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Malthus, Darwin, and Bagehot : A study in the transference of a concept^{*}

ABSTRACT: A familiar phenomenon in the history of science is the transference of a concept from one field of investigation to another. At present the newer concepts in use in physics are being applied in the social sciences. The classic example of this transference phenomenon is the concept of evolution; originating in the social sciences, it was taken over into biology and thence to the whole range of current thought. This paper aims at tracing the use of one idea—the struggle for existence—by MALTHUS in 1798 in an attempt to solve a problem in economics and politics, its elaboration by DARWIN sixty years later into the theory of natural selection for the purpose of solving a problem in biology, and the immediate application of the combined doctrines by WALTER BAGEHOT in an effort to solve the problem of social change.

A familiar phenomenon in the history of science is the transference of a concept from one field of investigation to another. The years of the present century, for example, have seen the use of concepts originally developed in physics applied to history and the other social sciences more or less generally (1). The classic example within the last hundred years is the concept of evolution. What is not generally recognized is the fact that the idea of evolution originated in the social sciences, even though DARWIN crystallized it in the field of biology, whence it has been taken over into the whole range of current thought. This paper proposes to trace the fundamental assumption of DARWIN's theory—namely, natural selection—from the source where he found it, THOMAS MALTHUS's famed *Essay on Population*, through its use by his own contemporary, WALTER BAGEHOT.

^{*} Adapted slightly from a paper read by abstract at a joint session of Section L of the American Association for the Advancement of Science and the History of Science Society in Berkeley, 22 June 1934.

(1) See JACQUES RUEFF : *From the physical to the social sciences ... translated* by HERMAN GREEN (Baltimore, etc.; 1929); CHARLES WOOLSEY COLE : "The relativity of history" (*Political Science Quarterly*, vol. 48, no. 2 (June 1933), p. 161-171); and [RALPH TYLER FLEWELLING] : "A quantum view of history" (*The Personalist*, vol. 15, no. 3 (July 1934), p. [199]-208).

The debt of DARWIN to MALTHUS is of course well known. He himself acknowledged it frankly in the first edition of the *Origin of Species* :

... the Struggle for Existence amongst all organic beings throughout the world, which inevitably follows from their high geometrical powers of increase, will be treated of. This is the doctrine of MALTHUS, applied to the whole animal and vegetable kingdoms. As many more individuals of each species are born than can possibly survive; and as, consequently, there is a frequently recurring struggle for existence, it follows that any being, if it vary however slightly in any manner profitable to itself, under the complex and sometimes varying conditions of life, will have a better chance of surviving, and thus be *naturally selected* (2).

The circumstances under which DARWIN chanced upon MALTHUS are briefly recorded in the autobiographical recollections which he wrote for his children :

After my return to England [in 1836 from the voyage of the "Beagle"] it appeared to me that by following the example of LYELL in Geology, and by collecting all facts which bore in any way on the variation of animals and plants under domestication and nature, some light might perhaps be thrown on the whole subject. My first note-book was opened in July 1837 ... In October 1838, that is, fifteen months after I had begun my systematic inquiry, I happened to read for amusement "MALTHUS on Population," and being well prepared to appreciate the struggle for existence which everywhere goes on from long-continued observation of the habits of animals and plants, it at once struck me that under these circumstances favourable variations would tend to be preserved, and unfavourable ones to be destroyed. The result of this would be the formation of a new species. Here then I had at last got a theory by which to work ... (3)

It is unnecessary more than to mention the remarkable double coincidence attending the use by DARWIN of the Malthusian concept of the struggle for existence : its employment by ALFRED RUSSEL WALLACE for the same purpose and his transmittal of his formulation of the theory to DARWIN, the meanwhile all unknowing that DARWIN had been working on the idea for many years but had delayed publication until he could provide what he considered indisputable proof. The circumstances are fully and

(2) London, 1859, p. 4-5.

(3) *The life and letters ... edited by ... FRANCIS DARWIN* (2 vol., New York, 1889), vol. 1, p. 67-68. The suggestion from MALTHUS was incorporated into the text of the two essays that preceded the *Origin* itself, written in 1842 and 1844 but never published before the *Origin* (see CHARLES DARWIN : *The foundations of the Origin of Species; two essays written in 1842 and 1844 ... edited by ... FRANCIS DARWIN* (Cambridge (Eng.), 1909), p. 7, 88, 90).

interestingly set forth by both men in easily available sources (4).

Just what passages in MALTHUS's essay attracted DARWIN is not known, nor what edition he read. The first appeared in 1798, and the second in 1803, considerably modified from the first; all later editions differ but little from the second (5). Although the *Essay on Population* has been called 'a book which no one reads and all abuse' (6), yet the whole burden of it—that, whereas population tends to increase at a geometrical ratio, food increases at only an arithmetical ratio, thus producing a "struggle for existence"—was exactly what DARWIN needed to explain the "survival of the fittest". He took over the phrase, "struggle for existence", from MALTHUS (7) and made it the cornerstone of the theory of the origin of species by natural selection. Judging from the use of the analogy between what DARWIN called "artificial selection", as the agency through which man is able to produce changes in domestic breeds of animals and plants, and "natural selection" (a term he adopted from current use by breeders) (8), as the agency operating outside the sphere of man's control, he could not help being greatly interested in MALTHUS's observations on man's breeding of plants and animals and on the transmissibility of characteristics by heredity. This passage appears in the first edition of the *Essay* and is almost unchanged in the later editions (9). It may well have been a reference to this

(4) *More letters of* CHARLES DARWIN (2 vol., New York, 1903), vol. 1, p. 118; JAMES MARCHANT : ALFRED RUSSEL WALLACE : *letters and reminiscences* (New York and London, [1916]), p. 91-92, 95; WALLACE's *My life* (2 vol., New York, 1905), vol. 1, p. 232, 239-240, 361-363.

(5) The 3d ed. was pub. in 1806, the 4th (a reprint of the 3d) in 1807, the 5th in 1817, the 6th (and last before MALTHUS's death) in 1826, a 7th in 1872, and a 9th in 1890.

(6) JAMES BONAR : MALTHUS and *his work* ([2d ed.], New York, 1924), p. 3.

(7) ROBERT H. MURRAY : *Studies in the English social and political thinkers of the nineteenth century* (2 vol., Cambridge (Eng.), 1929), vol. 1, p. 6; TALCOTT PARSONS : article on MALTHUS in *Encyclopaedia of the Social Sciences*, vol. 10 (New York, 1933), p. 68-69.

(8) In a letter to LYELL in 1859 DARWIN said, 'Why I like the term is that it is constantly used in all works on breeding ...' (see *The life and letters*, as cited, vol. 1, p. 472, 508).

(9) Reprint : *First essay on population*, 1798, with notes by JAMES BONAR (London, 1926), p. 167-171; 7th ed. (London, 1872), p. 268-270. MALTHUS makes use of the highly amusing account of Sir ISAAC BICKERSTAFF's artificially selected ancestry as recorded in ADDISON and STEELE's *Tatler* paper no. 75 (1 Oct. 1709).

passage which led DARWIN to examine MALTHUS in the first place, for he was diligent in searching out all he could find on plant and animal breeding.

It may be incidentally mentioned that HERBERT SPENCER very nearly approached DARWIN's concept of natural selection and by the same road. In his essay, "A theory of population deduced from the general law of animal fertility", published in the *Westminster Review* in 1852 (10), he said :

From the beginning pressure of population has been the proximate cause of progress. All mankind in turn subject themselves more or less to the discipline described; they either may or may not advance under it, but, in the nature of things, only those who *do* advance under it eventually survive (11).

Here is the birth of the phrase, "survival of the fittest," plainly based on the essential idea of MALTHUS, and later adopted by DARWIN, with full acknowledgment to SPENCER (12), in the *Origin*. As a matter of fact, Sir CHARLES LYELL even denied to DARWIN and WALLACE credit for originality of the concept of the struggle for existence (13). Passing over consideration of the proper proportion of credit for the origin of the idea, however, we now turn attention to an almost immediate influence of the publication of the *Origin*, namely, that on WALTER BAGEHOT.

BAGEHOT lived from 1826 to 1877, and was thus a contemporary of, though considerably younger than, DARWIN. He came of a wealthy banking family, was educated in Bristol and London and was early trained for the law, but soon turned to business and to writing on literary, political, and economic subjects. He knew many of the leading men in the England of his day and kept informed on the intellectual and scientific movements of the time by wide reading.

BAGEHOT left behind at his death an essay on MALTHUS, published posthumously, in which he summed up, more in rhetoric than justice, the contributions of the celebrated writer on population, as follows :

There is nothing in Mr. MALTHUS's life which is worth mentioning, or which

(10) Vol. 57, no. 112 (new ser., vol. 1, no. 2 (April 1852), p. 468-501.

(11) Quoted from the partial reprint in his *Principles of biology* (2 vol., New York and London, 1910), vol. 2, p. 536, 527-528.

(12) New impression of 6th ed. (London, 1900), p. 77.

(13) *Antiquity of man*, p. 456; quoted in BONAR, as cited, p. 46.

illustrated his doctrines. He was an estimable gentleman and clerical professor; "a mild pottering person," I think, CARLYLE would have called him. Neither his occupation nor his turn of mind particularly fitted him to write on money matters: he was not a man of business, nor had he, like PALEY and similar clergymen, a hard-headed liking for an innate insight into the theory of business. He was a sensible man educated in the midst of illusions; he felt a reaction against them, and devoted the vigor of his youth to disprove and dispel them; and he made many sensible and acute remarks on kindred topics. But he has been among the luckiest of authors, for he has connected his name with the foundation of a lasting science which he did not plan and would by no means have agreed in (14).

In his best known work, however, BAGEHOT probably little realized how perfectly he was serving as the cross-fertilizing agent for bringing back into the social sciences the concept which DARWIN had found there (in MALTHUS, that is) and then applied in one of the natural sciences. This will be made clear at once by simply reciting the full title of the book: *Physics and politics; or, Thoughts on the application of the principles of "natural selection" and "inheritance" to political society*. The main title is obviously an alliterative metonymy, "physics" standing for the physical sciences as a whole and "politics" for the social sciences (15). The book appeared in 1872, but the contents, except for the sixth and last chapter, had been published in five instalments in the *Fortnightly Review* beginning in 1867. His famous essay, "The English Constitution", which had headlined the first number of the *Fortnightly*, in 1865, and continued for a year and a half in that journal, had hinted at the idea of evolution as a concept applicable to man (16) as well as to the rest of the organic world.

It will be remembered that DARWIN had, in the *Origin*, purposefully omitted any but the slightest reference to the inclusion of man in the evolutionary process. He says in his autobiography:

As soon as I had become, in the year 1837 or 1838, convinced that species were mutable productions, I could not avoid the belief that man must come under the same law. Accordingly I collected notes on the subject for my own satisfaction, and not for a long time with any intention of publishing. Although in the "Origin of Species" the derivation of any particular species is never discussed, yet I thought it best, in order that no honourable man should accuse

(14) *Works* (5 vol., Hartford (Conn.), 1891), vol. 5, p. 400.

(15) See MAX LERNER's article on BAGEHOT in *Encyclopaedia of the Social Sciences*, vol. 2 (New York, 1931), p. 384-385.

(16) MURRAY, as cited, vol. 2, p. 247.

me of concealing my views, to add that by the work "light would be thrown on the origin of man and his history." It would have been useless and injurious to the success of the book to have paraded, without giving any evidence, my conviction with respect to his origin.

But when I found that many naturalists fully accepted the doctrine of the evolution of species, it seemed to me advisable to work up such notes as I possessed, and to publish a special treatise on the origin of man. I was the more glad to do so, as it gave me an opportunity of fully discussing sexual selection ... The "Descent of Man" took me three years to write... [and] was published in February, 1871 (17).

It was thus begun about 1868, and it is therefore quite possible that BAGEHOT's first essay in the "Physics and Politics" series, in 1867, may have served as an impetus to DARWIN to publish his own book, though the available sources do not elicit any specific information on the point. The interval between the third and fourth papers of BAGEHOT was well over two years (July 1869 to December 1871); in the meantime the *Descent* had come out, mentioning BAGEHOT's three papers with evident approval (18).

BAGEHOT was fearless in applying the doctrine to man's cultural evolution, with its attendant explanation of the process as the natural selection of fortuitous variations. He was not wholly original, really, in thus extending to man the evolutionary theory. SPENCER had expounded his theory of social evolution implicitly in his *Social Statics* (19), published in 1850, and explicitly in his *First Principles*, in 1862 (20). But BAGEHOT interested himself primarily in that phase of the problem which deals with the transition from one cultural stage to another, and his procedure in the investigation merits attention in passing.

(17) *The life and letters*, as cited, vol. 1, p. 75-76, 75.

(18) BAGEHOT's papers are mentioned four times in the 1st ed. and once more in the 2d ed. (1874).

(19) SPENCER's paper in *The Leader* for 20 March 1852 on "The development hypothesis" he called 'a profession of faith' in organic evolution. Mental as well as physical organization was submitted to the notion of evolution in *The principles of psychology* (1855). The outline of universal evolution was prepared in 1858, and the publication of the *Origin of species* was a great encouragement. (SPENCER's *Autobiography* (2 vol., New York, 1904), vol. 2, p. 9, 16-19, 57-58; JAMES P. LICHTENBERGER : *Development of social theory* (New York and London, 1923; "Century Social Science Series"), p. 309, 318).

(20) C. H. DRIVER : "WALTER BAGEHOT and the social psychologists" (*The social and political ideas of some representative thinkers of the Victorian age ... edited by [Fossey]. J. C. HEARNshaw* (London, etc.; [1933]), chap. ix (p. 194-221), p. 202.

As for the prehistoric stages he could, naturally, only speculate, but when he considered peoples and ages for which historical records exist he found himself, albeit unconsciously, at odds with the main contention of the doctrine of evolution, namely, that the transition from one stage to another is gradual, slow, and imperceptible. Only by abstracting selected facts from the available total could he produce the appearance of even, orderly, and gradual change. One quotation will make this clear :

No nation admits of an abstract definition; all nations are beings of many qualities and many sides; no historical event exactly illustrates any one principle; every cause is intertwined and surrounded with a hundred others. The best history is but like the art of REMBRANDT; it casts a vivid light on certain selected causes, on those which were best and greatest; it leaves all the rest in shadow and unseen. To make a single nation illustrate a principle, you must exaggerate much and you must omit much. But, not forgetting this caution, did not Rome—the prevalent nation in the ancient world—gain her predominance by the principle on which I have dwelt? In the thick crust of her legality there was hidden a little seed of adaptiveness. ... And the moral of their whole history is the same : each Roman generation, so far as we know, differs a little—and in the best times often but a *very* little—from its predecessors. And therefore the history is so continuous as it goes, though its two ends are so unlike. ... the history of Rome changes as a good diorama changes; while you look, you hardly see it alter; each moment is hardly different from the last moment; yet at the close the metamorphosis is complete, and scarcely anything is as it began. Just so in the history of the great prevailing city : you begin with a town and you end with an empire, and this by unmarked stages. So shrouded, so shielded, in the coarse fibre of other qualities was the delicate principle of progress, that it never failed, and it was never broken.

... Judaea changed in inward thought, just as Rome changed in exterior power. Each change was continuous, gradual, and good (21).

At the same time BAGEHOT set forth the undoubted historical occurrence of periods of cultural stability and lack of change, which he characterized by his famous colorful terms, “crust of legality” (as above), “cake of custom,” “customary law,” “law of status,” “net of custom” (22). Consequently, when he came to discuss, in the last chapter, “verifiable progress politically considered”, he had to admit, as did DARWIN in the *Origin* when faced with a similar dilemma (23), that the historical

(21) *Physics and politics* (New York, 1873), p. 61-63.

(22) *Physics and politics*, as cited, p. 27-29.

(23) ‘Geology assuredly does not reveal any such finely-graduated organic chain; and this, perhaps, is the most obvious and serious objection which can be urged against the theory.’—*Origin of species*, 1900 ed. as cited, p. 413.

evidence does not permit the picture of slow, gradual, and continuous change :

As a rule (and as has been insisted on before), a stationary state is by far the most frequent condition of man, as far as history describes that condition; the progressive state is only a rare and an occasional exception (24).

This explicit view of the factor of stability in culture, was a remarkable contribution to the solution of the problem of social change, which since the time of HESIOD has engaged the fascinated if bewildered attention of the human mind (25), albeit BAGEHOT was quite unconscious of his aid in this direction.

The experience of DARWIN and BAGEHOT in thus landing in a mirk of inconsistency when they essayed to transfer a concept from one field of investigation to another illuminates the importance and value of the history of ideas to research in the history of science. As an illustration, this paper has aimed at tracing briefly the use of one idea, the struggle for existence, first by the ' seminal mind ' (26) of MALTHUS in an attempt to solve a problem in economics and politics a century and a third ago, then its elaboration by DARWIN sixty years later into the theory of natural selection for the purpose of solving a problem in biology, and finally the application of the combined doctrines by BAGEHOT soon afterward in an effort to solve the problem of social change.

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(24) *Physics and politics*, as cited, p. 211.

(25) The concept of motion, which when applied to human affairs had the form of recurring cycles with most of the Greeks and Romans, that of a modified cycle with Saint AUGUSTINE, that of never-ending unilinear advancement with CONDORCET and COMTE, seems to lie back of most social thought today.

(26) The phrase is applied to BAGEHOT by MURRAY (as cited, p. 220), but seems more suitably given to MALTHUS, who has elsewhere been called ' Strewer of Seed which reached its Harvest in the Ideas of CHARLES DARWIN and FRANCIS GALTON ' (*Annals of Genetics*, vol. 1, pt. 1/2 (Oct. 1925), frontispiece).