

## Marx and Darwin

In the middle of the 19th century, no one could at the time have discerned any relationship between Marx and Darwin, when there appeared almost simultaneously, a few months apart, two works which were in fact to become fundamental for all modern culture: *Zur Kritik der politischen Ökonomie* (June 1859) by Karl Marx and *On the Origin of Species* (November 1859) by Charles Darwin. In particular, Marx's work at first found virtually no response, whereas Darwin's work achieved an overwhelming success, which started on the very day the *Origin of Species* appeared in the bookshops (as is known, the first edition sold out within 24 hours), and lasted for the remainder of the century. Even in the following decades, when Marx's reputation broke through the barriers of isolation within which socialist thought had been confined after 1848, and finally came into wider public circulation, it was Darwin, not Marx, who dominated the cultural scene and influenced every sector of it. Admittedly, the depth of this influence was not equal to its extent. Darwinism was essentially a diffuse cultural atmosphere that imbued the most diverse, and even opposite, tendencies

with its hues. Thus, for example, both socialists and anti-socialists, democrats and reactionaries, in those years called themselves Darwinian, and disputed at length who was more legitimately so. Not only the majority of natural scientists, but also philosophers and literati, sociologists and artists, drew sustenance from his doctrine and received direct or indirect inspiration from it. It will suffice here to cite the testimony of a great Italian man of letters, brought up in a completely different intellectual tradition, but sensitive to the new ferments in the culture of his time: 'There are men who may never have heard of the books or even the name of Darwin, but despite themselves live within the atmosphere created by him and feel its influences,' wrote the critic Francesco De Sanctis in a lecture in the last year of his life, entitled *Darwinism in Art*.<sup>1</sup>

This lecture starts with an apology for Darwin, but then develops into a manifesto for a literary poetics that has at bottom only a fortuitous connection with the theory of the scientist of Down House. It is not without significance, however, that De Sanctis had read Darwin with enthusiasm ('those were fine days of my life that I spent reading the works of Charles Darwin'), whereas it does not appear that he ever read a page of Marx or was struck by him in any way. On the other hand, there is one element in this apology by De Sanctis for Darwin which is of particular interest to us here: the passage in which he presents the limitation of the scientist as one of his titles to glory: 'the scientist's pride did not prevent him, in that marvellous chain of beings he conceived, from bowing before the Supreme, the Unknowable'. In reality this limitation was not so much Darwin's—he merely submitted ultimately and reluctantly, after many vacillations, to the anti-scientific suggestion of an unknowable—as that of later Darwinism, which in keeping with all positivist culture of the age ended up by makinggnoseological agnosticism into a new philosophical dogma. This indeed was to be one of its weakest links, which was precisely breached towards the turn of the century by the irruption of a new wave of spiritualism, to which Darwinism proper was gradually to yield. Darwinism thus eventually faded away as a general cultural atmosphere, while an aberrant outgrowth from it, *Social Darwinism*, survived and even acquired new virulence. In this situation the whole problem of the developmental relationship between Marxism and Darwinism, as it had been posed and discussed in the last decades of the 19th century, finally came to seem stale and superseded. We shall consider whether and to what extent this epilogue was justified, once we have examined the more specific, and necessarily prior, question of the historical relations between Marx and Darwin.

## 1. Human History and Natural History

De Sanctis's lecture on *Darwinism and Art* was given in Rome on 11 March 1883. A few days later in London, on 17 March, in his speech at the graveside of Marx, in the presence of a few intimate friends (including two natural scientists, the chemist Schorlemmer and the Darwinian biologist Ray Lankester), Engels publicly linked for the

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<sup>1</sup> F. De Sanctis, *Saggi Critici*, Vol. III, Bari 1953, pp. 355–67.

first time the name of his great dead friend with that of Darwin: 'Just as Darwin discovered the law of development of organic nature, so Marx discovered the law of development of human history.'<sup>2</sup> This verdict of Engels on the fundamental parallelism between Marx and Darwin was later taken up again and again,<sup>3</sup> and eventually became a commonplace of Marxist literature.

But the problem cannot be exhausted in these terms; even if those who have tried to advance beyond them have typically run the risk of becoming entangled in the most extreme confusions.<sup>4</sup> It remains a fact, however, that before the idea of any parallelism arose, Marx and Engels were themselves preoccupied with another question: that of establishing the significance, importance and limits of Darwin's work for their own conception of the world. It is therefore appropriate to begin by considering the judgments on Darwin and Darwinism expressed directly by the founders of scientific socialism.

The first pronouncement on Darwin came from Engels, in a letter to Marx of 12 December 1859. He had in his hands, still fresh from the press, one of the 1,250 copies of the first edition of *The Origin of Species* (which had been published on 24 November of that year). For some time Engels had already been engaged in studying with some assiduity the natural sciences, in which he had discovered various elements which seemed to confirm a line of thought which he had hitherto in certain respects been able to pursue only speculatively.<sup>5</sup> It is therefore not surprising that a reading of *The Origin of Species* delighted him, not because of the novelty of its conclusions—for which he was in a sense prepared—but on the contrary because they offered a *new* confirmation and a scientific demonstration of certain general principles which until that time had not enjoyed much credit, but which he, along with Marx, had never doubted. 'The Darwin, which I am just reading', he wrote to Marx, 'is really stupendous. Teleology in one respect had still not been finished off hitherto: it is now. Moreover, there has never yet been such a magnificent attempt made to demonstrate historical development in

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<sup>2</sup> Marx-Engels, *Selected Works*, London 1968, p. 435. Engels repeats the same comparison in his 1888 preface to the English translation of the *Communist Manifesto*.

<sup>3</sup> 'An analogous case' said Antonio Labriola (*Saggi sul Materialismo Storico*, Rome 1964, p. 236), while in the same period Edward Aveling was writing of the 'twin theories of evolution and surplus value' ('Charles Darwin und Karl Marx—eine Parallele', *Die Neue Zeit*, 1897, Vol. II, pp. 745–57). Turati, in a polemic of 1892 over the relations between Marxism and Darwinism, had noted in the same sense that 'Marx is precisely the Darwin of social science' (*Critica Sociale*, II, p. 135).

<sup>4</sup> See, for example, the essay by the Russian scientist Timiryazev, 'Darwin and Marx', written in 1919 and included in D. Ryazanov (ed.) *Karl Marx: Man, Thinker and Revolutionary* (London 1927), which contains some interesting observations so long as it remains on the plane of parallels and analogies, but promptly lapses into a positivist eclecticism when it broaches problems common to the two doctrines: Marx is thrust into the company not only of Darwin, but also of John Stuart Mill and Comte. Much the same can be said of an article by Howard Selsam, 'Charles Darwin and Karl Marx' (*Mainstream*, New York, Vol. 12, 6, 1959, pp. 23–36), where finally even peaceful competition between capitalism and socialism becomes an example of Darwin's law of natural selection—little to the advantage of either the notion of peaceful competition or an understanding of Darwin.

<sup>5</sup> Especially interesting in this respect is Engel's letter to Marx of 14 July 1858: see Marx-Engels, *Werke*, Vol. 29, pp. 337–9.

nature, or at least not so happily. Of course, you have to pass over the crude English method [*die plumpe englische Methode*].<sup>6</sup>

Marx, at that period absorbed with other work and preoccupations, had not had the chance to read *The Origin of Species* right away, but when about a year later he had occasion for the first time to appraise Darwin's work, his verdict did not differ from that of Engels, except in so far as it was expressed in a more laconic but even more categorical fashion: 'However grossly unfolded in the English manner'—wrote Marx to his friend on 19 December 1860—'this is the book which contains the natural-historical foundation [*die naturhistorische Grundlage*] of our outlook.'<sup>7</sup> Shortly afterwards, in a letter to Lassalle on 16 January 1861, Marx repeated the same judgment virtually verbatim, expressly reiterating the anti-teleological motif already emphasized by Engels: 'Darwin's book is very important and serves me as a natural-scientific basis for the class struggle in history [*als naturwissenschaftliche Unterlage des geschichtlichen Klassenkampfes*]. One has to put up with the gross English mode of development, of course. Despite all deficiencies, not only is the death-blow dealt here for the first time to "teleology" in the natural sciences, but its rational meaning is empirically explained.'<sup>8</sup>

### The 1857 Introduction

These assessments may, however, be easily misunderstood if they are not situated within the general framework of the theoretical positions at which Marx and Engels had by then arrived. If the whole way in which the materialist conception of history gradually took shape is not borne in mind, it might seem that it was only with *The Origin of Species* that historical materialism acquired a basis that it formerly lacked; indeed that it was only now that the problem of the relationship between human history and natural history, and thus between science of society and science of nature, was posed for Marxism. In fact, of course, it is plain that Marx and Engels did not wait for Darwin in order to postulate a historical and anti-teleological development of nature in close relation with their materialist conception of history. The very idea of the evolution of animal species—which, as is well known, did not originate with Darwin<sup>9</sup>—was anything but extraneous to their range of interests, even before 1859. There is a significant hint in this respect in the 1857 draft introduction to *A Contribution to the Critique of Political Economy*. Describing bourgeois society as a superior form of social organization compared with the historical formations which preceded it—'out of whose ruins and elements it built itself up'—Marx resorted precisely to an analogy with the evolution of animal species: the bourgeois economy, as the highest phase of development of an anterior historical process, furnishes the key for understanding

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<sup>6</sup> *Werke*, Vol. 29, p. 524.

<sup>7</sup> *Werke*, Vol. 30, p. 131: 'obgleich grob englisch entwickelt. . .'. Contrary to Liebknecht's claim in his memoir of Marx, there is no evidence that Marx 'discerned the innovatory importance' of Darwin before the publication of *The Origin of Species*.

<sup>8</sup> *Werke*, Vol. 30, p. 578; *Selected Correspondence*, Moscow 1965, p. 123.

<sup>9</sup> For the precursors of evolutionism, see especially the interesting essay of P. Omodeo, 'Centocinquant'anni di evoluzionismo', *Società*, XV, No. 5, 1959, pp. 833–83.

the economy of past societies, just as 'human anatomy contains a key to the anatomy of the ape'.<sup>10</sup> On the other hand, he adds immediately, continuing the analogy, 'the intimations of higher development among the subordinate animal species can only be understood after the higher development is already known.' In other words, Marx was already not only taking for granted the principle of the historical evolution of animal species and of nature in general, which found little favour in the science of the time, but also tending to exclude from that evolution any finalist assumption. Admittedly, it could be said that for a consistently anti-teleological conception of nature there cannot be anything in a lower species which *intimates* as such something higher, in the sense (for example) of that internal tendency towards perfection postulated by Lamarck. Nothing of the kind, however, can be found in Marx's statement, despite the finalistic overtones of the metaphor he employed; on the contrary, his stress that a higher development of a less evolved antecedent form can only be understood *a posteriori*, implicitly denies any preordained design in nature, any internal rationality of the real which precedes the material process of its external formation.

### The Problem of the Unity of Science

These and other passages might, however, seem merely casual or fortuitous if they are not situated within the framework of the general conception of the world which presided over the birth of historical materialism. It is therefore necessary to recall the way in which the problem of the relation between man and nature was treated by Marx as early as the *Economic-Philosophic Manuscripts* of 1844. The traditional antithesis of man and nature was not there overcome by a new philosophical solution, but for the first time found its explanation in a process of practical origin, and its solution consequently became a problem of historical practice, 'a *real* task of life', and no longer a purely theoretical aim, as it had always been for speculative philosophy. Effective and complete unity of man with nature can only be realized through society and within society, and this will be the accomplishment of communism, which 'as fully developed naturalism, equals humanism, and as fully developed humanism, equals naturalism.'<sup>11</sup> Such a perspective, on the other hand, can only be meaningful if a real analysis of the laws of development of human society has at least been started, and if this analysis has shown a non-extrinsic link between human history and natural history. In the *Manuscripts*, in fact, Marx had already discovered that the productive activity of men is the basis of their history and at the same time the indispensable substratum of the history of nature, hence too of the natural sciences, which from the dawn of human history have developed step by step with human productive activity. 'Industry', says Marx, 'is the *actual*, historical relationship of nature, and therefore of natural science, to man.'<sup>12</sup> The same theme is taken up again and developed in *The German Ideology*: nature, the sensible world which surrounds us, is not 'a thing given direct from all eternity, remaining ever the same, but the product of industry and

<sup>10</sup> *Grundrisse* (Penguin/NLR edition), London 1973, p. 105.

<sup>11</sup> *Economic and Philosophic Manuscript of 1844*, London 1970, p. 135.

<sup>12</sup> *Economic and Philosophic Manuscripts of 1844*, pp. 142-3.

of the state of society; and, indeed, in the sense that it is an historical product, the result of the activity of a whole succession of generations, each standing on the shoulders of the preceding one, developing its industry and its intercourse, modifying its social system to the changed needs'; thus 'the celebrated "unity of man with nature" has always existed in industry, and has existed in varying forms in every epoch according to the lesser or greater development of industry . . . but where would natural science be without industry and commerce?'<sup>13</sup> This historical relation of man to nature has, however, been realized hitherto through a contradictory process; for the more society tightens and extends its bonds, the more it accentuates social antagonisms and isolates its members, while humanity prepares its emancipation by multiplying the elements of its own dehumanization.

For the same reason, the ever deeper unity of man with nature itself produces the separation of man from nature, and consequently of the human sciences from the natural sciences. All this was already emphasized by Marx in the 1844 *Manuscripts*, where he describes the various dimensions of alienation: 'natural science has invaded and transformed human life all the more *practically* through the medium of industry, and has prepared human emancipation, although its immediate effect had to be the furthering of the dehumanization of man.'<sup>14</sup> It is in these circumstances that there develops between philosophy on the one hand (and between "human sciences" in general) and natural sciences on the other a relation of reciprocal estrangement: 'The *natural sciences* have developed an enormous activity and have accumulated an ever-growing mass of material. Philosophy, however, has remained just as alien to them as they remain to philosophy. Their momentary unity was only a *chimerical illusion*. The will was there but the means were lacking.'<sup>15</sup> Only the unfolding practical process of this contradiction can lead to its real supersession, when natural science would eventually become the real 'basis of *human* science, as it has already become the basis of actual human life, albeit in an estranged form';<sup>16</sup> so clear did that truth appear which the phenomenon of alienation had hitherto hidden—namely, that 'history itself is a *real* part of *natural history*, of nature developing into man.' 'Natural science', Marx therefore concluded, 'will in time incorporate into itself the science of man, just as the science of man will incorporate into itself natural science: there will be *one* science.'<sup>17</sup>

### Insights and Limits of the Young Marx

If these texts, in their specific philosophical terminology (from which Marx, of course, was very soon to distance himself), seem momentarily to have diverted us away from the theme of Darwinism, they may nonetheless help us to understand why the development of the natural sciences could not leave the founders of scientific socialism indifferent. For they show that it was not a chance interest, but a much deeper

<sup>13</sup> *The German Ideology*, London 1965, pp. 57–8.

<sup>14</sup> *Economic and Philosophic Manuscripts of 1844*, p. 142.

<sup>15</sup> *Economic and Philosophic Manuscripts of 1844*, p. 142.

<sup>16</sup> *Economic and Philosophic Manuscripts of 1844*, p. 143.

<sup>17</sup> *Economic and Philosophic Manuscripts of 1844*, p. 143.

need, rooted in the very origins of the materialist conception of history, that was expressed by Marx when he defined *The Origin of Species* as a book which contained the natural-historical foundations of the human science on whose construction he was at work. In reality, from 1844 to 1846, in the *Economic-Philosophic Manuscripts* and in *The German Ideology*, these foundations still appeared in many ways too slim and scientifically too approximate to sustain a conception of the world which advanced the perspective of the unity of all sciences. It is clear that within the postulated coincidence of humanism and naturalism, of historical nature and natural history, Marx's accent fell, and could not help falling, on that *part* of natural history constituted by human history. Since this was not just 'any part' but the very centre of natural history, of the process leading to the humanization of nature, yet which had hitherto lain outside the domain of scientific inquiry and been consigned to the abstract speculations of the philosophy of history, Marx's scientific endeavour could find no more appropriate object. The historicity of nature could not, however, have only this anthropological sense, could not be exhausted in that unity of man with nature which is a result of the productive activity of men; for in that case there would still remain room above and beyond this *historical nature* for an original act of creation, in other words for the restoration of the old spiritualism beyond the limited confines of our material world. Although in the *Manuscripts* of 1844 Marx still to some extent indulged in the naturalistic anthropologism of Feuerbach (which he superseded and criticized shortly thereafter in *The German Ideology*), he was aware of the danger of this restoration and did not hesitate to confront it with the most radical arguments against creationism. 'The creation of the earth', writes Marx, 'has received a mighty blow from geogeny—i.e. from the science which presents the formation of the earth, the further development of the earth, as a process, as a self-generation. *Generatio aequivoca* is the only practical refutation of the theory of creation.'<sup>18</sup> This reference to a 'nature preceding human history', which is yet never conceived as given directly from eternity, always equal to itself, reappears in *The German Ideology*, in the passages already cited in which the historicity of nature is presented as the result of human productive activity. 'Of course', Marx adds, 'in all this the priority of external nature remains unassailed, and all this has no direct application to the original men produced by *generatio aequivoca*.'<sup>19</sup>

For our purposes here, it is not of great importance to what extent, in these allusions to *generatio aequivoca*, Marx had directly in mind the disputes that had raged within the natural sciences since the 17th century over the hypothesis of spontaneous generation, in which the idea had rebounded in a curious fashion from the vitalists to the mechanists. In any case, the notion of *generatio aequivoca* had passed from scientific debates into the philosophical systems of the time, where it is to be found for example as the general mode of the origin of life in the natural philosophies of Schelling and of Hegel. However, there is no specificity of reference in the way Marx alludes to this hypothesis; he takes from it only one element, the concept of self-formation, of genera-

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<sup>18</sup> *Economic and Philosophic Manuscripts of 1844*, p. 144.

<sup>19</sup> *The German Ideology*, p. 58.

tion as a *process of development*, which therefore excludes any act of creation. The function of the idea of *generatio aequivoca* is therefore equivalent in the writings of the young Marx to the idea of evolutionism itself. Its most serious limitation is not that it rests on an ambiguous theory, later to be scientifically discredited,<sup>20</sup> but above all that it remains only an *idea*, which in fact is marginal to Marx's youthful outlook. In this way, however, the task of linking human history with the whole of the rest of natural history into a unitary conception of the world, was entrusted to a mere rational hypothesis, not empirically verified—indeed not even speculatively developed. On the other hand it must be acknowledged, however paradoxical it may seem, that this very limitation is an index of the seriousness and greatness of Marx right from the outset of his scientific activity. Once he had arrived at a conception of the development of society as a *process of natural history*,<sup>21</sup> and was therefore convinced of the need to apply the rigour of the scientific method, based on rational reconstruction of facts empirically investigated, to the analysis of the laws of social development, he could not then for mere love of system invert the method and integrate the new materialist *science* of society with the old materialist *philosophy* of nature. Only parallel progress of scientific research in all fields could have brought nearer in a real and not illusory way that prospect of a unitary science, whose full realization moreover presupposed for Marx, as we have seen, not only an advance of knowledge but also a further progress of social relations. We shall, in fact, see how the step forward in the direction of this prospect represented by the work of Darwin was immediately to be followed by two steps backward, with the active collaboration of Darwinist culture itself.

## 2. The Materialist Method

*The Origin of Species* finally gave the idea of evolutionism, the conception of nature as an historical process, for the first time an entirely scientific, that is both rational and empirical, basis. Both purely rational hypotheses and collection, classification and analysis of empirical data are integral elements of the history of science, as constituent moments of its development. But the objective result of its movement of knowledge, *scientific truth*, is reached only when empirical research and rational interpretation coincide, without extraneous residues. Before Darwin this coincidence had not yet been attained in the theory of evolution. While the idea of evolution had been worked out on a speculative basis, above all by the materialist philosophers of the 18th century (Diderot, Maupertuis, Holbach and others), empirical research had been accumulating data which could not easily be squared with traditional conceptions. Thus from Buffon onwards there had been no lack

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<sup>20</sup> For the dispute over the notion of *generatio aequivoca*, see Engels's remarks in *Dialectics of Nature* (Moscow, 1966, pp. 296–7), and for the history of the theory, A. I. Oparin, *L'Origine della Vita sulla Terra*, Turin 1956, pp. 7–44.

<sup>21</sup> This conception, which as we have seen was an achievement of the young Marx, remains a methodologically operative principle in all his scientific work. In his preface to the first edition of *Capital* (and indirectly in his postscript to the second edition), Marx explicitly stated his view of human history as natural history: 'My standpoint, from which the *evolution of the economic formation of society is viewed as a process of natural history* . . .' (Our italics), *Capital*, Vol. I, Moscow 1961, p. 10.



of natural scientists who had attempted a new systematization of empirical data by relating them to evolutionist ideas. But the connection between the two always remained at least partly extrinsic. Even Lamarck, unquestionably the most gifted of Darwin's naturalist predecessors, could surmount the difficulties of the theory of evolution only by extravagant hypotheses with no support in empirical analysis, and which consequently had to resort on the one hand to naïve mechanistic crudities and on the other to the *deus ex machina* of finalism. Nevertheless, it was these attempts, for all their approximation and improvisation, which made Darwin's work possible. The idea of evolution, as a rational hypothesis to explain facts observed and data gathered, was certainly in Darwin's mind (he says the idea 'pursued' him) long before he managed to demonstrate it scientifically; it was therefore, as an *idea* or *rational hypothesis*, no less a presupposition than his empirical research, of the *scientific theory* of evolution. Darwin then had to undertake more than twenty years' work to rediscover in the facts, and only in the facts, the rationality of this hypothesis, in order for empirical research and rational interpretation to coincide.

For this purpose, however, it was not enough to combine all the possible arguments in favour of the theory of evolution with all the actual modifications of species. Darwin realized that no argument could have the full value of proof if it did not provide an empirical explanation of the *mode* of evolution as well, the mechanism whereby species underwent modifications.<sup>22</sup> The traditional models of the evolutionary mechanism (the principle of use and disuse, and the influence of the external environment through the inheritance of acquired characteristics) did not seem to him to be adequate; for however derivable from empirical observation, they had no explanatory self-sufficiency, and in fact always led back in one way or another to a teleological interpretation of nature. Darwin never intended to deny the value of these traditional models.<sup>23</sup> Instead he made a deeper examination of the conditions in which they became operative, and eventually found in the principle of natural selection the *principal* agent of the mechanism of evolution, the most important fact round which all other facts could be rationally co-ordinated, the guiding thread which unravelled the tangle of apparent accident and reciprocal influence in which empirical observation always risked becoming lost. Any finalist explanation thus became superfluous, finally receiving, as Marx was to say, 'the death-blow'.

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<sup>22</sup> This methodological imperative was emphasized by Darwin in his Introduction to *The Origin of Species* (London 1903, p. 8): 'In considering the Origin of Species, it is quite conceivable that a naturalist, reflecting on the mutual affinities of organic beings, on their embryological relations, their geographical distribution, geological succession, and other such facts, might come to the conclusion that each species had not been independently created, but had descended, like varieties, from other species. Nevertheless, such a conclusion, even if well founded, would be unsatisfactory, until it could be shown how the innumerable species inhabiting this world have been modified, so as to acquire that perfection of structure and coadaptation which most justly excites our admiration.'

<sup>23</sup> The invalidity of the current view that counterposes Darwin to Lamarck over the problem of the inheritance of acquired characteristics, is demonstrated in the essay by P. Omodeo, 'Darwin e l'Ereditarietà dei Caratteri Acquisiti', *Scientia*, 54, December 1959.

## Marx's Comments in *Capital*

*The Origin of Species* was thus bound to attract the attention and interest of Marx, not merely for its results, but also for its thoroughly materialist—that is, scientific—method. If in his first enthusiastic judgments, already recorded, Marx's positive appreciations seem to concern only the overall conclusions of the work, he subsequently came to emphasize its methodological significance, along with the most controversial aspects of Darwinism. It is revealing, for example, that in an important footnote to *Capital*, which raises questions of method essential to the materialist conception of history in connection with the problem of the historiographic importance of technology, Marx uses precisely Darwin as the starting-point of his argument, citing his work as an exemplary application of the materialist method: 'Darwin has interested us in the history of Nature's Technology, i.e. in the formation of the organs of plants and animals, which organs serve as instruments of production for sustaining life. Does not the history of the productive organs of man, of organs that are the material basis of all social organization, deserve equal attention?'<sup>24</sup> It is no less significant, however, that at the end of this note to *Capital*, Marx felt it necessary to warn against a materialism 'abstractly modelled on the natural sciences'. The defects, he writes, of such a materialism, 'that excludes history and its process, are at once evident from the abstract and ideological conceptions of its spokesmen, whenever they venture beyond the bounds of their own speciality.'<sup>25</sup> We must be careful to avoid any misunderstanding here. Marx does not warn us against the materialism of the natural sciences, but against *a materialism abstractly modelled on the natural sciences*. The distinction is fundamental: for him, in fact, materialist method and scientific method are equivalent, are two terms for the same concept (in fact, a little earlier in the same note, he speaks of 'the only materialistic, and therefore only scientific method').<sup>26</sup> Nor does he think that the natural sciences necessarily exclude all historical development: the very example of Darwin shows the contrary. When, however, on this occasion he speaks of 'history and its process', the context makes it clear that he is referring to the historical process specific to human forces of production and to social relations that correspond to them: that is, the historical process outside which scientific knowledge of society is not possible, and in the name of which, therefore, we speak of *historical materialism*. It is *this* historical process which remains excluded from any type of materialism 'abstractly modelled on the natural sciences', with unhappy consequences when its advocates venture beyond the bounds of their own speciality. Marx, on the other hand, is careful not to conclude by inviting scientists to shut themselves up

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<sup>24</sup> *Capital*, Vol. I, p. 372. The passage continues: 'Would not such a history be easier to compile, since, as Vico says, human history differs from natural history in this, that we have made the former, but not the latter?' We have seen, however, that this distinction should not be understood in any rigid sense, since for Marx the history of humanity is none other than a part of natural history. For other suggestions of similar methodological value taken by Marx from the writings of Darwin, see *Capital*, I, p. 341, and *Theories of value*, Vol. III, London 1972, pp. 294–5.

<sup>25</sup> *Capital*, I, p. 373. [The phrase rendered as 'a materialism abstractly modelled on the natural sciences' by Gerrataina is *abstrakt naturwissenschaftlichen Materialismus* in the German original; see *Werke*, Vol. 23, p. 393].

<sup>26</sup> *Capital*, I, p. 373.

within the confines of their own respective disciplines. If he had done so, he would have had to start by setting an example himself and abstaining from frequent references to the natural sciences, Darwin included. What then is the relation between the various sciences, and in particular between natural sciences and social sciences, between natural sciences and philosophy? The problem is indubitably a complex one, but examination of the ulterior relations between Marxism and Darwinism may help to clarify it.

### 3. Darwin and Malthus

We have seen that the first enthusiastic judgments of Marx and Engels on Darwin were always tempered by a reservation about the 'crude English method', the 'gross English mode of development'. In general this reservation was marginal in character, since it concerned not the method of investigation but the method of exposition. That the latter was not always up to the standard of the former, that the scientific rigour of his method of research was often not matched by an equal rigour in his exposition, is a verdict to which Darwin himself would probably have found no objections. For in his *Autobiography* he was the first to admit the difficulties he had always experienced in expressing himself with clarity and concision, and candidly regretted his shortcomings: 'There seems to be a sort of fatality in my mind leading me to put at first my statements and propositions in a wrong or awkward form.'<sup>27</sup>

The reservation of Marx and Engels, however, becomes less marginal when we pass from Darwin's general method of exposition to consideration of certain substantive questions where the inexactitude of his formulations reveals a flaw in his reasoning. This is the case, for example, with the relation of Darwin to Malthus. However little Darwin, unlike his followers, was generally inclined to venture outside his speciality, in this particular instance he did so, abandoning his well-known caution as a scientist. The resultant confusion was not confined to Darwin's own understanding, for even today Malthus's theory of population is commonly mentioned as one of the principal sources of Darwin's theory of evolution. Darwin himself, when he invoked Malthus, was not preoccupied with deepening his comprehension of the latter's thought: he merely stopped at the first chance impression he received from a *casual* reading of the *Essay on the Principle of Population*. In turn, none of the later interpreters of Darwin took the trouble to check the original texts, which are nevertheless well-known and easily accessible, to establish the exact value of Darwin's reference.<sup>28</sup>

#### The Two Proportions

In his introduction to *The Origin of Species*, in which he described the plan of the work, Darwin wrote the following passage: 'In the next

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<sup>27</sup> *The Autobiography of Charles Darwin* (edited by Nora Barlow), London 1958, p. 137.

<sup>28</sup> It is regrettable that natural scientists make this mistake, but easily explicable, since the problem is of only incidental interest to them. It is much more surprising that the same uncritical attitude is to be found among social scientists; see, for example, D. G. MacRae, 'Darwinism and the Social Sciences', in S. A. Barnett (ed.), *A Century of Darwin*, London 1958, p. 296 ff.

chapter the Struggle for Existence among all organic beings throughout the world, which inevitably follows from the high geometrical ratio of their increase, will be treated of. This is the doctrine of Malthus, applied to the whole animal and vegetable kingdoms.<sup>29</sup> The scientific validity of any attempt to transfer a doctrine elaborated for society to the field of biology is disputable on principle, of course. But a methodological discussion would in this case anyway be superfluous, since Darwin, at the very moment when he says he wants to apply the 'doctrine of Malthus' to the whole animal and vegetable kingdom, empties that doctrine of everything that defines it and finds himself with something quite different on his hands, which bears only a nominal relation to the former. Neither the principle of the struggle for existence, nor that of the natural increase of population in geometric proportion, in fact serve to justify the theory of Malthus, who himself—despite his propensity to plagiarism, noted by Marx and other economists—appealed in turn explicitly to other authors to validate these principles. Malthus's 'discovery', the pillar on which his whole *Essay on the Principle of Population* rests, was the supposed *divergence*, the catastrophic pincer, between a human population which in each period of twenty-five years grew naturally in *geometric proportion*, and means of subsistence which, whatever efforts were made ('in the most favourable conditions of human industry', said Malthus, in so far as he could foresee them) could not in the same period grow at more than *arithmetical proportion*. This divergence between the two proportions has a meaning only for human society, outside of which it is not, in fact, possible to speak of a continuous increase, even in arithmetical proportion, of the means of subsistence; whereas for plants and animals, according to Malthus, the problem does not even arise, since the matter would proceed 'very simply', by the mere automatic elimination of superfluity.<sup>30</sup> While claiming to apply Malthus's theory, Darwin in reality belied it; he was in fact to spend his whole career showing how complex, rich and multi-form the problem was which had appeared so 'simple' to Malthus.

Probably a latent doubt as to whether he was forcing the meaning of Malthus's theory somewhat did occur to Darwin. For he later introduces a variant of his first formulation, to cover the objection which must have struck him; in the same section, under the heading 'geometrical powers of increase', he writes: 'It is the doctrine of Malthus applied with manifold force to the whole animal and vegetable kingdoms; for in this case there can be no artificial increase of food and no prudential restraint from marriage.'<sup>31</sup> But with this nonchalant logical leap, Darwin failed to realize that, lacking the premise of an arithmetical progression of the means of subsistence, Malthus's theory does

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<sup>29</sup> *The Origin of Species*, p. 9.

<sup>30</sup> See Malthus, *Essay on the Principle of Population*, London 1803, pp. 2–3: 'In plants and irrational animals the view of the subject is simple. They are all impelled by a powerful instinct to the increase of their species; and this instinct is interrupted by no reasoning or doubts about providing for their offspring. Wherever, therefore, there is liberty, the power of increase is exerted; and the superabundant effects are repressed afterwards by want of room and nourishment, which is common to plants and animals; and among animals, by their becoming the prey of each other.'

<sup>31</sup> *The Origin of Species*, p. 33.

not apply 'with manifold force', it ceases to apply at all—losing any specific meaning to become a completely arbitrary metaphor devoid of content, a mere literary reminiscence. In reality, what interested Darwin was not the 'geometric progression' but the struggle for existence, as an indispensable presupposition of natural selection. But this struggle for existence was not in fact related to any 'rapid rate of increase in geometric progression' of all living beings, as Darwin wrote in formal reference to Malthus, but simply to the fact that—as he himself immediately added—in each species 'more individuals are produced than can possibly survive'. But for this phenomenon, the type of proportion in the rate of increase is irrelevant, and the struggle for existence would proceed indifferently—in the case of living beings not capable of producing and increasing their own conditions of existence—whether the proportion was geometrical or arithmetical (and in fact the rate of reproduction is more or less rapid depending on the different species of animals and vegetables).

Malthus's theory can thus be seen to have been superficially interpolated into Darwin's thought, to which it remains substantially foreign. The fortuitous and haphazard character of Malthus's influence on the author of *The Origin of Species* is, moreover, manifest from the passage of his *Autobiography* in which the scientist records the circumstance in which he thought he had contracted his curious debt of gratitude to the famous economist. After alluding to the first stages of his investigations, when he had still not managed to work out 'how selection could be applied to organisms living in a state of nature', Darwin writes: 'In October 1833, that is, fifteen months after I had begun my systematic enquiry, 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 new species. Here, then, I had at last got a theory by which to work . . .'.<sup>32</sup> The merits of Malthus for Darwin are therefore only indirect, and can be reduced to the fact that Malthus had called his attention to the principle of the struggle for existence—a principle which on the one hand Malthus himself made no claim to have fathered, and on the other hand Darwin had already obtained directly from empirical observation. It should be added that with the acquisition of the notion of the struggle for existence, he was still not even half-way towards his goal: for the eventual discovery of a 'theory by which to work' he had to reach the conclusion—for which Darwin certainly got no help from Malthus—that in the conditions of struggle for existence favourable variations tended to be conserved and unfavourable ones to be eliminated.

We can therefore understand the reaction of Engels, when faced with those who like Dühring criticized Darwin's theory of the struggle for existence on the grounds of its presumed Malthusian origins. 'Now Darwin',—Engels remarks, 'would not dream of saying that the *origin*

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<sup>32</sup> *The Autobiography of Charles Darwin*, p. 120. Our italics.

of the idea of the struggle for existence is to be found in Malthus. He only says that his theory of the struggle for existence is the theory of Malthus applied to the animal and plant world as a whole. However great the blunder made by Darwin in accepting the Malthusian theory so naïvely and uncritically, nevertheless anyone can see at the first glance that no Malthusian spectacles are needed to perceive the struggle for existence in nature—the contradiction between the countless host of germs which nature so lavishly produces and the small number of those which ever reach maturity; a contradiction which in fact for the most part finds its solution in a struggle for existence—often of extreme cruelty. Just as the law of wages has maintained its validity even after the Malthusian arguments on which Ricardo based it have long been consigned to oblivion, so likewise the struggle for existence can take place in nature, even without any Malthusian interpretation.<sup>33</sup>

### The Deeper Link between Malthus and Darwin

It still remains to be explained why Darwin let himself be influenced by a reading of Malthus up to the point of accepting uncritically a doctrine he could very well have done without. In fact, the extrinsic and superficial link between Darwin's thought and Malthus's work reveals a deeper relationship of *The Origin of Species* with something much more serious and important: precisely with the reality to which the *Essay on the Principle of Population* brutally drew attention, even if it then tended to mystify it in the interests of the dominant classes. It is not so much the *social doctrine* of Malthus which was applied, as Darwin stated, to the plant and animal world, as the *social reality* which inspired the doctrine that found in the eyes of the natural scientist a singular reflection in the reality of the vegetable and animal nature which was the subject of his research. This double aspect of the relationship between Darwin and Malthus (where the superficiality of the direct relation was redeemed by the profundity of the indirect relation) was pointed out by Marx in a letter to Engels in 1862. 'Darwin, whom I have looked up again, amuses me when he says he is applying the "Malthusian" theory *also* to plants and animals, as if with Mr. Malthus the whole point were not that he does *not* apply the theory to plants and animals but only to human beings—and with geometrical progression—as opposed to plants and animals. It is remarkable how Darwin recognizes among

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<sup>33</sup> Engels, *Anti-Dühring*, Moscow 1947, p. 86. These considerations were developed by Engels in a passage of the *Dialectics of Nature* which stresses the complexity of the relationship between animal and vegetable over-population and the principle of natural selection (*Dialectics of Nature*, Moscow 1966, pp. 306–7). Marx for his part confined himself to remarking that the idea of the 'struggle for life' becomes a mere phrase if used as an explanatory principle or natural law of all history. Thus he commented in a letter to Kugelmann on 27 June 1870: 'Herr Lange, you see, has made a great discovery. The whole of history can be brought under a single great natural law. This natural law is the *phrase* (in this application Darwin's expression becomes nothing but a phrase) 'the struggle for life', and the content of this phrase is the Malthusian law of population, or rather, over-population. So, instead of analysing the struggle for life as represented historically in varying and definite forms of society, all that has to be done is to translate every concrete struggle into the phrase 'struggle for life', and this phrase itself into the Malthusian population fantasy. One must admit that this is a very impressive method—for swaggering, sham-scientific, bombastic ignorance and intellectual laziness.' Marx-Engels, *Selected Correspondence*, pp. 239–40.

beasts and plants his English society with its division of labour, competition, opening up of new markets, “inventions”, and the Malthusian “struggle for existence”. It is Hobbes’s *bellum omnium contra omnes*, and one is reminded of Hegel’s *Phenomenology*, where civil society is described as a “spiritual animal kingdom” while in Darwin the animal kingdom figures as civil society.<sup>34</sup> The amused and ironic tone of these comments should not mislead us; Marx is not satirizing Darwin, for whom his admiration—as we shall see—never waned, but registering an objective satire on bourgeois society that is reflected even in the disinterested work of a great natural scientist. It is in this sense that the same theme was to be taken up again later by Engels in the preface to the *Dialectics of Nature*: ‘Darwin did not know what a bitter satire he wrote on mankind, and especially on his countrymen, when he showed that free competition, the struggle for existence, which the economists celebrate as the highest historical achievement, is the normal state of the *animal kingdom*. Only conscious organization of social production, in which production and distribution are carried on in a planned way, can lift mankind above the rest of the animal world as regards the social aspect, in the same way that production in general has done this for men in their aspect as species.’<sup>35</sup>

For his part Darwin did not even reach the threshold of these problems. Not only did he never surpass the limits of bourgeois society, he did not even succeed in imagining a way in which it would be possible to apply to the study of society the same scientific methods which he himself had coherently employed to investigate the laws of development of organic nature. It is true that Darwin was not the author of the Social Darwinism which was to infest the positivist culture of the end of the 19th century, and basically had minimal responsibility for this by-product of his theories. But to the extent to which he could not avoid at least touching on the field of social problems, even he was not exempt from a methodological decadence. Thus, for example, his conclusions in *The Descent of Man* on the ‘progress of the well-being of the human race’ are of some significance. It is, he says, a problem ‘difficult to solve’ (but the more difficult, of course, the less scientifically founded the terms of the problem). Although Malthus is not named in this passage, his theory of population remains Darwin’s only available point of reference; on the other hand he is so intellectually casual here that after having claimed to apply Malthus’s social theory to the whole of organic nature, he ends by rejecting the conclusions of Malthusianism in the social field itself. However, the reason with which he justifies his anti-Malthusian theses are just as unscientific as those customarily used to support the opposite Malthusian theses. Thus, the restriction of marriage proposed by Malthus to combat the phenomenon of over-population is criticized by Darwin, on the grounds that without over-population the pre-requisite for the struggle for existence

<sup>34</sup> Marx-Engels, *Selected Correspondence*, p. 128. In his historical analysis of theories of surplus value, Marx expressly emphasized the importance of Darwin’s work as a scientific ‘refutation’ of Malthus’s theory: *Theories of Surplus Value*, Vol. II, London 1969, p. 121.

<sup>35</sup> *Dialectics of Nature*, p. 35. See also *Anti-Dühring*, pp. 324, 333; and Engels’s letters to Lange of 29 March 1865 and Lavrov of 12–17 November 1875, *Selected Correspondence*, pp. 171–3 and 301–4.

would be lacking, and without the struggle for existence Darwin cannot conceive the possibility of progress.<sup>36</sup> The descent at this point from the materialism of the natural sciences to a *materialism abstractly modelled on the natural sciences* is patent. As a scientist, Darwin drew from empirical observation of the animal and plant world the principle of the struggle for existence, and used it concretely to investigate the processes of development of organic nature and thus to discover their mechanisms and laws; but as far as the processes of society were concerned, it did not even occur to him that he should follow the same scientific method of research, and he confined himself instead to an abstract extension of results obtained from natural science to another science—that of society—where he supposed it possible to draw valid conclusions without any concrete or specific research. The result is the strange paradox that the scientist who more than any other contributed by his theory of evolution to demonstrating the historicity of nature, ended by denying and excluding the historical process in the very part of natural history that is human history. The struggle for existence, which conditions the development of the plant and animal world, becomes an eternal law of nature from which man can never escape, not only a stimulus but at the same time an insurmountable barrier of evolution. This conclusion remains even if Darwin adds, with eclectic caution, that he does not mean the struggle for existence to be taken as the sole or even the principal instrument of progress in human history. The signal for a methodological inversion was now given: denial of the eternity of natural laws, and their reinterpretation as historical laws, lapsed back into affirmation of historical laws of social development as eternal laws of nature.

This methodological inversion—which in Darwin himself is only suggested, remaining on the margins of his work as a sign of the bourgeois limits of his thought—was to become central to Darwinist culture, not only indicating its limits, but determining the fundamental character of its influence. However, this shift was to be possible because Darwin, despite the step he accomplished towards bringing the natural sciences and the historical sciences together, had already left the problem of the unity of science in a new impasse.

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<sup>36</sup> Darwin, *The Descent of Man*, London 1901, p. 945: 'Man, like every other animal, has no doubt advanced to his present high condition through a struggle for existence consequent on his rapid multiplication; and if he is to advance still higher, it is to be feared that he must remain subject to a severe struggle. Otherwise he would sink into indolence, and the more gifted men would not be more successful in the battle of life than the less gifted. Hence our natural rate of increase, though leading to many and obvious evils, must not be greatly diminished by any means.' Malthus was also preoccupied with 'indolence' in his *Essay on the Principle of Population*, and to avoid it he wanted the limitation of births to be entrusted exclusively to the means 'indicated by reason and sanctioned by religion', so that 'the desire for marriage should conserve all its force, quicken activity and impel the celibate to acquire by his labour the degree of comfort he is wanting'; and he therefore rejected with contempt 'any means artificial and foreign to the laws of nature which might be adopted to restrict population, both as an immoral means and as tending to suppress a necessary stimulus for inciting men to work. If in every marriage the number of children were to be subjected to a voluntary limitation, one would have to fear an increase of indolence'.



#### 4. Science, Philosophy and Religion

An indispensable condition, though not the only one, for overcoming this impasse is that each science should not shut itself up within its own concerns and ignore all the other sciences. But it cannot be denied that this desirable goal is confronted with a practical obstacle in the increasing specialization of research; nor can it be asked that this specialization be sacrificed for the sake of broadening the horizon of the individual knowledge of each scientist. However, lack of intellectual curiosity outside his own field of research will never be the mark of a scientist's greatness. This does not mean, of course, that a great scientist cannot have intellectual limits which he fails to surmount, nor that his value as a scientist is inversely proportional to these limits; it may, however, be said that the less they impinge on his research the more he will acknowledge them as such, as personal limits, and not pretend to justify them as limits of science. An acknowledgment of this kind can also be found in Darwin, in that measured and frank self-criticism which is one of the finest passages of his *Autobiography*, a moving document of scientific probity and scholarly humanity.<sup>37</sup>

Clearly, Marx too could not hope to deal simultaneously—on the plane of research—with both social and natural sciences, nor did he ever imagine resolving the problem of the unity of science by a utopian omniscience. A scientist like Marx, not only could not help being interested in the impetuous development of the natural sciences of his time, but was particularly obliged to ask himself what were the overall intellectual perspectives into which the new scientific discoveries should be inserted. The need to acquire critical and more than superficial information about them thus became an imperative task, which could not be eluded. Engels, as we have seen, had been the first to move in this direction, and Marx did not fail to recall this when he in turn felt the need to follow the same path. In a letter to Engels on the 4th of July 1864—which shows him immersed in works on physiology, histology and anatomy of the nervous system—after having noted with pleasure a certain correspondence between a point in Hegel's *Phenomenology* and the critique of phrenology in Lord's *Popular Physiology*, he added: 'You know that (1) I get round to everything late; and (2) I always follow in your footsteps. So it is likely that now in my free time I will devote myself a lot to anatomy and physiology, and also that I will attend courses (with demonstrations *ad oculos* and dissections).'<sup>38</sup> Of course, we should not take this declaration from Marx about his relations with Engels literally; the affectionately joking exaggeration—which would have been out of place had Marx not been sure of the complete lack of any intellectual vanity in his great friend and collaborator<sup>39</sup>—should not, however, be allowed to conceal the real

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<sup>37</sup> *The Autobiography of Charles Darwin*, pp. 136–42.

<sup>38</sup> *Werke*, Vol. 30, p. 418.

<sup>39</sup> It is easy to imagine the way in which his letter might have been used by another man; but when after Marx's death a tendency developed to overestimate Engels's contribution to the construction of scientific socialism, Engels himself felt the need to 'settle this point' by stating publicly: 'What I contributed—at any rate with the exception of my work in a few special fields—Marx could very well have done without me. What Marx accomplished I could not have achieved.' Marx-Engels, *Selected Works*, p. 618.

significance of these expressions. From them it is clear that (1) Engels acted as an important intellectual stimulus to Marx and (2) Marx attributed great value to the field which was later systematically developed by Engels in *Anti-Dühring* and the *Dialectics of Nature*.

### Huxley's Agnosticism

We should not, on the other hand, be surprised that in this period of natural scientific apprenticeship the judgment of Marx and Engels on individual questions of detail is sometimes unfounded, and that their opinions do not always coincide.<sup>40</sup> What is more important, however, is to evaluate fundamental questions of scientific orientation, and it is about them—where the agreement between Marx and Engels is always complete—that the principal themes of the cultural debate set off by the spread of Darwinism in fact crystallized. At the centre of this debate was the problem of the relationship between science and philosophy, between science and religion. It is true that even here the issues did not concern only Darwin, and not even principally Darwin (who, as Labriola observed, 'was not the philosopher of his science'<sup>41</sup> and remained on the side-lines, leaving to his supporters, led by Huxley—'the attorney-general of Darwinism'—both the responsibility for more general theorization and the onus of public polemics). The intellectual revolution which started with the publication of *The Origin of Species* all of a sudden found its first battle-field on the terrain of religion. Yet it was a conflict which did not last long, at least in its sharpest forms, soon tending to find a basis for partial accommodation. Engels, in a letter of April 1863 drawing Marx's attention to some writings of Lyell and Huxley, wrote: 'They are making a great fuss here with violent attacks against the old beliefs, and from all sides', but he added the warning there would inevitably be a search to prepare some diluted form of rationalism for the defense of religion.<sup>42</sup> A few years later, in 1868, it was Marx who pointed out a contradictory symptom of the attitude of Darwinist culture: 'Huxley, in his last talk at Edinburgh, in which he showed himself more materialist again than in the last few years, still left himself a back door for retreat. So long as we effectively observe and think, we can never get away from materialism. But this merely resolves into a relation of cause and effect, and "your great countryman Hume" has already shown that these categories have nothing to do with things in themselves. *Ergo* you are free to believe what you want. QED.'<sup>43</sup> Later, as is well known, Huxley was to coin the happy term 'agnosticism' for this position, and Engels in turn was doing no more than taking up Marx's remarks again when he spoke of this as a 'materialism that is ashamed of itself.'<sup>44</sup>

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<sup>40</sup> See, for example, the polemical exchange between Marx and Engels over a book by Pierre Trémaux (*Origine et Transformations de l'Homme et des Autres Bêtes*, Paris 1865), whose scientific accuracy Engels judged severely, while Marx was inclined to overestimate it, immediately hailing it as 'a notable advance on Darwin'. In fact, this work disappeared without a trace in the history of biological science. See the letters from Marx of 7 August, 13 August and 3 October 1866, and from Engels of 10 August, 2 October and 5 October 1866; *Werke*, Vol. 31, pp. 247–52, 256–61.

<sup>41</sup> Labriola, *Saggi sul Materialismo Storico*, p. 218.

<sup>42</sup> *Werke*, Vol. 30, p. 338.

<sup>43</sup> *Werke*, Vol. 32, p. 229.

<sup>44</sup> See the preface to the English translation of *Socialism: Utopian and Scientific*, in Marx-Engels, *Selected Works*, pp. 384–6.

## Darwin's Doubts

There is no doubt that this mantle of agnosticism enabled the scientific spirit of Darwinism to mollify and deflect the obstacles to it, making its success quicker and easier, but at the same time preparing the conditions for its later collapse. The way in which this process occurred seems tortuous in many respects, but it is not difficult to reconstruct its essential outlines. Darwin, for example, was personally an unbeliever (or at least became so at a certain point), but he did not want this to be publicly known, and thus preferred to continue to let it be believed that evolutionism was compatible with religion. In private he professed himself an 'agnostic', but his agnosticism, unlike Huxley's, was innocent of any philosophical emphasis; it was basically no more than a new way of acknowledging his own personal limits, at which he considered it honest, as well as prudent, to stop. On the other hand, the content of his agnosticism indubitably represented an advance on his previous positions. In one passage of his *Autobiography* he records that in the period when he was writing *The Origin of Species* he had come to theist conclusions: since it was impossible to explain 'this immense and wonderful universe, including man with his capacity for looking far backwards and far into futurity, as the result of blind chance or necessity', he was inevitably compelled to have recourse 'to a First Cause having an intelligent mind in some degree analogous to that of man'. This conclusion was, however, after many vicissitudes eventually shaken by doubt: 'Can the mind of man, which has, as I fully believe, been developed from a mind as low as that possessed by the lowest animal, be trusted when it draws such grand conclusions? May these not be the result of the connection between cause and effect which strikes us a necessary one, but probably depends merely on inherited experience? Nor must we overlook the probability of the constant inculcation in a belief in God on the minds of children producing so strong and perhaps an inherited effect on their brains not yet fully developed, that it would be as difficult for them to throw off their belief in God, as for a monkey to throw off its instinctive fear and hatred of a snake.'<sup>45</sup> Huxley himself would never have dared to advance such an impious argument against religion. It was not, however, mere caution or simple tactical prudence, but above all an awareness of the unscientific characters of these ideas, that prevented Darwin from exposing them publicly. In substance he limited himself in this field to proposing conjectures, to which however he did not seek to attribute greater value than to any other conjecture. The passage just cited from the *Autobiography* in fact concludes: 'I cannot pretend to throw the least light on such abstruse problems. The mystery of the beginning of all things is insoluble by us; and I for one must be content to remain an Agnostic.'

Darwin's agnosticism therefore has a more modest tone than Huxley's,

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<sup>45</sup> *The Autobiography of Charles Darwin*, pp. 93–4. In earlier editions of the *Autobiography*, the last part of this passage was suppressed at the direct instance of Darwin's wife, as emerges from her letter to her son Francis, mentioned in a footnote in the Barlow edition. For Darwin's attitude to religion, see the whole section of the *Autobiography* on this topic (pp. 85–96), together with chapter nineteen of the biography by Arthur Keith, *Darwin Revalued*, London 1955.

betraying a perplexity which leaves a door open to all solutions. If human reason does not deserve to be relied upon when it speculatively deduces the idea of God, it is not apparent why in Darwin's eyes it should merit greater confidence when it speculatively denies it, given that in neither case can there be any experimental proof. Content with having wrested away from speculation another portion of its domain, the scientist falls back on himself, not daring to destroy that domain completely. To do so, however, would have necessitated not only an acknowledgment of the social character of all speculative thought, starting with religious speculation (and Darwin, as we have seen, approaches this acknowledgment) but a passage back from the critique of speculation to the critique of society; it would have involved, in other words, a rendez-vous with Marx.

### The Correspondence between Marx and Darwin

But while Marx was in a position to understand and appreciate in all its importance the work of Darwin, by contrast Darwin was not capable of broadening his intellectual horizon to perceive at least the significance of the work of Marx, and in fact let fall the opportunities he was offered to acquaint himself with it. The two letters which Darwin wrote to Marx provide in this respect a significant testimony. The first, dated the 1st of October 1873, was occasioned by Marx's dispatch of a complementary copy of *Capital*, the second edition of which had just been published. It reads:

'Dear Sir,

I thank you for the honour which you have done me by sending me your great work on Capital; and I heartily wish that I was more worthy to receive it, by understanding more of the deep and important subject of political economy. Though our studies have been so different, I believe that we both earnestly desire the extension of knowledge, and that this in the long run is sure to add to the happiness of Mankind.

I remain, Dear Sir, Yours faithfully  
Charles Darwin'

Despite the courteous tone of this letter, it was clearly Darwin's intention to stay clear of a science which was not his own, and it seems in fact that the copy of *Capital* remained uncut in the library of Down House.<sup>46</sup> It would not, however, be fair to attribute this fact to bias or ill-will: after all, Marx's work is not suitable reading for 'amusement', like Malthus's *Essay*, and demanded an intellectual effort that Darwin's mind, virtually devoid of economics or philosophy, was not equipped to undertake. Other preoccupations, however, must have come into play when Darwin unexpectedly found himself faced with a proposal to link his name publicly with that of Marx. In 1880, in fact, Marx asked Darwin by letter for permission to dedicate Volume II of *Capital* to him.<sup>47</sup> Unfortunately, Marx's letter has not been found, and we lack some of the essential data for clarifying the significance of this inter-

<sup>46</sup> See Barnett's preface to the symposium, *A Century of Darwin*, p. XV.

<sup>47</sup> See *Karl Marx—Chronik seines Lebens in Einzeldaten*, Moscow 1934, p. 379.

esting episode in full. Darwin's reply, declining Marx's offer, has however been preserved.<sup>48</sup> The letter is dated 13 October 1880:

Private

Dear Sir,

I am much obliged for your kind letter and the enclosure. The publication in any form of your remarks on my writings really requires no consent on my part, and it would be ridiculous in me to give consent to what requires none. I should prefer the Part or Volume not to be dedicated to me (though I thank you for the intended honour) as this implies to a certain extent my approval of the general publication, about which I know nothing. Moreover though I am a strong advocate for free thought on all subjects, yet it appears to me (whether rightly or wrongly) that direct arguments against Christianity and theism produce hardly any effect on the public; and freedom of thought is best promoted by the gradual illumination of men's minds, which follows from the advance of science. It has, therefore, been always my object to avoid writing on religion, and I have confined myself to science. I may, however, have been unduly biassed by the pain which it would give some members of my family, if I aided in any way direct attacks on religion. I am sorry to refuse you any request, but I am old and have very little strength, and looking over proof-sheets (as I know by present experience) fatigues me much.

I remain, Dear Sir, Yours Faithfully,  
Ch. Darwin'

### The Contemporary Context

Although in this letter Darwin seems preoccupied solely with the relations between science and religion, it is probable that the reasons for his negative reply to Marx's request, as also the reasons for the request itself, are to be sought in other circumstances which are not explicitly apparent here. To start with, it should be noted that in 1880, although Marx had recommenced working on the continuation of *Capital*, the publication of Volume II was anything but near. There was not yet a final draft (nor, of course, would there ever be), nor were any printer's proofs in preparation. The problem of a possible dedication, with the proposal to send Darwin in due course the proofs to read, was not therefore posed in an immediate way. Marx's inquiry had in all probability a less contingent purpose. For the possibility of establishing on scientific ground the relations between Darwinism and socialism, if accepted by Darwin, would have finally discouraged the dilettante polemic which was developing in those years, and was to continue for several decades, with equal superficiality on the part of scientists and

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<sup>48</sup> Darwin's first letter to Marx in 1873 was published by Edward Aveling in 1897 in his article in *Neue Zeit*, 'Charles Darwin und Karl Marx—eine Parallele' (which appeared simultaneously in *New Century Review* and *Devenir Social*). Darwin's second letter of 1880 was published for the first time in the Soviet journal *Pod Znamenem Marxizma*, 1931, No. 1–2. The originals of both letters are now kept at the Institute of Marxism-Leninism in Moscow. Keith in his *Darwin Revalued*, cites the second letter in another version that is probably a retranslation into English from a previous translation into another language.

socialists.<sup>49</sup> The onset of this polemic went back to 1877 when Virchow, in order to justify his hostility to Darwinism in the most vehement way at the Munich Congress of German naturalists, did not hesitate to warn that it 'led directly to socialism'. To defend Darwin from the superficial and malicious criticism of Virchow, another great scientist like Haeckel found no better solution than to attack socialism, eventually advising right-thinking statesmen to spread Darwin's theory of evolution 'as the best antidote to the absurd egalitarian theses of the socialists'. The political tendency of Darwinism was, he claimed, in fact neither socialist nor even democratic, but aristocratic. 'The theory of natural selection teaches', said Haeckel, 'that in the life of humanity, as in that of plants and animals, it is only a small privileged minority that always and everywhere manages to live and grow; the immense majority, on the contrary, suffers and succumbs more or less prematurely.' This was the ideological road that was promptly taken by the most reactionary 'Social Darwinists' to justify imperialist wars and the exploitation of the majority by a minority.<sup>50</sup> But even the Darwinian socialists showed little sense or judgment. Imbued with positivist culture, even when they professed themselves Marxists, they would not abandon the bad habit of finding new proofs for socialism in the natural sciences, an aberration deplored by Engels.<sup>51</sup> Appropriating the Virchow-Haeckel polemic, they had no hesitation in mechanically inverting the terms of the controversy and basing themselves on the scientific authority of Virchow to use in favour of socialism the arguments advanced by the German scientist against Darwinism.<sup>52</sup>

Compared with this superficiality, Darwin's caution appears subjectively justified. On the other hand, knowing Marx only by name, he must have feared that if he accepted the dedication of a book by a socialist, he would nourish new misunderstandings. Yet in this way Darwin's very prudence and his tendency to agnosticism—which affected not only the problem of religion, but all other questions outside

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<sup>49</sup> The literature on the problem (ill-conceived) of the relationship between socialism and Darwinism is extremely large. The weightiest, although somewhat dubious, volume is Ludwig Woltmann, *Die Darwinische Theorie und der Sozialismus*, Düsseldorf 1899.

<sup>50</sup> For the reactionary character of Social Darwinism, see Rudolf Gottschalk, 'Darwin und der Sozialdarwinismus', in *Deutsche Zeitschrift für Philosophie*, 1959, No. 4, pp. 521–39. Some information is also provided in O. Barie, *Idee e Dottrine Imperialistiche nell' Inghilterra Vittoriana*, Bari 1953, pp. 248 ff. There is a very broad and penetrating—if incomplete—analysis of German Social Darwinism in Georg Lukács, *Der Zerstörung der Vernunft*, Neuwied 1962, pp. 591–605.

<sup>51</sup> See also Engels's comments on Büchner, *Dialectics of Nature*, pp. 202, 205.

<sup>52</sup> See, for example, Bebel in his popular work *Woman and Socialism*, London 1904, and the Italian Enrico Ferri in *Socialismo e Scienza Positiva (Darwin-Spencer-Marx)*, Rome 1894, p. 19. Labriola's comment that Ferri's work had encountered 'little response' (*Saggi sul Materialismo Storico*, p. 232) was not wholly accurate. It was translated into numerous languages, and was praised by Bebel himself in a subsequent edition of his own book, in which he declared himself in 'complete agreement' with Ferri. Some criticisms of Ferri's work can be found, however, in the journal *Der sozialistische Akademiker*, as well as in the two reviews mentioned by Labriola. In any case, Ferri did not invent the 'Trinity Darwin-Spencer-Marx'; it was already widely current in the socialist culture of the period, and was introduced and defended in Italy by Napoleone Colajanni in a book (*Il Socialismo*, Catania, 1884) which directly inspired Ferri.

his own field of research—objectively encouraged the superficial eclecticism of Darwinist culture in general. Thus it proved possible in turn to combine Darwinism with religion,<sup>53</sup> with imperialism and racism, with socialism, with the tritest positivist banalities, with the most contrary ideological and philosophical tendencies, with Spencer or with Nietzsche. The scientific spirit, which in the second half of the 19th century had seemed destined to penetrate all fields of knowledge, could not but be finally compromised by such eclecticism. Thus was revealed the illusion into which Darwin had fallen when he trusted in the spontaneity of intellectual progress, in the ‘gradual illumination of men’s minds which follows from the advance of science’. While scientific advance in fact continued to be rapid, the cognitive value of science was at the same time increasingly questioned, until eventually the ‘eternal values of the spirit’ were allowed to return to the fray and to celebrate new triumphs, while scientists, sequestered within their specializations, were relegated to a subordinate function within early 20th-century culture.

The sole alternative to this process of involution was seen by Marx and Engels in a return to the best philosophic tradition, understood as the ‘experimental history’ of thought: of the real thought necessary to the art of operating with concepts (Engels). Hence their partial revaluation of the Hegelian dialectic, indicated very explicitly by Marx and developed by Engels in ways which can seem excessive if we do not bear in mind this historical need to reassert the rigour of rational thought, without which science is degraded to a purely instrumental value, available for all uses. Today, the interest of the theme of the relationship between Marxism and Darwinism in the superficial traditional terms of eclectic integration (as formulated by Bebel and Kautsky, by Bernstein and Lafargue, as well as by our own Enrico Ferri) has naturally expired. But at a time when new scientific advances risk following the same parabola as those of the 19th century, with the aid now of neo-positivist agnosticism, there is every reason for us to ponder once again this first historical example of a new conception of the relations between philosophy and science, between natural sciences and social sciences.

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<sup>53</sup> In Italy, for example, Darwinism was first introduced in a guise that reconciled it with religion, which provoked mistrust on all sides. See the amusing description of the lecture given at Turin in 1864 by De Filippi, a professor of zoology at that university, cited by Montalenti in his introduction to the recent Italian edition of *The Origin of Species* (Turin 1959). Later, this presumptive reconciliation was more or less tacitly accepted by virtually all religious confessions, including Catholicism, while the fiercest anti-evolutionist zeal continued to be typical of their propaganda for ‘simple people’.