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## *Conceptualising Biology: the Contribution of Herbert Spencer*

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The dissemination of Darwinism, while undoubtedly leading to a major revolution in scientific, ethical and social thought, raises many historical difficulties. Darwin's ideas were constantly changing, and Darwin was himself part of a broader movement of evolutionary thought. Thus the relations between Darwin and Darwinism are historically complex, letting alone an assessment of their impact. Darwinism can be studied at the rarefied level of scientific theorists, or at a popular level of materialist debates on mind, human origins, sexuality and political order. Herbert Spencer has often been seen as a vulgariser of Darwinism and as launching a crude and cruel form of Social Darwinism. My aim will be to demonstrate some of Spencer's sophistication and originality in his conceptualisation of biology.

The "social organism" is a term which achieved widespread currency throughout 19th-century Europe, yet its meanings need to be specified through intellectual exchanges, and viewed as part of whole systems of thought. Although Spencer has often been seen as a vulgariser of Darwinism, and as guilty of disseminating a crudely individualist creed of "the survival of the fittest" in the United States, a European view of Spencer suggests that he made substantial and original contributions to biological thought. Moreover, Spencer was in many ways representative of a new wave of interest in biology as a synthetic science which integrated both the physical and social sciences on a distinctively organic basis. During the Thatcher years, Spencer's critique of the state became the object of serious attention among political scientists. They were less appreciative of Spencer's evolutionary interests in co-operative social processes. Robert Richards in his *Darwin and the Emergence of Evolutionary Theories of Mind and Behaviour* (1987) comments that "Herbert Spencer's intellectual stock has steadily declined since his death in 1903, and there appears no prospect of an immediate upturn." (p. 243) Richards highlights Spencer's contributions to debates on mental factors in evolution: but Spencer's fundamental contributions to the understanding of debates on form and function, animal physiology and embryology remain undervalued.

### **1. The Making of Biology**

While biology achieved a central position in the mid-nineteenth century, it

is easy to overlook that the concept of biology as an autonomous science was introduced in the 1790s, and gained broader circulation thanks to Lamarck who from 1802 developed the concept of "biology" as a unifying study of all forms of life including the human and social; Comte's classification of the sciences gave further impetus to the term. The term "biology" was introduced by an obscure *Naturphilosoph* Theodor Roose in 1796, before being taken up by others, notably Lamarck.<sup>1</sup> Comte's classification of the sciences placed biology next to sociology, even though Comte regarded social processes as irreducible.

As Pietro Corsi and Adrian Desmond have made abundantly clear, British debates on species and transformism were really an epiphenomenon of what was going on in France and Germany.<sup>2</sup> John Stuart Mill considered whether economics could ever find the same scientific legitimacy basis as physics and chemistry. Yet Mill neglected the biological, and it was no wonder that Mill's brave new science of "ethology"- the study of moral psychology - could so easily be reinterpreted in positivist terms of animal behaviour.<sup>3</sup>

Comte's rapprochement between biology and sociology was essential for the launching of the concept of "the social organism". Although published between 1830 and 1842, it was during the 1850s that John Stuart Mill, George Henry Lewes, George Eliot, Harriet Martineau and the avowedly positivistic Frederick Harrison - among others - spread Comte's creed. Comte's ideas were tinged with an attractive aura of a secular religion, adding to their interest for lapsed dissenters like Martineau or Spencer. Debates on evolution and positivism thereby became entangled around the issue of whether there was a biological basis to social science. Yet Spencer as the major disseminator of the concept of the social organism in Britain always denied any debt to Comte, although Mill's treatise *Auguste Comte and Positivism* demonstrated that while their solutions to such problems as the classification of the sciences differed, they occupied common territory. For in seeking to launch a social science, biology and kindred areas like psychology and phrenology were crucial. It was Marian Evans (alias George Eliot), who made Spencer read the *Philosophie Positive* in 1852.<sup>4</sup> In 1853 Harriet Martineau published her translation of Comte. By 1854 Spencer

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1. M. Dittrich, 'Progressive Elemente in den Lebensdefinitionen der romantischen Naturphilosophie', *Communicationes Historiae Artis Medicalis*, vol. 73-4 (1974) 73-85.

2. P. Corsi, 'The Importance of French Transformist Ideas for the Second Volume of Lyell's *Principles of Geology*', *British Journal for the History of Science*, vol. 11 (1978) 221-44. P. Corsi, *The Age of Lamarck. Evolutionary Theories in France 1790-1830* (Berkeley: University of California Press, 1989). A. Desmond, *The Politics of Evolution. Morphology, Medicine, and Reform in Radical London* (Chicago: Chicago UP, 1989).

3. J.S. Mill, *A System of Logic. Ratiocinative and Inductive* (London: Routledge, 1892), chpt 5 'Of Ethology, or the Science of the Formation of Character', pp. 519-28. The text was written between 1837 and 1841.

4. H. Spencer, *An Autobiography* (London: Williams and Norgate, 1904) vol.1, p. 398.

recorded "I am busy reading Comte and am building up quite a case against him." While taking over some of Comte's terms like "altruism" and "sociology", Spencer believed "the only indebtedness which I recognise is the indebtedness of antagonism".<sup>1</sup>

M.W. Taylor's study of *Man versus the State* suggests that Spencer's ideas are applied physics, much inspired by new discoveries concerning thermodynamics.<sup>2</sup> Spencer's dictum that "every cause produces more than one effect" suggests that there were crucial sources of Spencer's philosophical system, which were distinctively biological.<sup>3</sup> In making this claim, I do not wish to assert that Spencer was a natural scientist in a twentieth-century sense, but that he was part of a crusading movement which applied natural laws as a critique of revealed religion. In this sense I see no inconsistency between the claim of Mark Francis that Spencer was a religious leader, and the locating of Spencer among a sect of biological reformers of society.<sup>4</sup> In 1851 George Henry Lewes drew his attention to Milne Edwards' concept of "the physiological division of labour" - and incidentally it should be noted that Milne Edwards was a co-editor of Lamarck. In 1851 Spencer was invited by John Chapman to write a review of Carpenter's *Physiology*. In doing so he came across von Baer's law of development from the homogeneous to the heterogeneous - this conceptual scheme could be applied to evolution as well as to embryology.<sup>5</sup> Another indication of a distinctively biological approach is that Spencer stuck to his 1852 definition of life as "the co-ordination of actions", formulated in 1852 when he began to write for the *Westminster Review*. (Significantly, the *Review* was first edited by J.S. Mill, and by 1852 was in the capable hands of John Chapman and Marian Evans.) Spencer's essay, "The Social Organism" of 1860 drew on embryology and - quite distinctive from Comte - cell theory, and the associated analogy between the cell and the individual in society. That Spencerian biology was not reducible to the laws of physics was shown by his embryology: he backed the epigenetic theory of growth as a process of continuous unfolding rather than a process of simple expansion of preformed parts (confusingly referred to by embryologists as a theory of evolution). Spencer rightly looked back to such Germans as Goethe and C.F. Wolff as laying the basis in embryology for his law of progress. Spencer's belief in the mutual dependence of unlike parts owed much to von

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1. H. Spencer, *An Autobiography* (London: Williams and Norgate, 1904) vol.1, pp. 444-6.

2. M.W. Taylor, *Men versus the State. Herbert Spencer and Late Victorian Individualism* (Oxford: OUP, 1992), pp.78-85.

3. H. Spencer, 'Progress: its Law and Cause', Spencer, *Essays: Scientific, Political and Speculative* (London, 1901), p. 37.[first published 1857].

4. Mark Francis, 'Herbert Spencer and the Mid-Victorian Scientists', *Metascience*, vol.4 (1986) 2-21.

5. H. Spencer, *An Autobiography*, vol. 1 pp. 384-5.

Baer's conceptualisation.<sup>1</sup> Spencer continued to develop comparisons between individual [biological] organisms and social organisms.<sup>2</sup> He then transposed these theories into observations on the lack of differentiation in early societies - here he also cited Guizot's historical theories.<sup>3</sup> From this position Spencer was to counter mechanistic and strictly hereditarian biology.

## 2. Spencer's *Principles of Biology*

Spencer's *Principles of Biology* of 1864 was followed by a second biologically much more detailed volume of 1867. He set out to elaborate arguments on co-ordination and synthesis. Asking the key question, "Does life produce organization or does organization produce life?" Spencer saw these as reciprocal qualities. Again he drew on Milne Edwards' theory of the physiological division of labour to consider low and high qualities of organisation.<sup>4</sup>

Spencer argued that transmission of morphological form depended on hereditary units: he spoke of "formative tendencies", each kind of organism being built up of highly complex formative units specific to itself: constructed from certain kinds of molecules, these units had the powers of arranging themselves into the form of a specific organism.

Spencer's approach through cells and embryos was in many ways more accessible to continental researchers than Darwinian field biology or the concept of natural selection. Spencer's grasp of cell theory, debates on the constitution of protoplasm, and the construction of multi-cellular organisms was indeed impressive. There is no need to recapitulate here the arguments of Yvette Conry and others as to why Darwinism was never introduced into France; even such attractive translators of the *Origin of Species* as the liberal and feminist Clemence Royer rendered selection as election. But as Linda Clark has shown in her excellent monograph on *Social Darwinism in France*, ideas of "solidarité" could be attributed to Spencer, who after all had shown that altruism arose spontaneously in advanced societies.<sup>5</sup> Drawing on both Comte and Spencer, in 1877 Alfred Espinas published his thesis, *Des Sociétés Animales*. Espinas was editor with Théodul Ribot of the *Revue philosophique*, founded in 1876, and Ribot translated Spencer's *Principles of Psychology*. Espinas borrowed from Milne-Edwards who had

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1. H. Spencer, *An Autobiography* (London: Williams and Norgate, 1904) vol.1 p. 406.

2. Spencer, *An Autobiography*, vol.1 p. 504.

3. H. Spencer, 'The Social Organism', Spencer, *Essays: Scientific, Political and Speculative* (London: Williams and Norgate, 1901), vol.1, p. 287.

4. H. Spencer, *The Principles of Biology* (London: Williams and Norgate, 1864), vol. 1, pp. 153, 160.

5. Linda L. Clark, *Social Darwinism in France*, (Alabama, 1984), p. 42.

described the living organism as composed of cells grouped into organs executing different functions but co-operating for the well-being of entire organisms.<sup>1</sup> However, Espinasse did not stress Spencer's teachings on the naturalness of the struggle for life. Like Spencer he stressed human progress from egoism to altruism. The zoologist Edmond Perrier was typical in rejecting Social Darwinist notions of struggle, for theories of social solidarity.<sup>2</sup> Ribot wrote in his treatise on *Heredity*, how the Spencerian approach to the State as an organism allowed for an evolutionary morphology of different species of states, each with its own species of national character. Just as organisms assimilate molecules, so states continually gain and lose individuals as their national characteristics evolve.<sup>3</sup> Spencerian psychology was more significant for Ribot in offering a theory of the effects of the nerves on the body than the quantitative studies of Galton.<sup>4</sup> To Ribot and Espinasse one can also add Alfred Fouillée's treatise on social science of 1880, which criticised Spencer for too great an emphasis on the autonomous functioning of organisms thereby resulting in too weak a view of the state. René Worms's work of 1896 on *Organisme et société* which developed the organic analogy in terms of structure, functions, evolution and pathology. Processes of social cohesion are analysed - for example the exchange of goods and the provision of nutrition.<sup>5</sup> Such works were symptomatic of an era of solidarism in which moral philosophy, economics and the biomedical sciences offered an objective basis for welfare measures and ideas of social integration. Spencerian organicist biology fitted well into this ethos, even if Spencerian views of the state required correction.

In his *Principles of Biology* Spencer disagreed with Lamarck's theory of a *sentiment intérieur*, incidentally pointing similarities between the notions of Erasmus Darwin and Lamarck. At the same time Spencer was disposed to accept functional adaptation of use and disuse as a cause of evolution, even though admitting that he did not know the ultimate cause as to why this occurred. Such debates confirmed Spencer's importance in Germany. In the 1860s and 70s it was the German prophet of Darwinism, Ernst Haeckel, who took up Spencer's views. The lively letters between Haeckel and Spencer indicate that Spencer's reliance on cells, embryos and nerves made his ideas especially attractive to Germans seeking an evolutionary basis for social phenomena. Spencer's theory that the more an organism was differentiated, the greater the need for organs of integration made his ideas

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1. Clark, *Social Darwinism*, p.43.

2. Clark, *Social Darwinism*, p. 47.

3. T. Ribot, *Heredity* (London, 1875), p. 108. Ribot, *Contemporary English Psychology* (London, 1873).

4. T. Ribot, *Heredity* (London, 1875), pp. 234-5.

5. F.W. Coker, *Organismic Theories of the State* (New York, 1910).

especially attractive to those seeking a non-selective and non-utilitarian philosophy of social integration. It was ironic that Spencer who opposed public assistance for the poor became identified in France and Germany with benign theories of social solidarity.<sup>1</sup>

In 1893 Spencer's attack on the inadequacy of natural selection launched a crucial debate in European biology, providing a strident critique of the all-sufficiency of natural selection and of Weismann's germplasm theory. Just as Spencer hoped for goal-directed social progress towards altruism, so he allowed for a purposive element in evolution. Spencer has a central role in the rise of neo-Lamarckism at this time: he made a dramatic stand against certain neo-Darwinists who have subsequently been seen as pioneers of modern evolutionary synthesis notably August Weismann. In 1894 Weismann came to Oxford to deliver the Romanes Lecture, when his view of "intra-selection" clashed with Spencer's objection that environment and nutrition were factors in shaping the evolution of coadaptive parts.<sup>2</sup>

Modern evolutionists tend to highlight mechanistic and reductionist strands in biology, overlooking more holistic approaches. That it was an organicist sociologist, Jacques Novicow who coined the term *darwinisme sociale* was symptomatic of an era when it seemed best to purge organicist social thought of natural selection. Similarly, the seriousness which Oscar Hertwig, the Berlin cell biologist, devoted to Spencer's ideas is worthy of attention. Hertwig, a lapsed student of the Darwinist Haeckel, found Spencerian biology useful in formulating his critique of Weismann's Darwinism and of Darwinian based eugenics: Spencer developed an organicist theory of the state drawing on Spencer's theory of correlative development - that the greater the division of labour, the greater the central organs of integration have to be: Hertwig used this philosophy to produce a critique of Social Darwinism and eugenics. Thus this German case shows how Spencerian social theory could reinforce anti-Darwinism.<sup>3</sup> I hope that his position now is less paradoxical than it might at first appear.

Biological programmes of social reform have often been conceptualised as Social Darwinism by which is meant an exterminatory creed of natural selection and "survival of the fittest". The lack of public interest in natural selection - Darwin's distinctive contribution to the evolutionary debates - is

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1. (with P. Corsi), 'Darwinism in Germany, France and Italy', in D. Kohn (ed.), *The Darwinian Heritage*, Princeton: Princeton University Press, 1985, pp. 683-732.

2. Richards, *Darwin*, p.400.

3. Paul Weindling, *Darwinism and Social Darwinism in Imperial Germany: The Contribution of the Cell Biologist Oscar Hertwig (1849 - 1922)* (Stuttgart, 1991). Weindling, 'Ernst Haeckel, Darwinismus and the Secularization of Nature', in J.R. Moore (ed.), *History, Humanity and Evolution: Perspectives in the History of Evolutionary Naturalism* (Cambridge, 1989) pp. 311-327.

Weindling, 'Theories of the Cell State in Imperial Germany', in C. Webster (ed.), *Biology, Medicine and Society 1840-1940* (Cambridge, 1981), pp. 99-155.

well established by Alvar Ellegard for Britain and Yvette Conry for France.<sup>1</sup> While continental interest in Spencer was intense, in the 1870s and 80s, there was little sympathy for the "survival of the fittest", but intense interest in the overall programme of establishing a biological basis for altruistic forms of social science. Spencer made himself all the more palatable to the French by drawing on Lamarckian theories of adaptation. France offers an arena where Lamarckian and organicist biological theories flourished, but by all accounts where Darwinism was weak. This shaped the distinctive French form of eugenics - puericulture - which was environmentalist, Lamarckian and welfare-oriented.<sup>2</sup> Spencer was part of a movement seeking to place the social sciences, history and ethics on a biological basis: to understand this one has to lay aside modern notions of an entrenched division between the social and natural sciences, and to grasp his distinctive formulation of biology as a social entity.

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1. Alvar Ellegard, *Darwin and the General Reader*, Göteborg, 1958 (=Acta Universitatis Gothoburgensis/Gotheborgs Universitets Arsskrift, vol. 64, no. 7), (reprinted, Chicago: University of Chicago Press, 1990). Yvette Conry, *L'introduction du darwinisme en France au XIXe siècle* (Paris, 1974).

2. W.E. Schneider, *Quality and Quantity. The Quest for Biological Regeneration in Twentieth Century France* (Cambridge: CUP, 1990).