 427).

Examination of the autograph letter was obviously necessary. It is the first of three letters written to Sir Charles Lyell just prior to the reading of the joint contribution before the Linnean Society on July 1, 1858. The first letter is plainly dated "18th" in ink, in Darwin's hand. But after the numeral, "June" has been written in pencil and "1858" also in pencil, just below the day and month, in a hand other than Darwin's. On the second letter, dated just "Friday" in ink, the same hand has written in pencil, "received June 1858," but in this case the penciling is at the left-hand side of the top of the letter, not in juxtaposition to Darwin's indication of a date. The third letter bears the heading "Down 26th" in ink, in Darwin's hand. Here again "June 1858" is written in pencil, in a hand clearly distinct from Darwin's but quite like the penciled writing on the earlier letters. I interpret the pencil marking on all three letters as having been added at the home of the recipient (Lyell). Other Darwin letters to Lyell have had their dates similarly completed. (For example, on a letter that Darwin had dated "May 5th," someone in Lyell's household had added "1856.") But the indication that the letter acknowledging receipt of Wallace's manuscript, dated "18th" by Darwin, was probably received by Lyell in June does not constitute proof that it was written in June. It could have been written on May 18 but not mailed until June. Is there a possibility that Darwin could have received Wallace's letter on May 18?

When would a letter mailed on March 9, 1858, at Ternate, Moluccas, Dutch East Indies, be likely to have arrived in London? An answer, if there is any evidence now available, would certainly have to come from a knowledge of how the mails from the Dutch East Indies reached the Netherlands, and indeed all of Europe, in 1858.

beginning in 1846 the Netherlands Post began to make official use of the overland mail service provided to the British Government on contract by the P & O Steamship Navigation Company. This dependence on the P & O service continued until 1870, after the Suez Canal was opened, when the Royal Dutch Mail was established to carry the mails between Batavia (Djakarta) and the Netherlands. Starting in 1846 the mail was carried twice a month from Batavia to Singapore. There it was picked up by the P & O packet sailing from Hong Kong to Singapore to Galle, Ceylon, where it was transhipped to the Calcutta-Ceylon-Suez leg. From Suez the mails were carried overland in Egypt to Alexandria and transferred to the Mediterranean section of the P & O. The letters were taken to Marseilles and carried by train to Paris and then to Rotterdam.

The route of the Dutch mail steamer, with transit times, was as follows:

Dutch Interisland Mail Route	
Port	Transit Time
Batavia (Java)	
Semarang (Java)	36 hours
Surabaya (Java)	24 25 hours
Macassar (Celebes)	4-5 days
Timor	5-6 days
Banda	2 days
Amboina	15-20 hours
Ternate	1 5-2 days
Menado (Celebes)	1 5 days
Macassar (Celebes)	7 days
Surabaya (Java)	4-5 days
Batavia (Java)	2-5 days

(from E. H. Boon's traveler's guide to Netherlands East Indies, 1863, in Dutch: J. Giphart, trans.)

Transit time from Ternate to Batavia was about sixteen days. Wallace's letter and manuscript, mailed in Ternate on March 9, would have arrived in Batavia on March 25, 1858.

On March 27 *Jawa Bode* reported that the *Banda* had departed on March 26 for Singapore.

From Singapore, of course, the P & O system carried the mails to London. The Hong Kong-Singapore-Ceylon packets, on a two-week schedule, visited Singapore twice in April 1858, on the seventh and the twenty-first. Dutch Indies mail transhipped from the *Banda* to the Calcutta-Ceylon-Suez packet presumably left Singapore on April 7 and reached Suez on May 4. Singapore mail leaving April 21 arrived in Suez on May 16.

In accordance with the normal schedule for the interisland service, Wallace's letter from Ternate should, as described above, have reached Batavia on March 25. According to P & O records, it should have arrived in London about the time that the official Dutch letter was received in The Hague (May 15). The London arrival date, as shown by Postal Headquarters records, was May 14.

May 14, 1858, fell on a Friday. A May 18 (Tuesday) date for arrival at Down House, a few miles outside London, seems a little late for the mail service of the day. At any rate, May 17-18 is the most likely time for Wallace's letter and manuscript to have reached Darwin's hands.

Although such a two-week delay is unexplained, we must regard May 28 (Friday) or May 29, 1858, as a possible time for the arrival of Wallace's manuscript at Down House. But either date is earlier than June 12, the date that Darwin recorded in his diary for finishing "Divergence" and corrections to chapter vi.

the evidence indicates that Darwin must have received Wallace's manuscript on either of two dates in May. Receipt on May 18 would leave 25 days for completion of those folios by June 12; May 28-29 would leave scarcely two weeks. But it must be conceded that desperation will make the pen move quickly.

What Really Happened at Down House?

The question, of course, refers only to the happenings in response to Wallace's essays. The simple answer is that no one knows.

Darwin never mentioned that his beginning to write his species book in 1856 had any relation to the publication of Wallace's "Law" paper the preceding September; that possibility was suggested by the following information. In his autobiography Darwin noted that Lyell had urged him to write in 1856; in a letter to Wallace he revealed that Lyell had called his attention to the Wallace 1855 paper; and in an 1858 letter to Lyell Darwin also recalled that Lyell had urged him to read Wallace's paper.

Darwin had rejected Lyell's advice to publish a short account of his views so as to establish his priority. Two years later he regretted it.

Lyell had raised the question of whether Wallace's views might have "originated" from something that Darwin had written to him. Darwin rejected this out of hand. But Lyell also must have implied that he himself might have revealed some of Darwin's views in a letter Lyell claimed to have written to Wallace.

As history records, Darwin's friends Lyell and Hooker did even more for him than he had hoped. They awarded priority to Darwin on the basis of two excerpts, one from an 1844 manuscript, the other from a year-old letter.

Hooker asked Darwin to supply a copy of the Gray letter. Darwin sent the requested copy, together with a copy of the sketch of 1844 solely that you may see by your own hand-writing that you did read it. . . .

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Another puzzling aspect of the Darwin excerpts in the joint publication is the question. Who selected the "extract" from the sketch that was read at the meeting and ultimately published? One is left with the impression, since the fair copy had been sent to them, that Hooker, or possibly Lyell, was responsible for choosing the passage. But a subsequent exchange of letters revealed that precious few hours were available for Lyell or Hooker to study the document. I interpret a remark in a letter to Hooker, after the crucial event, to suggest that Darwin himself had written out the selection and sent it along with the bound copy of the 1844 sketch. He must have copied this at a most difficult time, for mortal disease had struck his family; on June 28, his infant son Charles had died of scarlet fever. The extract had to substitute for the promised sketch of his "general views" because he was too emotionally overwrought to compose one. This letter to Hooker, on July 13, ended with the words, "Pray thank Mrs. Hooker for her very kind note, and pray, say how truly obliged I am, and in truth ashamed to think that she should have had the trouble of copying my ugly MS." The two documents that Darwin noted having sent to Hooker were not in Darwin's handwriting. The copy of the sketch sent to Hooker and Lyell was the fair copy in the hand of Mr. Fletcher, the schoolmaster.

Relevant Chronology of
Alfred Russel Wallace (1823-1914)

and
Charles Robert Darwin (1809-1882)

1844	Wallace Leaves surveying to be schoolmaster. Leicester, for one year, meets H W Bates	Darwin Manuscript essay on possibilities of organic change read by Hooker alone Puts ms aside
1845	Anon. Vestiges awakens interest in possibility of organic change	
1846	Surveying business declines Departs for Amazon with Bates as professional collector	Begins study of barnacles
1848	Departs for Amazon with Bates as professional collector	
1852	Returns from Amazon; most collections lost. Writes papers, books	
1854	Departs for Singapore; Borneo	Barnacle study completed
1855	Paper on "law" regulating introduction of new species	Reads Wallace's paper
1856	Bali, Celebes, Aru	
1858	Feb.—writes ms. "On the Tendency of Varieties to Depart Indefinitely from the Original Type"	Begins long species manuscript. "Natural Selection" May—receives Wallace's ms.

July 1—Joint Darwin-Wallace paper read at meeting of Linnean Society, London

1859 Eastern Islands of Malay Archipelago *Origin of Species*
1862 Return to England