KROPOTKIN BETWEEN LAMARCK AND DARWIN: THE IMPOSSIBLE SYNTHESIS

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RESUMEN

El príncipe P.A. Kropotkin (1842-1921) fue el líder mas importante del anarquismo revolucionario de su generación. El fue también un respetado explorador y geógrafo, y escribió una variada serie de libros sobre la revolución francesa, el sistema de prisiones o la literatura rusa. Sin embargo, el es más conocido por su contribución al debate sobre el Darwinismo Social, ejemplificada por su libro *El apoyo mutuo. Un factor de la evolución* (1902). En realidad, Kropotkin estaba tratando de construir su particular versión de la ética evolucionista: una acabada sociobiología consistente con los objetivos revolucionarios. Pero existía un serio obstáculo. La presencia de las leyes de la población maltusianas en el mismo corazón del darwinismo bloqueaban cualquier tipo de progreso en esa dirección. Kropotkin trató de extirpar el aguijón maltusiano haciendo un análisis crítico de la selección natural y proponiendo una síntesis entre Lamarck y Darwin en los años 1910.

El objetivo de este artículo es estudiar los elementos básicos del argumento desplegado por Kropotkin. Se ha prestado especial atención a las críticas dirigidas a las teoría *dura* de la herencia de August Weismann, y a las razones por las cuales la contribución de Kropotkin en este campo ha sido ignorada.

PALABRAS CLAVE: Kropotkin, darwinismo, Lamarck, anarquismo, genética.

SUMMARY

Prince P.A. Kropotkin (1842-1921) was the most important leader of revolutionary anarchism of his generation. He was also a respected explorer, geographer, and wrote a variety of books on the French Revolution, prison systems and Russian literature. However, he is better known for his contribution to the debate on Social Darwinism, exemplified by his book *Mutual Aid. A Factor Evolution* (1902). Actually, Kropotkin was trying to build his own brand of evolutionary Ethics: a complete socio-biology consistent with revolutionary goals. But there was a serious obstacle. The presence of the Malthusian population laws at the very core of Darwinism blocked any potential progress in this direction. Kropotkin tried to extirpate the Malthusian sting by making a critical analysis of natural selection and proposing a synthesis between Lamarck and Darwin in the 1910s.

The aim of this article is to study the basics of the argument deployed by Kropotkin. It has been paid especial attention to the criticisms addressed to the hard heredity theory of August Weismann, and the reasons why Kropotkin's contribution in this field has been ignored.

KEY WORDS: Kropotkin, darwinism, Lamarck, anarchism, genetics.

On January 1919 it was published the last of a series of articles on the relative influence of the direct action of environment and natural selection in the Evolution of organisms. The Editor, in a brief introductory note, expressed his fears about the final fate of the author:

> «Since this article was written, Prince Kropotkin, whose efforts on behalf of the Russian people forty years ago resulted in his imprisonment in the Fortress of St. Peter and St. Paul, has been incarcerated in the same prison by the accursed Bolshevists who now misrepresent that people. The Editor is unable to obtain any news of Prince Kropotkin, but there is only too much reason to fear that he has been murdered in the name of these whom he befriended»[1].

Actually, Peter Kropotkin did not die in 1919. He died from natural causes two years later, semi-exiled in the small town of Dimitrov, while he was trying in vain to finish his long- life project, his book on Ethics[2]. But, even though Kropotkin was not dead in 1919, there is not doubt that the final part of his life was coloured by the bitterness of failure and decline. In 1917, after forty years of exile, Kropotkin came back to his homeland to participate in the Russian Revolution. Revolution triumphed, but that was not his anarchist revolution. The cruel irony is that the series of articles, which appeared in *The Nineteenth Century* during the 1910s, was destined to an analogous fate of failure and neglect. This time, it was in the domains of Science, his other long-life passion. This article intends to explore the reasons of this second failure. This is what I call the impossible synthesis between Darwin and Lamarck.

The biography of this member of the Rurik family, a man born and educated in one of the oldest aristocratic families of Russia, was amazingly many-sided. Page of the Tsar, anarchist agitator, inmate of Russian and French jails, eminent geographer, Humboldtian explorer and member of the British Association for the Advancement of Science, he wrote books, articles and pamphlets on libertarian communism, the French Revolution, prison systems, and the history of Russian literature[3]. But Kropotkin is better known for his reflec-

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[1] KROPOTKIN, P. (1919), «The Direct Action of Environment and Evolution», *The Nineteenth Century and After*, vol. LXXXXV, nº DIII, 70-89; p. 70.

[2] In extremely difficult conditions: GOLDMAN, E. (1932), *Living my Life*, London, vol. 1, pp. 767 and 865.

[3] On Kropotkin's biography see : MILLER, M. A. (1976), *Kropotkin*, Chicago; PLANCHE, F.;DELPHY, J. (1948), *Kropotkine*, Paris; MARKIN, V. A. (1985), *Peter Alekseevich Kropotkin*, Moscow; WOODCOCK, G. and AVAKUMOVIC, I. (1990), *Peter Kropotkin. From Prince to*

tions on Evolution. His book *Mutual Aid* (1902) has been usually portrayed as a classical refutation of Social Darwinism[4]. Kropotkin was very young when he started to be interested by evolutionism. The correspondence with his elder brother Alexander reveals the impression caused by Spencer and Darwin in the brothers' minds during the early 1860s[5]. Obviously, that was not a politically innocent interest. The brothers were reflecting on the potentialities of Darwinism as a weapon against autocracy, in the agitated context of the raising expectations created by the liberation of the serfs[6]. However, Peter Kropotkin had not defined his political profile, sticking at this moment to a vague form of constitutional liberalism.

But the 1860s were also years of change in Kropotkin's life. That is especially true after joining the advanced posts of the Russian army in Siberia, where he thought that he could help more efficiently the forces of reform. However, he soon realised that reform was not possible from within[7]. He became increasingly alienated from the military career, and, to a great extent, from his own class. From the scientific point of view, the geographical and military explorations of eastern Siberia not only credited Kropotkin as a reputed geographer. They provided Kropotkin with an important field experience against which he could contrast Darwinist theories[8].

The 1870s, after the Siberian disillusionment, were decisive in the ideological definition of the Russian prince. The French Commune had a catalyst effect in the prince's mind. Kropotkin went to Switzerland to get a proper knowledge of the Workingmen International. Disappointed by the authoritarian attitude of the Marxist sections, he decided to join the ranks of revolutionary anarchism[9]. Back in Russia, he started a clandestine activity in the famous populist circle of Chaikovskii[10]. After a short time of agitation, the police dissolved the group. Kropotkin managed to escape his imprisonment,

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Rebel, New York and Montreal; KROPOTKIN, P. (1988), *Memoirs of a Revolutionist*, Toronto and London; OSOFSKY, S. (1979), *Peter Kropotkin*, Boston.

[4] See, for instance, HAWKINS, M. (1997), *Social Darwinism in European and American Thought 1860-1945*, Cambridge, p.181.

[5] TODES, D.P. (1989), *Darwin without Malthus. The Struggle for Existence in Russian Evolutionary Thought*, New York, pp. 127-129; KROPOTKIN (1988), pp. 97-98; NETTLAU, M. (1992), «Peter Kropotkin at Work», *The Raven*, vol. 5, nº 4, 379-388; p. 380.

[6] MILLER (1976), p. 66.

[7] *Ibid*. p., 70.

[8] WOODCOCK and AVAKUMOVIC (1990), p. 73.

[9] MILLER (1976), pp. 72-85.

[10] *Ibid*., pp. 86-113.

reaching the coasts of Great Britain in 1876[11]. Although Kropotkin soon acquired an aura of respectability in Britain, his life as agitator was far from finished in the continent. These were years devoted to organisational tasks and theoretical reflection on the every day life of the libertarian movement[12]. There is not sign of how Biology and Politics were being articulated in Kropotkin's mind in those years. In 1882 we have the first indication. It was an obituary of Darwin published in the anarchist journal *Le Revolté*. For the first time, he used part of his basic arguments: sociable species are the most prosperous and progressive; solidarity is the key mechanism used by the species in their struggle against the hostile forces of nature[13].

1883 marked a decisive turning point in Kropotkin's biography. Falsely accused of being member of the defunct International, a group of prominent anarchists were judged in the industrial French city of Lyon[14]. Kropotkin assumed the defence of the group with an exposition of the principles of libertarian communism. The speech was reflected all around Western European press. Thus, Lyon's trial had a boomerang effect for French authorities, giving free publicity to the weakened international anarchism, and consecrating Kropotkin as the leading anarchist figure of his generation. But the years he passed incarcerated had other life-lasting consequences. The first has to do with the readings in jail. It was in the prison of Clairvaux[15], where Kropotkin read the essay of the Russian zoologist Karl Fiodorovic Kessler[16], decisive in the formalisation of his own ideas on the subject. Even more important was the fact of the decisive worsening of the prince's health. He became a sick person for life.

In fact, 1886 marked the death of the agitator and the birth of the theoretician, the anarchist intellectual[17]. Kropotkin was amnestied by the French gov-

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[11] WOODCOCK; AVAKUMOVIC (1990), p. 145.

[12] *Ibid*., pp. 145-199.

[13] KROPOTKIN, P. (1882), «Charles Darwin», *Le Révolte*, 5, 1.

[14] On the Lyon trial: (1983)»The Lyon Trial», *Freedom Anarchist Fortnightly*, vol. 44, nº 2, 4-5; «The Trial of Socialists», *The Times* 9, 10, 12 20 January 1883.

[15] In Clairvaux he shared a cell with Emile Gautier, a French anarchist journalist who was the first to use the term *darwinisme social*: «Prince Krapotkine», *The Times* 29 March 1883, p.6. On Gautier and Social Darwinism: BEJÍN, A. (1992), «Evolution du darwinisme social en France», en TORT, P. (ed.), *Darwinisme et societé*, Paris, 353-360; p. 355.

[16] On Kessler: KROPOTKIN, P. (1987), *Mutual Aid. A Factor of Evolution*, pp. 24-26; TODES (1989), chapter 6; LA VERGATA, A. (1992), «Les bases biologiques de la solidarité», in TORT, P. (ed.), *Darwinisme et societé*, Paris, 55-87.

[17] Kropotkin became the most important source of theoretical inspiration for the anarchist movement. The generalized admiration for Kropotkin' achievements constrained the scope of intellectual debate within anarchist ranks: CAHM, C.; «Peter Kropotkin: Recollections and

ernment, pressed by the public opinion of both shores of the English Channel[18]. He decided to establish his residence in Britain, given the insecurity of his situation of France. Nevertheless, things have changed. His complex status of refugee and his weakened health prevented him to maintain the kind of political activity he was used to. He did not assume any position of leadership within the small native anarchist circle, limiting himself to be a source of theoretical inspiration[19]. However, his life in London suburbia was not entirely anonymous. Kropotkin was an aristocrat who renounced voluntarily to his class condition, a man who escaped from Russian prisons and at the same time a respected geographer. Contrasting with the image of Kropotkin usual in France[20], he became the geographer who resulted to be an anarchist, not the dangerous revolutionary who resulted to be a geographer. In addition, the legendary kindness of the prince became almost a cliché[21]. Understandably, Kropotkin enjoyed an aura of both respectability[22] and romanticism, which proved to be extremely useful. The anarchist prince had access to a public and circles extremely unusual for any other revolutionary anarchists[23]. He wrote not only for *The Times* and *Nature*[24], but also in the probably most popular of

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Criticisms of and Old Friend», in RICHARDS, V, ed., (1965), *Malatesta, His Life and Ideas*, London, 257-268; PERNICONE, N. (1993), *Italian Anarchism 1864-1892*, Princeton, p. 242; NETTLAU, M. (1931), «El comunismo anarquista y Pedro Kropotkin», *La Revista Blanca*, 2ª época, 184, 371-377; p. 376

[18] «France», *The* Times 27, 28, 29 March 1883

[19] CAHM, C. (1989), *Kropotkin and the Rise of Revolutionary Anarchism 1872-1886*; Cambridge, p. 205; Nettlau (1992), p. 385. Kropotkin was the founder of the famous *Freedom* group. It was mainly formed by a small group of middle-class anarchists. It was severely criticized by some anarchists coming from a working-class background: ALDRED, G. (1955), *No Traitors Gait! The Autobiography of Guy A. Aldred*, Glasgow, p. 303; OLIVER, H. (1983), *The International Anarchist Movement in Late Victorian London,* London, p.42.

[20] «France», *The Times* 28 March 1883, p. 3.

[21] NEVINSON, H. (1925), *Changes and Chances*, London, p. 125; RHYS, E. (1931), *Everyman Remembers*, London and Toronto, p. 157; STEWART, W. (1921), *J. Keir Hardie. A Biography*, London, New York and Toronto, p. 122; ROWLER, Ch. (1911), *Fifty Years of Work without Wages*, London, New York and Toronto, p. 154.

[22] «He brought into the embittered anarchist movement a strain of mellow Victorian respectability and personal warmth…»; HARE, R. (1959), *Portraits of Russian Personalities between Reform and Revolution*, London, Oxford, New York and Toronto, p. 342.

[23] SHPAYER-MAKOV, H. (1987), «The Reception of Peter Kropotkin in Britain, 1886-1917», *Albion*, 19, 373-390.

[24] KELTIE, S.J. (1921), «Obituary, Prince P.A. Kropotkin», *Nature*, vol. CVI, nº 2675, 735-736.

the monthly reviews, *The Nineteenth Century*[25]. Even though anarchism was a marginal force in the British political map, the ideas of Kropotkin were extremely important in the formation of the intellectual background of leading figures of the Fabian movement[26], the Socialist League[27], and the emerging ILP[28]. He had continuous contacts with members of the radicalised intelligentsia like Edward Carpenter[29], Patrick Geddes[30], William Morris[31] or George Bernard Shaw[32]. And, at the same time, he kept in touch with the local community of geographers[33].

It did not take a long time to take advantage from such an unusual position for an anarchist. The Great Depression began to show its effects in Britain. Social unrest was especially noticeable in the second half of the 1880s. The inhabitants of the slums periodically rioted in the centre of London. Henry George questioned some of the sacred principles of Political Economy. The feeling of defeat in the industrial struggle against new competitors as Germany or the USA, the upsurge of socialism born from the ashes of the old radicalism[34], the off-feeling popular classes, the Irish question... In this spe-

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[25] The editor of *The Nineteenth Century*, James Knowles, was one of his best personal friends in England. METCALF, P. (1980), *James Knowles. Victorian Editor and Architecht*, Oxford, p. 325.

[26] PEASE, E.R. (1963), *The History of the Fabian Society*, Liverpool and London, pp. 48-49, 52-53, 66.

[27] CALLAGHAN, J. (1990), *Socialism in Britain since 1884*, Oxford, p. 24.

[28] WILLIAM, (1921), p. 122.

[29] ROWBOTHAM, S.; WEEKS, J. (1977), *Socialism and the New Life. The Pesonal and Sexual Politics of Edward Carpenter and Havelock Ellis*, London, pp. 102-103.

[30] MAIRET, P. (1957), *Pioneer of Sociology. The Life and Letters of Patrick Geddes*, London, pp. 67 and 89.

[31] MACCARTHY, F. (1994), *William Morris. A life of Our Time*, London, pp. 544-545.

[32] WEINTRAUB, S. ed., (1986), *Bernard Shaw*: *the diaries, 1885-1897 with early autobiographical notebooks and diaries, and an abortive 1917 diary*, London, pp. 494, 578, 633, 727 and 799.

[33] Kropotkin was in contact with Henry Walter Bates and J. Scott Keltie: KELTIE, S.J. (1921), «Obituary», *Geographical Journal*, vol. LVII, nº 4, 316-319; KELTIE, S. J. (1942), «Peter Kropotkin, Geographer, Explorer, Mutualist»; in ROCKER, R. (ed.), *Centennial Expressions on Peter Kropotkin. 1842-1942*, Los Angeles, 4-6; DICKENSON, J. (1992), «Henry Walter Bates of the River Amazons», *Archives of Natural History*, vol. 19, nº 2, 209-218; p. 210; DICKENSON, J. (1992), «The Naturalists on the River Amazons and a Wider World: Reflections on the Centenary of Henry Walter Bates», *The Geographical Journal*, vol. 158, nº 2, 207-214; p. 212.

[34] LAYBOURN, K. (1997), *The Rise of Socialism in Britain. c 1881-1951*, Thrupp-Stroud-Gloucestershire, pp. 1-17; KROPOTKIN, P. (1988), «1886-1907. Glimpses into the Labour

cific context, Kropotkin dared to say that the «anarchist thinker» follows the «course traced by the philosophy of evolution…»[35]

Scientists, and more specifically, the emerging group of biologists, did not remain indifferent, and spoke loudly offering solutions to the nation's disease. T.H. Huxley proposed reforms in education and social assistance, denouncing the extreme forms of laissez-faire, what he called «administrative nihilism». However, it was not only a strategy devised to show the insufficiencies of the insights of Spencerian ultra-liberalism. More fundamentally, the intention was to curtail the naive and dangerous expectations of socialism, a movement he described as political *rousseaunism*. Thus, the sequence of articles he wrote about the relation between Ethics and Evolution, culminated by the Romanes Lecture[36] in the beginning of the 1890s, had an underlying political script[37]. Following Huxley's argument, Nature could be described as a set of brutal, amoral, processes. It cannot be the foundation of our ethic conceptions. In fact, the moral being, the civilised man, must oppose these blind, amoral forces. Now, Huxley established a contrast between two metaphors: Nature is the jungle, civilisation the garden. It is clear that Huxley was plainly refusing the idea of Society as a mere continuation of Nature, the justification of laissez-faire as a projection of Nature's laws. This is apparently consistent with a new kind of reformist liberalism. However, this liberalism was rather cautious. Nature reappeared to halt socialist pretensions. The persistence of primordial aggressive instincts and the haunting spectre of Malthusian population laws permanently threaten our existence. Both the necessity of the active role of the State, and the acceptance of the inevitability of certain levels of inequality, were justified[38].

Movement in this Country»; in WALTER, N.; BECKER, H. (eds.), *Act for Yourselves. Articles from Freedom 1886-1907*, London, 114-121; pp. 115-117; HULSE, J. W. (1970), *Revolutionaries in London. A Study of Five Unorthodox Socialists*, Oxford, p. 72.

[35] KROPOTKIN, P. (1887), «The Scientific Bases of Anarchy», *The Nineteenth Century*, vol. XXI, nº CXX, 238-252; p. 238.

[36] May 1893.

[37] In this respect I follow the point of view developed by those who see an underlying political script in Huxley's approach to Ethics: HELFAND, S. M. (1977), «T.H. Huxley's 'Evolution and Ethics': The Politics of Evolution and the Evolution of Politics», *Victorian Studies*, vol.20, nº2, 159-178; DESMOND, A. (1997), *Huxley: From Devil's Disciple to Evolution's High Priest*, Reading, Massachussets, pp. 583-599. historiográficas la tomo de: CROOK, P. (1994), *Darwinism, War and History*, Cambridge, pp. 58-59.

[38] Desmond describes with accuracy this delicate balance: «Though a little mutualism might bolster his profesional State bureucracy against Spencer, he knew from experience that

Nothing seems to be more opposed to the Kropotkinian project of construction of a naturalist ethics based on Evolution- the philosophical foundation of libertarian communism. In fact, it can be proved that Kropotkin was beginning to work in this direction even before Huxley made public his position in this issue. The motives were clear. The weakness of the anarchist movement was paralleled by the increasing number of acts of terrorism committed by libertarian individuals. Kropotkin was convinced that a certain degree of violence would be needed to achieve revolutionary goals. But he opposed consistently any act of gratuitous violence in the French anarchist press[39]. In fact, anarchism, *amoralisme*, violence and intellectual and artistic dissent were normally conflated in *Fin-de Siècle* France[40]. Kropotkin's defence of an «anarchist morality», different from bourgeois morality, was both a symptom of his own humanistic beliefs and a device destined to dissociate anarchy from fashionable amoralism. Moreover, ethics was important from the theoretical point of view. Anarchy entails the suppression of any form of legal, political, and religious coercion. This implies that there is something both in human nature and the «natural» interaction of small communities that makes unnecessary any regulation from *outside*[41]. It is obvious that anarchism seemed dangerously dependent on the myth of the original —natural— goodness of the human kind, something that made it the most likely candidate to be dismissed as a form of «political *rousseaunism*». Thus, the kropotkinian basic argument that ethics was based on the primordial social instincts inherited from our animal ancestors had obvious political overtones. As long as this claim was represented as a mere logical development of the evolutionary creed (especially the chapters devoted in Darwin's *Descent* to the origins of moral sense), anarchism appeared not as an unsustainable fallacy but scientifically sound. Moral habits, the real foundations of social life, are installed in the human brain. Religions, law, property, are not necessary to create and sustain social life, because social life is «natural» and anterior[42]. They actually corrupt the underlying sympathetic dispositions of the human kind.

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too much might justify Wallace's and Kropotkin's collectivist ideals –the very targets he was trying to destroy by strengthening Darwinian nature». Desmond (1997), p. 599.

[39] CAHM (1989), p. 206.

[40] See SONN, R. D. (1989), *Anarchism and Cultural Politics in Fin de Siècle France*, Lincoln and London

[41] KROPOTKIN, P. (1882), «La loi et l'Autorité», *Le Revolté*, 7, 1, p.1.

[42] «There is no need of any extraneous or supernatural help or admonition. All the elements of morality are inherent in Nature…»; KROPOTKIN, P. (1897), «Natural Selection and Mutual Aid» in *Humane Science Lectures*, London, 182-186; p.186.

However, this attempt to place evolutionism in the side of revolution was definitely blocked by what Kropotkin saw as the dominant interpretation of Darwinism. From 1890 to 1896, he published a series of articles on this issue in *The Nineteenth Century*[43], assembled as a book in 1902. It was his famous *Mutual Aid. A Factor of Evolution*. Kropotkin was not only concerned by Huxley's[44] public reflections on the relation between evolution and ethics[45]. He launched a generalised attack against what he considered the vast majority of Darwinists. The basics of the argument are well known. He accused what he calls «disciples of Darwin» of limiting their conception to the most brutal aspects of Nature. They only saw the struggle for life in the sense of mutual extermination within the species[46]. Kropotkin admitted certain degree of this sort of struggle, but warns that Darwin also talked about the «metaphoric» or «indirect» struggle for life, describing it as the collective combat that every species sustain against the adverse conditions of the environment. In fact, this kind of metaphoric struggle is much more important in the global economy of nature than the inner struggle within the species[47]. Now, in this prevalent struggle sustained by the vast majority of species against the hostile environment, the fittest are those groups developing in the highest degree the habits of sociability oriented to mutual aid or solidarity within the species[48]. Moreover, sociability creates the conditions for the progress of the highest faculties (morality and intelligence). Thus, the conclusion is that solidarity is not only prevalent in the economy of nature, but the actual progressive mechanism of evolution[49].

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[43] An excellent analysis of *Mutual Aid* in: La Vergata (1992), pp. 68-74.

[44] It should not be excluded an element of personal resentment. Some of the most brilliant British scientists (Wallace and Spencer among others) signed a petition to free Kropotkin from French prisons. Huxley plainly rejected to participate: HYNDMAN, H. M. (1911), *The Record of an Adventurous Life*, Londres, pp. 261-262; Sellers, Edith (1894), «Our most distinguished refugee», *The Contemporary Review*, vol. LXVI, 537-549; p. 548. From a purely intellectual point of view, Huxley had great respect for Kropotkin: Huxley to James Knowles (1 June 1888), in HUXLEY, L. (1903), *Life and Letters of Thomas Henry Huxley*, London, pp. 71-72.

[45] Kropotkin said that he was responding to Huxley's article, «The Struggle for Existence: A Programme», published in the *The Nineteenth Century* (February 1888), KROPOTKIN (1987), p.23. However, the real *targets seem* to be Malthus and Hobbes: KINNA, R. (1992), «Kropotkin and Huxley», *Politics*, vol. 12, nº 2, 41-47; p. 46. More on this issue in MILLER, D. (1986), «Peter Kropotkin (1842-1921): Mutual Aid and Anarcho-Communism» en HALL, J. (ed.), (1986), *Rediscoveries*, Oxford, 85-104; p. 96.

[46] KROPOTKIN (1987), pp. 21-23.

[47] *Ibid*.,p.24.

[48] *Ibid*., pp. 60-61.

[49] *Ibid*., pp. 61,230 y 232.

In the following years, Kropotkin was especially interested in extending more explicitly the argument deployed in the *Mutual Aid* to the domain of ethics. There were good reasons to do so. New enemies threatened the construction of a minimum consensus about the role of morality within the anarchist movement. The burgeoning influence of Nietzsche among the anarchist ranks was part of this story. Kropotkin, in a 1902 letter, made clear his opposition to the advance of Nietzschianism in the libertarian movement[50]. Nietzsche, in his own words, was «strong in his critique of the bourgeois morality and especially Christian charity», but «miserable» when he begun «to sketch the powerful individual»[51]. Nietzsche was no more than a bourgeois individualist[52]On the other hand; philosophical scepticism about the achievements and the social role of Science[53] was in vogue all around Europe. Thus, both Science and solidarity as the basis of ethics and communitarian anarchism were under attack. In 1904 and 1905, Kropotkin responded using his favourite instrument, *The Nineteenth Century*[54]. The articles were not intended solely to conjure the dangers. They were conceived as the introductory part of a specific work on Ethics. In these articles he analysed the influence that sociability and mutual aid had represented in the life and ethical conceptions of primitive groups of humans. He thought that he was following the line indicated by Darwin himself, when he tried to explain in the *Descent* the origin of moral consciousness in human kind invoking the general preeminence among animals of social over individual instincts[55].

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[50] Ruth Kinna claims that Kropotkin's *Mutual Aid* was written to confront the challenge posed by the decline of the anarchist movement and Nietzsche's popularity among the libertarians: KINNA, R. (1995), «Kropotkin's Theory of Mutual Aid in Historical Context», *International Review of Social History*, 40, 259-283. However, Kropotkin was promoting his own brand of *socio-biology* in the mid-1880s, years before those threats were apparent.

[51] Kropotkin letter to Tcherkesoff (4 October 1902) in NETTLAU, M. (1926), «Kropotkin y Nitezsche», *La Protesta*, 250, 2; p.2.

[52] PUNZO, V.C. (1976), «The Modern State and the Search of Community: the Anarchist Critique of Peter Kropotkin», *International Philosophical* Quarterly, vol. XVI, nº 1, 1-32; pp. 17-18. See also NOVAK, D. (1964), «Une letter inéditée de Pierre Kropotkine à Max Nettlau», *International Review of Social History*, IX, 268-285.

[53] Scepticism about Science and return to Christian faith became fashionable among French intellectuals. Kropotkin was especially worried about this new threat: Kropotkin to Jean Grave (9 December 1894) in NETTLAU, M. (1981*), Die erste Blütezeit der Anarchie*, Vaduz, p. 71.

[54] Published in August 1904 and March 1905.

[55] Kropotkin was enthusiastic about Darwin's achievements in this domain: «It is a complete theory on Ethics, deeper than Kant's, and developed in a few pages.» Kropotkin to Gus-

However, he could not continue his work on ethics. The 1905 Russian Revolution, his worsening health[56], and the exhausting amount of work needed to complete his book on the French Revolution, delayed this project. He resumed the work in 1909. But when he was able to do so, he found, «from letters received», that before going any further, he should discuss the question of Darwinian struggle and Mutual Aid from a different point of view. This time implied a critical analysis of natural selection «of the deepest interest just now, when Lamarckism is coming so prominently to the front»[57]. Of course, this question was not new for Kropotkin. In the early 1890s, the Russian anarchist discussed in the pages of the scientific section of *The Nineteenth Century*[58], the merits of the different theories of heredity, and the relative powers of natural selection and the heredity of acquired characters[59]. To have a deeper understanding of the underlying reasons, we have to take into account that Kropotkin had not developed a consistent theory on how mutual aid causes actual evolutionary change before the 1910s. His book *Mutual Aid* contains a long anti- Malthusian argument trying to demonstrate that mutual aid is much more important in *progressive* development than the inner struggle within species. But it says very little about how mutual aid actually produces this sort of *progressive* development. Kropotkin was acutely aware of this difficulty[60]. He went a step further and made public his own ideas in a series of articles published during the 1910s. He found extremely difficult to deal with all the new theories on

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tav Landauer (12 November 1903) in SILBERNER, E. (1977), «Unbekannte briefe Peter Kropotkins and Gustav Landauer», *International Journal of Social and Economic History*, 9, 111-130; p. 118.

[56] Kropotkin to Mr. Skilbeck (20 July 1908), *Papers of James Thomas Knowles*, Westminster City Archives, 716/84/19; KELTIE, S. J. (1942), «Peter Kropotkin, Geographer, Explorer, Mutualist»; in ROCKER, R. (ed.), *Centennial Expressions on Peter Kropotkin. 1842-1942*, 4-6, Los Angeles, p.5; ROCKER, R. (1956), *The London Years*, London, p. 178.

[57] Kropotkin to Mr. SKILBECK, (16 November 1909), *Papers of James Thomas Knowles*, Westminster City Archives, 716/84/23.

[58] KROPOTKIN, P. (1892a), «Recent Science», *The Nineteenth Century*, vol. XXXI, nº CLXXXIII, 743-761; KROPOTKIN, P. (1892b), «Recent Science», *The Nineteenth Century*, vol. XXXII, nº CXC, 1002-1020; KROPOTKIN, P. (1893), «Recent Science», *The Nineteenth Century*, vol. XXXIII, nº CXCIV, 671-689; Kropotkin, P. (1901), «Recent Science», *The Nineteenth Century and After*, vol. L, nº CCXCV, 417-438.

[59] Kropotkin was aware of the political potentialities of Lamarckianism before the 1910s. It could become a useful weapon against Malthusianism: Kropotkin to James Guillaume (12 June 1903), in NETTLAU, M. (1981), *Die erste Blütezeit der Anarchie*, Vaduz, p.74.

[60] Peter Kropotkin to Gustav Landauer (12 November 1903), in SILBERNER (1977), p.114; Peter Kropotkin to Luigi Bertoni (22 March 1912), in *La Protesta*, 8 February 1926.

evolution and heredity, but he felt obliged to confront this new challenge[61]. Peter Bowler has shown the complexity of the period 1890-1910, a period he called «the eclipse of Darwinism»[62]. Natural selection was under the combined attack of different alternative theories and research programmes like Mendelism, Orthogenesis and Neo-Lamarckism. Now, Kropotkin was not completely alone when he had to deal with this complexity. He received the critical advice and support of Marie Goldsmith, a brilliant Russian student of Biology[63], disciple of the French Neolamarckian Yves Delage[64]. Her help was instrumental. Kropotkin was an amateur naturalist of the old school, a complete stranger in the field of experimental Biology[65].

Difficult question. But the real target was pretty obvious. Kropotkin, like many of the Russian naturalists, saw in Thomas Malthus his most hideous *bête noire*[66]. Following the explicit argument of the anarchist prince, mutual aid could not be recognised as the underlying principle of human ethics because biologists resist considering it as the most visible feature of animal life. They did not accept solidarity as a prevalent fact of the Economy of Nature because it contradicts the Malthusian struggle for life, something they see as

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61 The amount of work needed to complete this work caused extraordinary physical and intellectual exhaustion: NETTLAU (1981), p.82.

62 BOWLER, P. (1983), *The Eclipse of Darwinism*, Baltimore.

63 In 1896, Marie Goldsmith, meets Kropotkin in Paris for the first time. Goldsmith was a biologist who completed her Ph.D. thesis in 1915. Her supervisor was Yves Delage: CONFINO, M.; RUBINSTEIN, D. (1992), «Kropotkine savant. Ving-cinq lettres inédites de Pierre Kropotkine à Marie Goldsmith. 27 juillet 1901-9 julliet 1915», *Cahiers du Monde Russe et Soviétique*, vol. XXXIII (2-3), 243-302; pp. 245-246. She was also an active anarchist: AVRICH, P. (1967), *The Russian Anarchists*, Princenton and New York, p. 39.

64 On Yves Delage see: FISCHER, J.L. (1979), «Yves Delage (1854-1920). L'Epigenèse neolamarckien contre la prédétermination weismanniene», *Revue de Synthese*, 95-96, pp. 443-461.

65 There was a major shift towards laboratory-oriented Biology. That was especially true in the emerging genetics community: «William Bateson described their concern thus: 'Disgusted with the superficiality of 'naturalists' *the younger reformers* sit down in the laboratory to the solution of the problem, hoping that the closer they look, the more truly will they see. For the living things out of doors, they care little. Such work to them is all vague.'» HARWOOD, J. (1993), *Styles of Scientific Thought. The German Genetics Community 1900-1933*, Chicago and London, p. 19.

66 In this respect, Kropotkin represented himself as part of this Russian tradition: DELAGE, Y.; GOLDSMITH, M. (1912), *The Theories of Evolution*, London, p. 351; Kropotkin to Marie Goldsmith (15 August 1909) in CONFINO, M. (ed.) (1995), *Anarchistes en exil. Correspóndanse inédite de Pierre Kropotkine à Marie Goldsmtih 1897-1917*, Paris, p. 365.

the real foundation of Darwinist theory of evolution. Even though they are reminded that Darwin in the *Descent* stressed the importance of sociability and sympathetic feelings in the struggle for life and for the preservation of the species, they cannot conciliate this claim with the part assigned by Darwin and Wallace to the struggle between individuals in their theory of natural selection. Kropotkin assumed that this contradiction *does* exist. Malthusianism and prevalence of association contradict each other[67].

Kropotkin tried to respond to this objection by taking a definite position in the debate in the relation between heredity and Evolution. Kropotkin, as a significant part of the Neo-Lamarckian, postulated a peculiar synthesis between Lamarckianism and Darwinism[68], in which natural selection plays a secondary role, being the direct action of the environment and the heredity of acquired characters the real evolutionary mechanisms. He tried to demonstrate, fundamentally, that natural selection of accidentally produced variations could not be responsible for the process of progressive evolution. Alternatively, he showed that the direct action of the environment[69] was more consistent with this sort of *progressive* process. In addition, he tried to demonstrate that the heredity of acquired characters was not a theoretical impossibility but a fact with increasing experimental evidence in favour.

In this move to Neolamarckian waters, one thing is noticeable: he never dropped the banner of Darwinism[70]. The anarchist prince tried to show how his synthesis between natural selection and the heredity of acquired characteristics was simply a step further in the line indicated by Darwin himself. To do

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[67] KROPOTKIN, P. (1910a), «The Theory of Evolution and Mutual Aid», *The Nineteenth Century and After*, vol. LXVII, Nº CCCXCV, 86-107, pp. 86-87.

[68] Kropotkin to Marie Goldsmith (7 April 1915), in CONFINO (1995), p. 488; KROPOTKIN (1919), p. 86.

[69] It seems that Kropotkin was using a terminology closely connected with Herbert Spencer's ideas on this issue. It becomes obvious from the 1890s: «But while it has been proved that Natural Selection must have played a very important part in securing those variations which were useful to the species, Science during the last thirty years, has put forward more and more that other factor, indicated by Lamarck, and which Herbert Spencer has described as direct accommodation to the influence exercised by surrounding circumstances, or adaptations to the environment.» KROPOTKIN, P. (1896), «Anniversary Address. Mutual Aid Amongst Animals», *Transactions of the Hertfordshire Natural History Society*, vol. IX, 1-13; p. 3. More on this similarities: KROPOTKIN, P. (1904), «Herbert Spencer. Su filosofía.I.», *La Revista Blanca*, 134, 417-420; p. 420; JONES, G. (1980), *Social Darwinism and English Thought. The Interaction between Biological and Social Theory*, Brighton, p. 87.

[70] See Kropotkin to Marie Goldsmith (7 April 1915), in CONFINO (1995), p.487.

so, he made a massive use of the published works of Darwin and the correspondence published by Francis Darwin[71]. In Kropotkin's opinion, the main goal of Darwin was to prove that species were not fixed entities. Even though Darwin felt a sort of «paternal predilection» for natural selection, it never transcended the status of a «working hypothesis»[72]. Darwin did not give a more important role to the Lamarckian factors, because there were no proof in favour of the direct action of the environment as a mechanism capable of producing stable varieties and species. More decisively, he was opposed to the Lamarckian ideas of the inherent power of the organisms to progress and the role assigned to the will of animals in their adaptive processes[73]. However, the succession of editions of the *Origin* and Darwin's correspondence reveal a progressive admission of the importance of the direct action of the environment as mechanism of evolution, following the direction indicated by the experimental evidence[74]. This was paralleled by a shift in the role assigned to natural selection.

Kropotkin claimed that Darwin started to abandon the *Origin's* understanding of natural selection in the last decades of his life. The mere *selection* of variations produced independently of the adaptive necessities of the organism was not enough to explain evolutionary change. Adaptations *prepared* by the direct action of the environment became the new raw material for natural selection. In Kropotkin's own words, it becomes «a physiological selection of those individuals, societies, and groups which are best capable of meeting the new requirements by new adaptations of their tissues, organs and habits»[75]. Now, variation is not random anymore[76]. It is adaptive. It affects groups of organisms as a whole[77]. Natural selection is reduced to the elimination of

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[71] «So I have got into it thoroughly, in the form of an analysis of the evolution of Darwin's ideas after the publication of the `Origin of Species'- as it appears from the 5 volumes of his letters.» Kropotkin to Mr. Skilbeck, (16 November 1909), *Papers of James Thomas Knowles*, Westminster City Archives, 716/84/23. See also KROPOTKIN (1910a), p. 87.

[72] KROPOTKIN (1910a), pp. 89-90.

[73] *Ibid*., pp. 94-97.

[74] KROPOTKIN (1919), pp. 72-73.

[75] KROPOTKIN, P. (1910b), «The Direct Action of Environment in Plants», *The Nineteenth Century and After*, vol. LXVIII, nº CCCCI, 58-77; p. 61.

[76] «It ceases to be a selection of haphazard variations…» KROPOTKIN (1910b), p. 61. Kropotkin showed openly his dislike of the idea of haphazard variation as the raw material of evolution from the early 1900s: Kropotkin (1901), p. 424.

[77] «It is not so much a selection of individuals as selection of group of individuals, modified all at once, more or less, in a given directions.» KROPOTKIN (1910b), p. 61.

those individuals —mainly sick[78]—, unable to cope with new environmental challenges. Rather than a creative force, natural selection is now regarded as a sieve[79]. In the animal world it was conceived as the selection of those groups that better exercise their collective intelligence to diminish inner competition, and to combine efforts for the rearing of their offspring[80]. For Kropotkin, it was vital to project this big picture of the old Darwin supporting this vision of natural selection. A *proper* understanding of natural selection is the first unavoidable step to demonstrate that mutual aid does not contradict Darwinism[81].

On the other hand, this preponderant role assigned to the direct action of the environment and the heredity of acquired characters was especially useful to address the traditional objections presented against the natural selection of random variations. In first place, it seems to be more realistic to think that direct adaptation is the prevalent mechanism when we see organisms almost perfectly adapted to their environment. It was difficult to believe that random variation would eventually produce this sort of *perfect* adaptations. In second

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[78] KROPOTKIN, P. (1914), «Inherited Variation in Plants», *The Nineteenth Century and After*, vol. LXXV, nº CCCCLII, 816-836; p. 833.

[79] He started to make public his ideas on natural selection from the 1890s: KROPOTKIN (1893), p. 689. This vision of natural selection as a sieve was shared by the German Biologist Ludwig Plate (1862-1937), Haeckel's successor in the chair of Zoology at Jena. He wrote an important book on the selection theory, being profusely cited by Kropotkin in the 1910s articles. Plate was also promoting a synthesis between Darwinism and Lamarckism. See HARWOOD (1993), p. 107; MAYR, E. (1980), «The Role of Systematics in the Evolutionary Synthesis», in Mayr, E. and Provine, B., eds, *The Evolutionary Synthesis. Perspectives on the Unification of Biology*, Cambridge Mass. and London, 123-136; p. 133; BLACHER, L.I. (1982), *The Problem of the Inheritance of Acquired Characters*, New Delhi, p. 63..Yves Delage supported a similar vision on natural selection: FISCHER (1979), p. 454. In fact, among the critics of Neo Darwinism was rare to find a plain rejection of natural selection *in toto*. It was more common to assign this sort of secondary role to natural selection: «This larger group of critics sees in natural selection an evolutionary factor capable of initiating nothing, dependent wholly for any effectiveness on some primary factor or factors controlling the origin and direction of variation, but wholly capable of extinguishing all unadapted, unfit lines of development, and, in this way, of exercising decisive final control over the general course of descent *i.e.*, organic evolution.» KELLOG, V. L. (1907), *Darwinism To-Day. A discussion of present-day scientific criticism of the darwinian selection theories, together with a brief account of the principal other proposed auxiliary and alternative theories of species-forming*, London, p. 27.

[80] *Ibid*., p.61.

[81] «I need to show that mutual aid does not contradict Darwinism, if we understand natural selection as it should be.» Kropotkin to Marie Goldsmith (3 November 1909), in CONFINO (1995), p. 373. More on Kropotkin's vision of how Darwin understood natural selection: Kropotkin to Marie Goldsmith (7 April 1915), in CONFINO (1995), p. 487.

place, Kropotkin thought that natural selection was unable to generate the kind of directional, cumulative change needed to create divergence and differentiated species. The direct action of the environments fits better in the big picture of cumulative, directional change. In third place, it responds better to the old objection of the «blended heredity». We just saw in Kropotkin's version of Darwinism, that the direct action of the environment produced inheritable changes in animals groups and species as a *whole*. Thus, there was no danger from swamping of new useful characters[82]. But clearly, what Kropotkin found really interesting in Neo-Lamarckism was its utility for tackling his own political and moral objections. The elimination of chance in evolution made easier to think in terms of natural and political progress under predefined lines. And, above all, this particular synthesis removed the main obstacle blocking the construction of a new ethic based on a naturalistic conception of the universe: the «Malthusian idea about the necessity of a competition to the knife between all the individuals of a given species»[83].

Obviously, the big challenge for Kropotkin was to prove that direct adaptations were inherited by the successive generations. The Russian anarchist admitted that there was not conclusive experimental evidence in favour of the heredity of acquired characters even though Lamarckian mechanisms found strong experimental support in plants[84]. In his opinion, the lack of evidence (especially noticeable in animals) was due to the primitive state of the research in this field. That was caused, to great extent, by the distorting effect of the popularity of the theories of August Weismann[85]. As it is well known, August Weismann built a *hard* heredity theory, in other words, a theory that explicitly excluded the possibility of heredity of acquired characters and proclaimed the «all-sufficiency» of the natural selection of random variations[86]. His the-

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[82] KROPOTKIN (1910b), 58-60.

[83] KROPOTKIN (1919), p. 89.

[84] Kropotkin to Mr. Skilbeck (14 April 1910), *Papers of James Thomas Knowles*, Westminster City Archives, 716/84/30.

[85] On Weismann see: MAYR, E. (1985), «Weismann and Evolution», *Journal of the History of Biology*, vol. 18, nº 3, 295-329.

[86] Weismann ideas were opposed by Herbert Spencer: CHURCHILL, F.B. (1978), «The Weismann-Spencer Controversy over the Inheritance of Acquired Characters», in FORBES, G. (ed.), *Human Implications of Scientific Advance. Proceedings of the XVth International Congress of the History of Science*, Edinburgh, 451-464.

ory, a synthesis of cytology and evolutionist theory[87] stated that there was in the body a separated germinal substance, the *germinal plasm*, responsible for the transmission of hereditary information from generation to generation. Weismann claimed that there was rigid distinction between body and the potentially immortal germinal cells[88], being the hereditary information transmitted by the latter. In fact, the body was the mere host of this germ plasm. The possibility of somatic changes affecting the germ plasm was plainly rejected[89].

Kropotkin soon realised the importance of the threat represented by Weismann[90]. In fact, he labelled his articles published in *The Nineteenth Century* during the 1910s as his «anti-Weismann polemic». The problem is that Weismannism seemed to have a large group of supporters within British academia. In one letter he reflected this sense of isolation writing: «on this point I am in war with the English universitarians»[91]. And Kropotkin tried to make his best to win the war. First of all, he attempted to turn the tables. The Neo-Darwinian Weismann was not a true Darwinist. Kropotkin found in the «germinal plasm theory» a teleological element incompatible with truly materialistic theory of Evolution. In the immortal germ plasm he saw reflected the Hegelian idea of the «matter endowed with an immortal soul». Kropotkin claimed that this was the kind of unscientific philosophy Darwin had had to

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87 In this respect he was following the synthetic way of thinking of Darwin, Haeckel and Spencer: HODGE, M.J.S. (1989), «Generation and the Origin of Species: A Historiographical Suggestion», *British Journal for the History of Science*, 22, 267-281, p. 274.

88 HODGE (1989), p. 274.

89 Actually, Francis Galton had previously formulated the idea of the continuity of the germ plasm. The main contribution of Weismann, from the biologist's' point of view, was his solid attack against the inheritance of acquired characters: TEICH, M. (1990), «The Unmastered Past of Human Genetics» en TEICH, M.; PORTER, R. (eds.), *Fin de Siecle and its Legacy*, Cambridge, 296-324; p. 313.

90 Presumably, Kropotkin obtained a considerable amount of information about Weismann from Marie Goldsmith. Yves Delage, mentor of Goldsmith, was one of the scientists who better understood Weismann theories: FISCHER (1979), p. 450.

91 Kropotkin to Luigi Bertoni (5 July 1913) in *La Protesta,* 8 February 1926. Weismann was more influential in England than in the continent: CHURCHILL (1978), p. 462. One of the most relevant English Neo Darwinists was E. Ray Lankester. He entered the fray raising serious doubts on Kropotkin qualification as a Biologist. LANKESTER, E. R. (1910), «Heredity and the Direct Action of the Environment», *The Nineteenth Century and* After, vol. LXVIII, nº CCCCIII, 483-491; p. 484; KROPOTKIN, P. (1910c), «The Response of Animals to their Environment», *The Nineteenth Century and* After, vol. LXVIII, nº CCCCV, 856-867p. 866; Kropotkin (1919), p. 80; Kropotkin to Marie Goldsmith (7 and 16 September 1910), in CONFINO (1995), 396-399.

fight[92]. Secondly, he made use of the most common objections raised against Weismanns' theories. The speculative nature of the theory and the lack of an authentic objective or experimental basis were mentioned[93]. Advances in cytology were used to show the impossibility of the isolation of the germ plasm. The Weismannian conception of the hereditary information confined to the cell nucleus was discredited. There was increasing evidence showing some sort of interchange between the cytoplasm and the nucleus[94]. Moreover, the supposedly splendid isolation of the germ plasm was challenged by recent research revealing connections between *all* the cells of the organism of animals and plants, including germinal cells[95]. On the other hand, the modifications introduced by Weismann in his theory were represented not only as symptom of inconsistency, but as a tacit admission of the possibility of the heredity of acquired characters as well[96].

Kropotkin neglected Mendelism. It was not regarded as an important enemy. He did not show any doubt about the reality of Mendelian ratios[97]. However, he wondered if it would be possible to get the same results obtained by hybridisation, putting the same organisms under some special environmental conditions in the course of several generations. In short, Kropotkin saw Mendelian heredity as a special case of heredity, but he did not consider Mendelism as a theory capable of explaining the whole process of generation. The same could be said about De Vries' mutation theory[98]. Kropotkin claimed that mutation had scant importance in the production of new species. In addition, he thought that mutations or sports, far from being congenital, could be included in a special category of characters acquired by a change of nutrition and afterwards inherited[99].

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92 KROPOTKIN, P. (1912), «Inherited Acquired Characters. Theoretical Difficulties», *The Nineteenth Century and After*, vol. LXXI, nº CCCCXXII, 511-531; p. 517; KROPOTKIN (1919), p. 75.

93 KROPOTKIN (1919), p. 76.

94 *Ibid*., p. 520.Kropotkin was sceptical about the nucleus as the only bearer of hereditary information from the 1890s: KROPOTKIN (1892b), p. 1011.

95 KROPOTKIN (1912), pp. 520-525.

96 *Ibid*., pp. 527-530.

97 KROPOTKIN (1914), p. 828.

98 By 1912s the mutation theory had drawn serious criticisms: ALLEN, G. E. (1980), «The Evolutionary Synthesis: Morgan and Natural Selection Revisited», in MAYR, E.; PROVINE, B. (eds.), *The Evolutionary Synthesis. Perspectives on the Unification of Biology*, Cambridge Mass. and London, 356-384, p. 371.

99 «The consensus of opinion is thus against attributing to mutation an origin quite from the origin of habitus-variations. But what it is so, we have in the so-called `mutations' another

In conclusion, Kropotkin, as most of the Neo-Lamarckians, was not really providing convincing evidence in favour of the heredity of acquired characters[100]. He was much better when he had to analyse the weakest points of the alternatives theories of Evolution and heredity. The inability of the natural selection of random variations to produce the directional, cumulative change capable of creating differentiated species was a common belief among a respectable group of scientists. Certainly, the critiques directed to Weismann reflect both Kropotkin's personal dislike of Weismann and his distaste of everything that sounds Marxist, Hegelian or simply philosophically German. Even before he wrote his 1910s's articles, this dislike was patent. In 1901 Kropotkin portrayed Weismann as the «Karl Marx of Biology», equally «superficial» and prone to make great «generalisations based on a handful of data- metaphysical upon a foundation that does not exist.»[101] However, whatever the personal and philosophical reasons, Kropotkin criticisms were far from being baseless. Weismann's theory was often accused of being speculative and devoid of any experimental evidence[102]. The connection traced by Kropotkin between Weismann's style of thinking and a return to old philosophical or even theological ideas was not uncommon[103]. Oscar Hertwig dismissed Weismannism, describing it as a renewed form of the old preformationism[104]. Even some arguments presented against Weismann that now

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vast category of characters `acquired´ under the influence of a changed nutrition in a new environment, *and inherited*»; KROPOTKIN (1919), p. 85.

[100] Kropotkin acknowledged the difficulty to supply experimental evidence for the heredity of acquired characters: KROPOTKIN (1919), pp. 79-80. The inability of the Lamarckians to provide experimental support was regarded as a serious liability for their position. However, the decisive blow did not come directly from the lack of experimental evidence. The real problem was that the heredity of acquired characters became an unnecessary hypothesis to explain evolution: BURCKHARDT, R. W. (jr.) (1980), «Lamarckism in Britain and the United States», in MAYR, E. and PROVINE, B. (eds.), *The Evolutionary Synthesis. Perspectives on the Unification of Biology*, Cambridge Mass. and London, 343-352; p. 347.

[101] Kropotkin to Marie Goldsmith (2 August 1901), in CONFINO (1995), p. 108.

[102] See GARLAND (1980), p. 364.

[103] This is the case of the French Neolamarckian, Alfred Giard: GOHAU, G. (1979), «Alfred Giard», *Revue de Synthese,* 95-96, 393-406; p. 404.

[104] BOWLER, P. J. (1989), *The Mendelian Revolution. The Emergence of Hereditarian Concepts in Modern Science and Society*, London, pp. 80-81. Weismann was more focused on heredity and the role of cell's nucleous. Hertwig concentrated on the cytoplasm and development: MAIENSCHEIM, J. (1986), «Preformation or New Formation –or Neither of Both?, in HORDER, T. J.; WITKOWSKI, J. A.; WYLIE, C.C. (eds.), *A History of Embryology*, Cambridge, 73-108; pp. 78-79. More on Hertwig's criticisms in: WEINDLING, P. (1981),

appear to be erroneous, were consistent with scientifically sound research programmes. The idea of the cell nucleus as the only bearer of the hereditary information, sanctified by Th. Morgan's chromosomal theory later on, was far from being accepted by the whole scientific community. During the inter-war years, an important group of German and French scientists insisted, like Kropotkin, in the key role of the cytoplasm.

On the other hand, it would be rather *presentist* to blame Kropotkin for not being able to foresee the synthesis of Darwinism and Mendelism. In fact, in the beginning, Mendelism was associated with saltationist theories of Evolution[105]. The evolutionary process would be the result of discontinuous variations or mutations, not the outcome of the natural selection of slight variations. The self-proclaimed defenders of the Darwinian orthodoxy, Karl Pearson and the Biometricians saw Mendelians as fierce enemies of Darwinism[106]. The neo-Darwinian Weismann was not enthused with Mendelism. Moreover, when Kropotkin represented Mendelian heredity as a special case within the general phenomena of generation, he was not alone at all. Many biologists believed that there were two forms of heredity, one Galtonian and one Mendelian[107]. More significantly, an important group of biologists claimed that Mendelian heredity was responsible only for the transmission of unimportant characters. The significant characters were subjected to different

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«Theories of the Cell State in Imperial Germany», in WEBSTER, Ch. (ed.), *Biology, Medicine and Society 1840-1940*, Cambridge, 99-155; pp. 127-131; MAIENSCHEIM, J. (1991), «Epistemic Styles in German and American Embryology, *Science in Context*, vol.4, n° 2, 407-427; pp. 417-418.

[105] This was the main reason for the initial lack of success of Mendelism among the community of naturalists (zoologists, botanists, palaeontologists, etc.). Everything they found seemed to confirm Darwinist insistence on gradualism: MAYR (1980), «Prologue: Some Thoughts on the History of the Evolutionary Synthesis», in MAYR, E. and PROVINE, B., eds, *The Evolutionary Synthesis. Perspectives on the Unification of Biology*, Cambridge Mass. and London, 1-48, pp.12 -13; SAPP, J. (1983), «The Struggle for Authotiy in the Field of Heredity, 1900-1932: New Perspectives on the Rise of Genetics», *Journal of the History of Biology*, vol. 16, n°3, 311-342; p. 321.

[106] Two contrasting points of view on the Biometric-Mendelian debate in MACKENZIE, D and BARNES, S. B. (1979), «Scientific Judgement: The Biometry-Mendelism Controversy», in BARNES, S. B.; SHAPIN, S. (eds.), *Natural Order: Historical Studies of Scientifi Culture*, Beverly Hills and London; OLBY, R. (1988), «The Dimensions of Scientific Controversy: The Biometric-Mendelian Debate», *British Journal for the History of Science*, 22, 299-320. A more recent publication challenging previous assumptions: MAGNELLO, M. E. (1998), «Karl Pearson's Mathematizacion of Inheritance», *Annals of Science*, 55, 35-94.

[107] OLBY (1988), p.316.

forms of hereditary transmission under which the acquired character could be inherited. These relevant characters would be only transported by the cytoplasm, not the cell nucleus[108].

Was the Kropotkinian synthesis impossible because there is something incompatible in the theories of Darwin and Lamarck? Mike Hawkins has defended the absolute theoretical incompatibility between two worldviews: Social Darwinism and Lamarckianism. More recently, D.A. Stack, using a «strict» definition of Darwinian, claims, «There was a irreconcilable tension between Darwinian science and radical or socialist politics»[109]. It is clear that Malthus was an integral part of Darwinism. Thus, Kropotkin's use of Lamarckism in order to remove Malthus of the citadel of Darwinism becomes theoretically implausible. However, things change when we consider Lamarckianism and Darwinism not as immutable theoretical sets, but as social constructions[110]. The meaning of Darwinism was not permanent. It was continuously negotiated, widened, and restricted. Many of the Russian biologists tried to find their way to create a Darwinism without Malthus[111]. On the other hand, platonic distinctions between Darwinism and Lamarckianism do not reflect the complexities of historical reality. Lamarckianism in the form of the heredity of acquired characters and the role of use and disuse was not only present in the founder of the creed, Darwin. It was integral part of the philosophy and research programmes of some of the most prominent *Darwinists*,

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[108] «With the Rise of Mendelian-chromosome theory, many embryologists in the United States and Europe attempted to formulate a compromise between the hereditary role of the cytoplasm and the nucleus. Based on the embryological considerations mentioned above, they claimed that Mendelian Genetics was concerned only with characteristics which did not exceed the framework of the species and that the cytoplasm was concerned with the `fundamental' characteristics of the organisms», SAPP, J. (1987), *Beyond the Gene. Cytoplasmic Inheritance and the Struggle for Authority in Genetics*, New York and Oxford, p. 16. Generally speaking, the biologists interested in a *second* form of heredity -located outside the chromosomes- were those wanting to introduce non selectionist mechanisms of evolution. HARWOOD (1993), p. 105. On cytoplasmic heredity and French Biology: BURIAN, R. M.; GAYON, J.; ZALLEN, D. (1988), «The Singular Fate of Genetics in the History of French Biology», *Journal of the History of Biology*, vol. 21, nº3, 357-402; pp. 379-381.

[109] STACK, D.A. (2000), «The First Darwinian Left: Radical and Socialist Responses to Darwin, 1859-1914», *History of Political Thought*, vol. XXI, nº 4, 682-710; p. 709.

[110] I fully agree with James R. Moore when he claims that Darwinism, rather than having an essential meaning, is «a historical artefact that requires analysis…» MOORE, J. (1991), *Journal of the History of Biology*, vol. 24, nº 23, 353-408; p. 359.

[111] ROGER, J.A. (1960), «Darwinism, Scientism and Nihilism», *The Russian Review*, vol. 19, nº 1, 10-23; TODES (1989); VUCINICH, A. (1988), *Darwin in Russian Thought*, Berkeley

Haeckel, Spencer, and Romanes. In fact, Kropotkin's synthesis could be interpreted as a formal proposal to return to the loosely defined Darwinism of the pre-Weismannian era.

Thus, Kropotkin's failure cannot be explained in terms of the conventional story of the victory of good Science (Darwinism) over bad Science (Lamarckianism). Deep changes in and out of the biologist's community, not the supposed inconsistency of Kropotkin's argument, were responsible for this failure. Synthesis was not inherently impossible. It became impossible. Part of the story is related with the abyss opened between Neo-darwinians and Neo-lamarckians[112]. The fracture of the loose initial consensus was never cured. More decisively, Lamarckism was not anymore a reliable associate of materialism. New elective affinities have been created. Individuals and groups wanting to reintroduce purpose and directionality in evolution used the heredity of acquired characters. But their motives were completely different to Kropotkin's reasons. The idea of the inheritance of the effects of use and disuse created the illusion of living beings directing the evolutionary process using psychological mechanisms. Lamarckism appeared closely linked with those coming from religious positions or philosophical vitalism that found Darwinism unacceptable, repelled by a worldview which —as they felt— reduced the universe to the chaos of purposeless forces[113]. Lamarckism and Darwinism implied not only different programs of research but underlying philosophies fundamentally opposed as well.

In the first decades of the 20th Century, even Lamarckianism appeared too mechanistic for some vitalist philosophers. This is the case of the French philosopher Henri Bergson, extremely popular among the academia and the intelligentsia of Western Europe in the 1910s. In fact, the Bergsonian vitalism eliminated the environment as fundamental factor in the process of adaptation, stressing the decisive role of inner changes[114]. Kropotkin saw the danger of this anti-materialist tendency. His correspondence reflected his deep dislike of a philosophy he felt especially disgusting. Bergson was not «honest»;

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[112] BOWLER (1989), p.53.

[113] Kropotkin was aware of this use of Lamarckianism: «…a number of biologists with a methaphysical mind know as 'Neo-Lamarckians'- appeal to a Hegelian Naturseele in order to explain evolution…»; KROPOTKIN (1910b), p. 77. See Kropotkin to Marie Goldsmith (3 November 1909 and 2 February 1910), in CONFINO (1995), pp. 373, 386-387.

[114] BOESIGER, E. (1980) «Evolutionary Biology in France at the Time of Evolutionary Synthesis», in MAYR, E.; PROVINE, B., (eds.), *The Evolutionary Synthesis. Perspectives on the Unification of Biology*, Cambridge Mass. and London, 309-322, pp. 314-315

the 400 pages of his *The Creative Evolution* were depicted as «400 pages of falsities, subterfuges, nebulous ideas, absurdities, and lack of sense...»[115] It is clear that one of the reasons why Kropotkin never dropped the banner of Darwinism was because he saw it forming integral part of the kind of materialism he worshipped from his formative years in Russia[116]. But, whatever his efforts, Kropotkin could not stop social processes. The mechanist materialism of Vogt, Moleschott or Büchner was definitely abandoned by the Belle Époque intelligentsia.

On the other hand, both the theoretical and institutional developments in Biology were about to ruin the foundation of any possible defence of Lamarckism in the following decades. The emergence of Genetics as a separate discipline was based on the acceptance of a research programme only interested in the transmission of hereditary information[117]. The actual process of how this information was expressed to form the adult was considered out of the boundaries of the discipline. Thus, in Britain, and especially in the U.S, the study of generation, understood as a wide field of research including both transmission of traits from parents to descendants and embryo's development, were losing institutional and financial support. Moreover, the distinction between phenotype and genotype, conceptualised by Johannsen[118], sanctioned the image of the body reduced to the role of a mere host of the hereditary information. The changes of the developing organism cannot alter this information. Thus, the traditional image of the organism as a self-regulated whole was decisively undermined, and with it, the basic assumption underlying not only Kropotkin's ideas on this topic, but Darwin's theory of pangenesis: the idea of hereditary material being someway manufactured by the bodies of the parents. Thus, the phenotype/genotype distinction destroyed the necessary condition of the heredity of acquired characters: the claim that changes affecting parents' bodies would be memorised in the germinal material. However, it is important

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115 Kropotkin to Luigi Bertoni (5 September 1913). See also: Kropotkin to Luigi Bertoni (5 July 1913), in *La Protesta*, 8 February 1926; KROPOTKIN, P. (1913), «La croisade contre la science de *M. Bergson*», *Les Temps Nouveaux*, 23, 2-4.

116 MILLER (1976), p. 28.

117 «By 1926, Morgan had divorced the study of transmission (genetics) completely from the study of development (embryology), in the process restricting the term `heredity' to encompass only the study of the material entities that passed from one generation to the next.» ALLEN, G.E. (1986), «T. H. Morgan and the split between Embryology and Genetics», in HORDER, T .J.; WITKOWSKI, J. A.; WYLIE, C. C. (eds.), *A History of Embriology*, Cambridge, 113-146; p.116.

118 On Johanssen: GOODING, G. (1996), «The Phenotype/Genotype Distinction and the Disappearance of the Body», *Journal of the History of Ideas*, 57, nº3, 525-545.

to remember the limits of this institutional and conceptual revolution in Biology. It affected initially the Anglo-Saxon academic world. A wider conception of heredity, compatible with Neo-Lamarckism, was preserved in France and Germany until the end of Second World War[119].

Crossing the frontiers of biological disciplines, it seems clear that the popularity of Weismannism first and Mendelism after, reflected important changes in the relation of biology and politics in the years before the First World War. In the German case, Paul Weindling has shown how the implications of Mendelism, especially the idea of immutable characters persisting through generations, encouraged a major shift in Biology, favouring the study of the heredity of constant characters. This kind of research contrasted with the Darwinist emphasis on the continuous change in the evolutionary process[120]. Whatever the conservative implications of Mendelism, it is clear that the hereditarianist tide was paralleled by the growing importance of the role of the State in social, economical and political life. Human heredity was not an exception. Eugenics[121], discussed in a rather theoretical level in the past decades, became part of the debates of European and American parliaments, and, finally, in matter of law in the 1920s and 1930s. Here again, Kropotkin saw the danger. He was present at the International Eugenics Congress held in 1912. There, he questioned the right to sterilise the *unfit*, and significantly accused the Congress of ignoring the hereditary transmission of the environmental influence, promoting in this way a false image of both Eugenics and Genetics[122]. But the complaint of a venerable old man was not going to avoid the medical, legal and biological management of human heredity to become a real priority after the Great War.

In fact, the kropotkinian proposal of widening Darwinism to reintroduce Lamarckism was a political anachronism. The restoration of the Darwinism of the 1860s was important for Kropotkin. It is clear that he could have manoeuvred

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[119] SAPP, J. (1986), «Inside the Cell: Genetic Methodology and the Case of the Cytoplasm», in SCHUSTER, J. A.; YEO, R. (eds.), *The Politics and Rethoric of Scientific Method*, Dordrecht, 167-202; p. 176.

[120] WEINDLING, P. (1989), *Health, Race and German Politics between National Unification and Nazism*, Cambridge, p. 232.

[121] On the relation between Genetics and Eugenics: HARWOOD, J. (1989), *British Journal for the History of Science*, 22, 257-265.

[122] KROPOTKIN, P. (1912), «The Sterilisation of the Unfit», *Freedom. A Journal of Anarchist Communism*, 282, 767-77; p. 77; «Eugenics and Militarism», *The Times*, 30 July 1912, p. 4; KROPOTKIN, P. (1912), «The Sterilization of the Unfit», *Mother Earth*, vol. VII, nº 10, 354-357; Kropotkin to Marie Goldsmith (10 July 1912), in CONFINO (1995), p. 431.

more comfortably in this kind of intellectual and political space. Reading Kropotkin correspondence, it is noticeable the nostalgia and the idealisation of the 1850-1870 period[123]. Here, we have to take into account the ideological background that anarchism shared with middle class liberalism of this era: the faith in the powers of self-organisation of communities and individuals, the dislike of State interference, the key role attributed to Science both in technological and educational terms, the promotion of religious dissent reaching the limits of agnosticism, freethinking or even atheism[124]. Most of the Darwinist of the 1860s subscribed this creed. Moreover, in those years it was possible to be a Darwinist and not being completely convinced about natural selection. It was possible to avoid Malthusianism. Generally speaking, this opened the door for a potential socialist reading of Darwinism. However, this fragile consensus did not last. Darwin and Huxley did their best to restrict the sense of Darwinism, precisely because they did not want dangerous associations with materialism or socialism[125]. This is the kind of association that Kropotkin tried unsuccessfully to renew and exploit. More significantly, European middle class had changed. It was not liberal in the old sense of the word. Belle Époque bourgeoisie did not believe anymore in a self-regulating market. Now, the upper middle-class supported protectionism and imperialism. The cult of violence and irrationality were more attractive to the intelligentsia than the old-fashioned faith in Science. The brand of optimistic evolutionism promoted by Kropotkin, became a complete anachronism in the bellicose atmosphere of the 1910s.

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[123] Paralleled by his increasing dislike of the jingoist direction taken by British politics in the early 1900s: Kropotkin to Georg Brandes (12 January 1906), in KRÜGER, P. (ed.) (1956), *Correspondance de Georg Brandes. IV. Notes et references*, Copenhague, 279-282.

[124] «Self reliance, individual initiative, and freedom of action were values shared by anarchists and liberals alike.» SHPAYER-MAKOV (1987), pp. 384-385.

[125] MOORE (1991), pp. 383, 405.