

THE STRUGGLE FOR COEXISTENCE:  
PETER KROPOTKIN AND THE SOCIAL ECOLOGY OF SCIENCE IN  
RUSSIA, EUROPE, AND ENGLAND, 1859-1922

by

ERIC M. JOHNSON

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The following individuals certify that they have read, and recommend to the Faculty of Graduate and Postdoctoral Studies for acceptance, the dissertation entitled:

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Submitted by Eric M. Johnson in partial fulfillment of the requirements for the degree of Doctor of Philosophy  
in History

**Examining Committee:**

Alexei Kojevnikov, History  
Research Supervisor

John Beatty, Philosophy  
Supervisory Committee Member

Mark Leier, History  
Supervisory Committee Member

Piers Hale, History  
External Examiner

Joy Dixon, History  
University Examiner

Lisa Sundstrom, Political Science  
University Examiner

Jaleh Mansoor, Art History  
Exam Chair

## **Abstract**

This dissertation critically examines the transnational history of evolutionary sociology during the late-nineteenth and early-twentieth centuries. Tracing the efforts of natural philosophers and political theorists, this dissertation explores competing frameworks at the intersection between the natural and human sciences – Social Darwinism at one pole and Socialist Darwinism at the other, the latter best articulated by Peter Alexeyevich Kropotkin’s Darwinian theory of mutual aid. These frameworks were conceptualized within different scientific cultures during a contentious period both in the life sciences as well as the sociopolitical environments of Russia, Europe, and England. This cross-pollination of scientific and sociopolitical discourse contributed to competing frameworks of knowledge construction in both the natural and human sciences. I argue that the dominant theoretical framework that emerged in evolutionary sociology – what would become known as Social Darwinism – was an outcome in opposition to Socialist Darwinism rather than one that emerged through empirical evidence. The widespread rejection of Kropotkin’s Darwinian theory of mutual aid in England should be understood within this larger discursive context. As such, my project offers a reconceptualization of scientific knowledge construction by emphasizing the sociopolitical networks upon which consensus is achieved in the public sphere. This dissertation is divided into five chapters beginning with the macroscopic lens of anthropology in the context of Empire before progressing forwards in time but inwards in scope to examine the European socialists’ articulation of Darwinian science as a theory of social change, to the conflict between Social Darwinism and Socialist Darwinism, to the evolutionary mechanisms of cooperation in nature, and finally to the debate over the modes of biological inheritance.

## **Lay Summary**

This dissertation follows the history and intellectual development of Peter Kropotkin whose scientific theory of mutual aid showed how Darwinian evolution could explain cooperation and the origin of morality. By following his journey from prince to naturalist to political radical, it reveals that Kropotkin was part of a transnational network of scientific and political thinkers whose perspective can be defined as Socialist Darwinism. Those figures that would later be defined as representing Social Darwinism originated in their opposition to Socialist Darwinism and through an ongoing debate with them. This demonstrates that political and scientific ideas about evolutionary change were influenced by each other in the late-nineteenth and early-twentieth centuries.

## **Preface**

All of the research in this dissertation was performed by the author, Eric M. Johnson. The research design was conducted by the author in consultation with his supervisor, Alexei Kojevnikov.

An early chapter (not included in this dissertation but summarized in the conclusion) was published. Eric M. Johnson, “Demographics, Inequality and Entitlements in the Russian Famine of 1891,” *Slavonic and East European Review* 93(1), 2015, pp. 81-104. I conducted all of the statistics and wrote the manuscript.

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## Acknowledgements

I first encountered Kropotkin's theory of mutual aid while pursuing a Ph.D. in Evolutionary Anthropology at Duke University. My research focused on the evolutionary mechanisms of prosocial behavior in bonobos (*Pan paniscus*) and I opted to enroll in the Graduate Certificate Program in the History and Philosophy of Science to brush up on my history of evolutionary theory. While rifling through dusty nineteenth-century tomes in the library, I was astounded to discover a contentious debate that mirrored so much of what was still taking place among evolutionary thinkers today. How could cooperative instincts evolve if natural selection only operates on individual reproductive success? If such a trait did emerge, how could it possibly be adaptive when confronted with selfish free riders that accepted their help but offered nothing in return? If the saying tossed around my departmental seminars was true, "Scratch an altruist and watch a hypocrite bleed," how could human morality ever have evolved? Before I knew it, I was presenting papers at history conferences and upending my life to follow an idiosyncratic Russian anarchist on his journey around the world.

After six years studying anthropology and evolutionary biology, I had almost no idea about how to write a history paper. My history of science professor, Seymour Mauskopf, spent considerable time talking with me about my term paper and teaching me how to shift my thinking from the hypothetico-deductive reasoning of science to thinking in terms of historical change. It was entirely thanks to him that my first-ever term paper about the history of science ended up taking me to a workshop in Vienna where I presented my research in front of John Beatty. Had this unique confluence of events never happened, and had John never caught me outside to suggest applying to University

of British Columbia, I might still be chasing down irascible apes with a looseleaf notebook in the stifling heat.

Alexei Kojevnikov and Mark Leier are the other two members of my supervisory committee and I am immensely grateful for their support and patience. Alexei spent countless hours reading various long-forgotten drafts and meeting with me to explain the art of historical research. His background and knowledge in the history of Russian science proved invaluable and the colleagues he put me in touch with introduced me to avenues of research I never could have discovered on my own. The talks I had with Mark discussing Bakunin and the creative destruction of revolutionary anarchism in the nineteenth-century brought the history alive and sent me back to the library filled with excitement about what I might discover next. I will also never forget the enthusiasm and encouragement he expressed after my first conference talk on the Russian famine of 1891. Thank you for that.

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The Faraday Institute for Science and Religion made it possible for me to travel to Russia, The Netherlands, Germany, and London in order to conduct the research

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Finally, I want to thank my family for the immense support and patience they have shown me during the years that I have devoted to this research. My mother and father have always let me know that they love and support me in this monumental task, even if they don't always understand just what it's about. My brothers Glen, Corey, and Kevin have kept me sane through our shared love of Dungeons & Dragons and Erin Ziegenfuss has been there with support and kindness when it was needed most. But most important of all throughout this process has been my partner Shauna and our children

Kaylee and Sagan. Thank you for the dauntless patience you have demonstrated during this endeavor and for putting up with my all-night writing binges and periodic crises of writers block. I love you very much and I say with absolute confidence that I could not have done this without your support.

## Prologue

### Bias in Biology

“Socialists profess to follow Mr. Darwin’s teaching, that the “moral sense is fundamentally identical with the social instincts.” In this sense the words are quoted in an interesting little volume, entitled *A Working Man’s Philosophy*, by *One of the Crowd*, published in this country two years ago. Prince Krapotkine also, in a recent article on the scientific bases of anarchy, remarks that those who share his views endeavour “to deduce the laws of moral science from the social needs and habits of mankind.” That such was the opinion held by the precursors of the revolution in France is well known, and Sir Henry S. Maine, in his work on ancient law, has pointed out the serious error of Montesquieu in having “looked on the nature of man as entirely plastic, as passively reproducing the impressions, and submitting implicitly to the impulses which he received from without,” and in thus greatly underrating “the stability of human nature.” Similarly, in the view of our modern Socialists, a series of social formations, changing according to circumstances, is accompanied by a series of moral transformations, and by a similar transmutation of ideas affecting the law of property, and with every important change in the social organism corresponding changes take place in the conception of morality. Thus the disintegration of society as at present founded on individualism and the gradual creation of associative forms of society tending towards an acceptance of Communism in some form or other are accompanied by a complete revolution in moral science. Egoistic forms of personal and racial morality are displaced by a higher form of “classical utilitarian morality of public life,” until, in the Collectivist Society of the future, the final form of morality is reached in the shape of a universal altruism – a cosmopolitan morality, in which self-interest is altogether unknown.”

- Moritz Kaufmann, “Socialist Philosophy,” *London Quarterly Review* 141(21), October 1888, p. 100.

“The field [of sociobiology] was actually founded 85 years earlier by the leading anarchist thinker Peter Kropotkin, also a natural scientist, in seminal work that led to his classic *Mutual Aid: A Factor of Evolution*, published in 1902. His studies criticised the conclusions on ‘struggle for existence’ drawn by the noted Darwinian T.H. Huxley, who never responded publicly, though in private he wrote that Kropotkin’s prominently-published work was ‘very interesting and important.’ Kropotkin’s Darwinian speculations about the possible role of cooperation in evolution, with their implications for anarchist social organisation, remain about as solid a contribution to human sociobiology as exists today. But somehow this work has not entered ‘the canon’; one can hardly imagine why.”

- Noam Chomsky, “Rollback, Part II”, *Z Magazine*, February 1995.

## Introduction

### Interpreting Darwinism

In February 1860, eighteen-year-old Alexander Kropotkin sent a letter to his younger brother Peter, who at that time was serving as personal attendant to Tsar Alexander II. The burgeoning nihilist explained that he had rejected traditional morality because he estimated only about one in a thousand people bothered to live their lives according to moral rules. Stealing, lying, flattery, or humiliation may have been considered sins in the past, but why should anyone be bothered to obey such outdated dogmas today? Why care about anyone else other than for reasons of self-interest or the fear of punishment? It took nearly a month for Peter Alexeyevich to respond because their father, though he was the owner of a vast estate just outside of Moscow and had ancestral ties to the royal family, was currently in financial straits and couldn't send Peter the allowance necessary to purchase stamps. But when the young prince did reply, he said that he could not agree with the pessimistic view espoused by his brother. At barely seventeen-years-old, he admitted that he could not form an argument to prove him wrong. He just felt that society had for centuries been constructed on a moral foundation and did not think the fear of punishment alone was sufficient deterrent. There had to be something deeper than mere self-interest and fear of reprisal that allowed societies to bond together.<sup>1</sup> Alexander never reached a satisfying answer to this question and ended up taking his own life in a fit of despair, but for young Peter it would become his life's work.

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<sup>1</sup> Letter from Alexander Kropotkin to Peter Kropotkin, February 1860, *Петр и Александр Кротопкины Переписка, 1857-1862* [Peter and Alexander Kropotkin Correspondence] (Moscow: Academia, 1932), pp. 183-88.

What neither brother knew at the time was that such debates were already widespread in England following the publication of Charles Darwin's *On the Origin of Species* three months earlier. In the London *Saturday Review* on Christmas Eve, 1859, it was warned that Darwin's theory on the transmutation of species through the struggle for existence among individuals could challenge the divine basis for the "moral and spiritual faculties of man."<sup>2</sup> Two days later, Darwin's "bulldog" Thomas Henry Huxley in *The Times* attempted to assuage concerns that Darwinian self-interest was in opposition to the "contracted moral world." He assured readers that God's authority over the fixity of species was not unassailable. Whereas many in England were of the opinion that mankind was a single species, American scientists and theologians were in agreement that "the species negro is so distinct from our own that the Ten Commandments have actually no reference to him."<sup>3</sup> Meanwhile, Richard Owen, then-President of the British Association for the Advancement of Science, had just delivered his own critique to the *Edinburgh Review* stating that Darwin's argument led to the conclusion that man is "devoid of soul" and "parallels the abuse of science to which a neighbouring nation, some seventy years since, owed its temporary degradation" (this would be the first of many allusions to come between, not only the French Revolution, but Darwinian "immorality" and the fear of political instability).<sup>4</sup>

It is appropriate that the earliest reviews of *On the Origin of Species* should specifically mention that Darwinism undermined the basis for morality and political

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<sup>2</sup> Anonymous, "Origin of Species," *Saturday Review* 8, December 24, 1859, p. 775-76.

<sup>3</sup> Thomas Henry Huxley, "Darwin on the Origin of Species," *The Times*, December 26, 1859, pp. 8-9. An extended version was reproduced in Thomas Henry Huxley, *Darwiniana: Essays* (London: Macmillan and Co., 1893).

<sup>4</sup> Richard Owen, "Darwin on the Origin of Species," *Edinburgh Review* 111, April 1860, pp. 251-275 (269).

stability while also offering support for racial inequality, as these would be three of the most contentious social issues of the nineteenth century in relation to Darwin's ideas.<sup>5</sup> As it turns out, later in life, Peter Kropotkin would come to be involved in all three. In his 1902 book *Mutual Aid: A Factor of Evolution*, based on a series of scholarly articles published over the previous decade, Kropotkin highlighted the great extent to which Darwin sought to explain human morality from an evolutionary perspective. Likewise, Kropotkin's anarchism was a Darwinian-inspired political philosophy that sought an end to the cycle of revolution that was such a persistent feature of life in nineteenth century Europe (the irony, of course, is that anarchism required revolution in order to achieve this imagined stability). Human society, according to Kropotkin, had its foundation in moral instincts, but these instincts were ill adapted for the social strain experienced in the stratified hierarchies and glaring inequalities of the modern world. It was therefore necessary for society to be redesigned from the bottom-up following scientific principles. The evidence for this new conception of society was to be found in the natural world based on the fact that group-living animals utilized cooperation and prosocial behavior as a strategy in their "struggle for existence." Humans were the inheritors of this biological legacy and represented a difference in degree, but not in kind, with our non-human forebears. In small-scale indigenous societies around the world there were common features of equality, cooperation, and reciprocal altruism that were enforced through

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<sup>5</sup> A fourth would be inequality based on sex. See e.g. Erika L. Milam, *Looking for a Few Good Males: Female Choice in Evolutionary Biology* (Baltimore: Johns Hopkins University Press, 2010); Penelope Deutscher, "The Descent of Man and the Evolution of Woman," *Hypatia* 19(2), 2004, pp. 35-55; Sally Gregory Kohlstedt and Mark R. Jorgensen, "'The Irrepressible Woman Question': Women's Response to Darwinian Evolutionary Ideology," in Ronald L. Numbers and John Stenhouse (eds.) *Disseminating Darwinism: The Role of Place, Race, Religion, and Gender* (Cambridge: Cambridge University Press, 1999); Barbara Gates, *Kindred Nature: Victorian and Edwardian Women Embrace the Living World* (Chicago: University of Chicago Press, 1998); Cynthia Eagle Russett, *Sexual Science: The Victorian Construction of Womanhood* (Cambridge: Harvard University Press, 1989).

consensus rather than by any centralized authority. For Kropotkin, this revealed the basic equality of all peoples and offered hope that a future society could be built following the principles of mutual aid.

Kropotkin built directly from Darwin's argument of instinctive sympathy – what Darwin also referred to as “mutual sympathy” – as the basis for his theory of mutual aid.<sup>6</sup> Kropotkin's notoriety as a political radical was equaled only by the high esteem held for his scientific and scholarly achievements. The discoveries he had made of glacial formations during the Quaternary Period in Russia were received with international acclaim and earned him invitations to join the Imperial Russian Geographical Society, the British Association for the Advancement of Science, as well as a Cambridge University endowed chair in geology (which he turned down because it came with the stipulation that he give up his political work).<sup>7</sup> Kropotkin gave lectures on biology and geology throughout Europe, England, and North America and was an outspoken proponent of an ecosystems worldview in which nature was never static but remained in constant flux. He was a devoted Darwinian from the first publication of *On the Origin of Species*, and it was this scientific background that he held as the basis for a politics of individual liberty and the necessity of social change.

Everything changes in nature, everything is incessantly modified: systems, wages, planets, climates, varieties of plants and animals, the human species — Why should human institutions perpetuate themselves! ... What we see around us is only a passing phenomenon which ought to modify itself, because immobility would be death. These are the conceptions to which modern science accustoms us.<sup>8</sup>

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<sup>6</sup> Charles Darwin, *The Descent of Man, and Selection in Relation to Sex*, Vol. 1 (London: John Murray, 1871), p. 83.

<sup>7</sup> Tatiana Ivanova and Vyacheslav Markin (2008). “Piotr Alekseevich Kropotkin and his Monograph Researches on the Glacial Period (1876),” *Geological Society, London, Special Publications* 301, p. 117-128.

<sup>8</sup> Peter Kropotkin, "Revolutionary Studies," *The Commonweal*, Jan 2, 1892, p. 2.

Following the trajectory of Kropotkin's development, *The Struggle for Coexistence* will make three principal arguments contributing, respectively, to three bodies of scholarly literature and their related debates: A) the historiography concerning Kropotkin's science, B) the broader history about the political and sociological applications of Darwin's evolutionary theory (i.e. Social Darwinism), and, C) the contemporary scientific questions about which Kropotkin's biological writings are directly relevant.

### **Historiography and Kropotkin's Science**

The historiographical literature on Kropotkin's science has treated him as a curious but marginal figure until the last decade and can be characterized as brief summaries of his theory of mutual aid while primarily emphasizing his later writing on Lamarckian heredity and the political implications of his ideas. As Gregg Mitman has documented, while Kropotkin's contributions to Geography and Earth Sciences were highly appreciated by his contemporaries and colleagues, Kropotkin's theory of mutual aid was mostly rejected or ignored by scientists until relatively recently.<sup>9</sup> Some prominent naturalists of his generation, such as E. Ray Lankester, even went so far as to publicly accuse Kropotkin of manipulating science to justify his political ideology and insert the discredited theory of Lamarckian inheritance.<sup>10</sup> This *a priori* rejection of Kropotkin's thesis by English naturalists represents a unique case study to investigate the social construction of knowledge and the interplay between scientific culture and

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<sup>9</sup> Gregg Mitman, *The State of Nature: Ecology, Community, and American Social Thought, 1900-1950* (Chicago: University of Chicago Press, 1992).

<sup>10</sup> E. Ray Lankester, "Heredity and the Direct Action of Environment," *The Nineteenth Century*, Sept. 1910, pp. 483-491.

consensus in a transnational context. Other than the few recent exceptions reviewed below, the historiographical literature has followed this same line of thought and Kropotkin is represented as either a scientific dilettante staunchly defending a Lamarckian perspective in the face of overwhelming contrary evidence or that his biological work served as a scientific justification for his political ideas. Speaking against the prevailing opinion, the evolutionary biologist and lay historian Stephen Jay Gould explained that Kropotkin's theory of mutual aid was empirically cogent, but even he lamented the Russian naturalist's insertion of political prejudice into his scientific theory and concluded that he "did not grasp the full implication of Darwin's basic argument."<sup>11</sup> Even after Gould's partial endorsement (or perhaps because of it), historians of biology still largely adhered to the trend defined by earlier scientists.

In the early literature on the history of Darwinian theory, Kropotkin scarcely appeared. For example, Loren Eiseley's *Darwin's Century: Evolution and the Men Who Discovered It* (1958) offered only a single sentence referencing that Kropotkin identified "co-operative tendencies" in nature while Gertrude Himmelfarb's *Darwin and the Darwinian Revolution* (1959) offered less than a paragraph in his chapter on Darwinism and politics.<sup>12</sup> Michael Ruse made no mention of Kropotkin in his survey *The Darwinian Revolution: Science Red in Tooth and Claw* (1979) while Peter Bowler offered about ten lines in his *Evolution: The History of An Idea* (1984) in which he concluded that Kropotkin's use of Lamarckian heredity was essential or his theory of mutual aid would

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<sup>11</sup> In Gould's case, this was due to Kropotkin's argument that mutual aid was beneficial to individuals but could also confer fitness benefits to social groups. However, Gould admitted that he was primarily following Todes assessment for his conclusion. Stephen Jay Gould, "Kropotkin Was No Crackpot," in *Bully for Brontosaurus: Reflections in Natural History* (New York: W.W. Norton & Company, 1991), pp. 338-9. The essay originally appeared in *Natural History* 97(7), 1988.

<sup>12</sup> Loren Eiseley, *Darwin's Century: Evolution and the Men Who Discovered It* (New York: Doubleday, 1958), p. 348; Gertrude Himmelfarb, *Darwin and the Darwinian Revolution*, (London: Chatto & Windus, 1959), p. 350.

“degenerate into a form of Darwinism” that involved competing groups.<sup>13</sup> Bowler’s most recent edition (2003) changed the wording somewhat but maintained his framing that Kropotkin’s political bias primarily informed his scientific theory.<sup>14</sup> In *The Non-Darwinian Revolution: Reinterpreting a Historical Myth* (1988), Bowler included a few lines about how Kropotkin’s later writing on Lamarckism led toward his conclusion that society should be based on “spontaneous cooperation.”<sup>15</sup> Bowler later offered a succinct dismissal of Kropotkin’s science in *The Eclipse of Darwinism* (1992) due to this emphasis on Lamarckism and connected it with the quite different theory of Scottish clergyman Henry Drummond proclaiming “the enshrinement of love as the driving force in the development of life.”<sup>16</sup> Álvaro Girón’s “Kropotkin Between Lamarck and Darwin: The Impossible Synthesis” (2003) held that Kropotkin’s attempt to bridge the Darwinian and Lamarckian camps was doggedly pursued “in order to remove Malthus of the citadel of Darwinism” and was little more than “political anachronism.”<sup>17</sup>

The portion of the Kropotkin historiography that emphasized the political context of his science has largely concluded that Kropotkin’s commitment to anarchism drove his scientific conclusions. David Roger Oldroyd, in his *Darwinian Impacts: An Introduction to the Darwinian Revolution* (1980), offered half a page in which he concluded that

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<sup>13</sup> Michael Ruse, *The Darwinian Revolution: Science Red in Tooth and Claw* (Chicago: Chicago University Press, 1979, 2003); Peter J. Bowler, *Evolution: The History of An Idea* (Berkeley: University of California Press, 1984), pp. 215-6. The identical passage appeared in Bowler’s “revised” edition. Peter J. Bowler, *Evolution: The History of An Idea* (Berkeley: University of California Press, 1989), p. 228.

<sup>14</sup> Peter J. Bowler, *Evolution: The History of An Idea* (Berkeley: University of California Press, 2003), p. 316.

<sup>15</sup> Peter J. Bowler, *Evolution: The History of An Idea* (Baltimore: Johns Hopkins University Press, 1988), p. 166.

<sup>16</sup> Bowler even referred to this as the “Kropotkin-Drummond thesis.” Peter J. Bowler, *The Eclipse of Darwinism: Anti-Darwinian Theories in the Decades Around 1900* (Baltimore: Johns Hopkins University Press, 1992), pp. 55-6.

<sup>17</sup> Álvaro Girón, “Kropotkin Between Lamarck and Darwin: The Impossible Synthesis,” *Asclepio*: 55 (1), 2003, p. 209 & 212.

Kropotkin was determined to justify his political doctrine by placing it on a scientific foundation.<sup>18</sup> Ruth Kinna, in her Oxford PhD thesis *Anarchist Organization: Kropotkin's Scientific Theory* (1991), took this conclusion a step further and argued that, for Kropotkin, “the direct action of the environment provides a basis on which he can finally justify the introduction of anarchy.” Kinna went on to state, “As Malatesta rightly points out, Kropotkin used scientific theory ‘to support his social aspirations.’”<sup>19</sup> In Mike Hawkins’ *Social Darwinism in European and American Thought* (1998) Kropotkin was included in a short section on “reform Darwinism” where he concluded that the theory of mutual aid was ultimately not based on natural selection.<sup>20</sup> Hawkins held that Kropotkin was primarily interested in the political conclusions of mutual aid but that, ironically, “the biological determinism in Kropotkin’s analysis posed problems for the coherence of his theory.”<sup>21</sup> David Stack’s *The First Darwinian Left* (2003) provided several pages outlining Kropotkin’s scientific theory and likewise argued that it was problematic in that it carried the danger of “reducing human beings to upright apes determined by their ‘nature.’”<sup>22</sup> Michael Ruse’s more recent *Darwinism and Its Discontents* (2006) provided a single line, without scientific context, that Kropotkin thought “the right thing therefore is to abolish governments and to let our natural inclinations take over.”<sup>23</sup> In short, the

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<sup>18</sup> David Roger Oldroyd, *Darwinian Impacts: An Introduction to the Darwinian Revolution* (London: Open Humanities Press, 1980), p. 237.

<sup>19</sup> Ruth Kinna, “Anarchist Organization: Kropotkin’s Scientific Theory,” PhD Thesis, University of Oxford, 1991, pp. 258-62, quotation on p. 262. Also see Ruth Kinna, “Kropotkin’s Theory of Mutual Aid in Historical Context,” *International Review of Social History* 40, 1995, pp. 276-7, 280.

<sup>20</sup> Mike Hawkins, *Social Darwinism in European and American Thought, 1860-1945: Nature as a Model and Nature as a Threat* (Cambridge: Cambridge University Press, 1998), pp. 177-81.

<sup>21</sup> *Ibid.*, p. 179.

<sup>22</sup> David Stack, *The First Darwinian Left: Socialism and Darwinism, 1859-1914* (Cheltenham: New Clarion Press, 2003), pp. 37-40, quotation on p. 40.

<sup>23</sup> Michael Ruse, *Darwinism and Its Discontents* (Cambridge: Cambridge University Press, 2006), p. 205.

early historiography of Kropotkin's biological work has concluded that his science was used as a tool to justify preexisting ideological commitments. The most significant disagreement among these early historians has been that some argue Kropotkin's politics compromised his science, while others argue that his science compromised his politics.

A third interpretation of Kropotkin's science is that it followed in the Russian tradition of natural history and should be understood as part of the anti-Malthusian tradition in evolutionary thought. As Daniel Todes has brilliantly demonstrated in *Darwin Without Malthus* (1989), Kropotkin's scientific arguments had an extensive history in the Russian biological literature dating back to the 1840s.<sup>24</sup> Compared to England, the harsh and unpredictable climate of Siberia and the Russian steppe resulted in a significantly different articulation about how natural communities interacted with each other and with their environment. Likewise, the Industrial Revolution in England with its concomitant naval and maritime commercial dominance, allowed for the panoply of specimens that circulated from remote locales to British scientific centers. In addition to the unique environments accessed by naturalists from Russia and England, the sociopolitical environment of feudal serfdom versus state capitalism promoted differing assumptions about demography, population dynamics, and the response to social change amongst naturalists in both countries. These discordant natural and social environments produced mutually exclusive scientific cultures with conflicting perspectives on the Malthusian assumption in Darwin's theory of natural selection. The English interpretation of Darwin's metaphor of the "struggle for existence" as competitive individualism fits into a

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<sup>24</sup> Daniel P. Todes, *Darwin Without Malthus: The Struggle for Existence in Russian Evolutionary Thought* (Oxford University Press, 1989).

large literature about national style in science.<sup>25</sup> In the Russian context, Todes argues that political tendencies divided between monarchism and a socialist-oriented populism gave rise to “a cooperative social ethos and a distaste for the competitive individualism widely associated with Malthus and Great Britain.”<sup>26</sup> It was for this reason, Todes argues, that the mutual aid tradition “remained an uncontroversial element in Russian evolutionary thought.”<sup>27</sup> Todes therefore situates the Russian history of science as analogous to scientific developments in England at the time in that the sociopolitical context substantially influenced the ideological dimension of scientific ideas.

Largely unexplored on this issue of national style, however, are the transnational networks of scientific exchange. As Eduard Kolchinsky and Erki Tammiksaar have documented for the Russian context with Dittmar Dahlmann and Wilfried Potthoff in the German, the evolutionary tradition in Russia was formed primarily by German scholars that worked in St. Petersburg or by Russians educated in German universities.<sup>28</sup>

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<sup>25</sup> For national styles of science see: Alistair C. Crombie, *Styles of Scientific Thinking in the European Tradition* (London: Duckworth, 1994); Nathan Reingold, “The Peculiarities of the Americans, or Are There National Styles in the Sciences?” *Science in Context* 4, 1991, pp. 347-66; Jean Gayon, “On the Uses of the Category of Style in the History of Science,” *Philosophy & Rhetoric* 32(3), 1999, pp. 233-46. On cognitive styles see: Marga Vicedo, “Scientific Styles: Toward Some Common Ground in the History, Philosophy and Sociology of Science,” *Perspectives on Science* 3, 1995, pp. 231-54; Ian Hacking, “Styles of Scientific Reasoning,” in John Rajchman and Cornel West (eds.) *Post-Analytic Philosophy* (Columbia University Press, 1985, pp. 145-64. For scientific styles within particular disciplines see: Martin Rudwick, “Cognitive Styles in Geology,” in Mary Douglas (ed.) *Essays in the Sociology of Perception* (London: Routledge and Kegan Paul, 1982), pp. 219-41; Mary Jane Nye, “National Styles? French and English Chemistry in the Nineteenth and Early Twentieth Centuries,” *Osiris* 8, 1993, pp. 30-52; Jonathan Harwood, *Styles of Scientific Thought: The German Genetics Community, 1900-1933* (Chicago: University of Chicago Press, 1993); and Malcolm Nicolson, “National Styles, Divergent Classifications: A Comparative Case Study from the History of French and American Plant Ecology,” *Knowledge and Society: Studies in the Sociology of Science Past and Present* 8, 1989, pp. 139-86.

<sup>26</sup> Todes, *Darwin Without Malthus*, p. 168.

<sup>27</sup> *Ibid.*, p. 122.

<sup>28</sup> This is an emerging literature that has begun to be explored in the Russian and German-language historiography of science but has yet to be addressed in English. For Russian see: Eduard Kolchinsky, *Биология Германии и России-СССР в условиях социально-политических кризисов первой половины XX века: между либерализмом, коммунизмом и национал-социализмом* [Biology in Germany and the U.S.S.R and the Conditions of Social and Political Crises in the First Half of the

Nineteenth-century Russian journals regularly published papers in both German as well as French, and there was a widespread transnational exchange of ideas between these three countries. Naturalists in Russia, more so than in England, were integrated into and built upon these transnational networks in their construction of scientific theory. For Kropotkin, in particular, while he received his education and scientific training in Russia, most of his life was spent in Europe and England during which he wrote extensively on scientific developments for publications such as *Nature* and *The Nineteenth Century* (where he also served as scientific editor, taking over from Thomas Henry Huxley). Kropotkin was situated within multiple different transnational scientific and political communities – some overlapping, others not – and this makes any explanation of his ideas relying on a single national style to be incomplete.

However, it is largely as a result of Todes influence that there has been a recent turn in how Kropotkin's science has been interpreted in the historiographical literature. Over the past decade, historians have emphasized that Kropotkin's mutual aid can be understood as an early exploration of the recently reinvigorated "group selection" theory that was part of a larger trend in anti-Malthusian evolutionary thought. Mark Borrello's *Evolutionary Restraints: The Contentious History of Group Selection* (2010) presents

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Twentieth Century Between Liberalism, Communism, and National Socialism] (St. Petersburg: Nestor-Istoriia, 2007); Erki Tammiksaar, "Отношения между наукой и национальностью в Российской империи XIX," [The Relationship Between Science and Nationality in the Russian Empire During the 19<sup>th</sup> Century] in Indrek Jääts and Erki Tammiksaar (eds.), *Проникновение и применение дискурса национальности в России и СССР в конце XVII-первой половине XX вв* (Tartu: Estonian National Museum, 2005); Natalia Sukhova and Erki Tammiksaar, *Александр Федорович Миддендорф, 1815–1894* [Alexander Fedorovich Middendorf, 1815–1894] (Moscow: Nauka, 2005), pp. 66-7; also see Galina I. Lyubina and Elena A. Zaitseva (Baum), "Русская учащаяся молодежь в Гейдельберге в начале 60-х гг. XIX в. [Russian Students in Heidelberg in the Early 1860s], Annual Science Conference, Vavilov Institute for the History of Natural Science and Technology, 2007, pp. 239-43. For German see: Dittmar Dahlmann and Wilfried Potthoff (eds), *Deutschland und Russland: Aspekte kultureller und wissenschaftlicher Beziehungen im 19. und frühen 20. Jahrhundert* [Germany and Russia: Aspects of Cultural and Scientific Relations in the 19th and early-20th Centuries] (Wiesbaden: Harrassowitz, 2004).

Kropotkin as a case study in the early development of evolutionary theories that sought “to understand the transmission and fitness of certain group behaviors.”<sup>29</sup> Borrello challenges earlier historical interpretations that saw Kropotkin as an amateur naturalist and instead emphasizes his deep involvement with the literature and scientific societies in Russia, Europe, and England. Borrello presents Kropotkin’s mutual aid as a precursor to the group selection theory later articulated by the field biologist Vero Copner Wynne-Edwards in the 1960s and 70s, a researcher whose ideas would also be marginalized by his scientific contemporaries. Likewise, Oren Harman’s *The Price of Altruism* (2010) situates Kropotkin as a scientific thinker grappling with similar questions as George Price would in his mathematical model of group selection in the late 1960s.<sup>30</sup> In his chapter on Kropotkin and Huxley, Harman identifies that the Malthusian doctrine of competitive individualism separated the two theorists and placed them at odds with one another. Likewise, Piers Hale has extensively documented similar currents of anti-Malthusianism that existed in late-nineteenth and early-twentieth century England. In his *Political Descent: Malthus, Mutualism and the Politics of Evolution in Victorian England* (2014), Hale documents the extensive network of political radicals – socialists, communists, and anarchists – that were inspired by Darwin’s ideas but who rejected the competitive individualism of Malthus.<sup>31</sup> Hale mentions in passing, but does not pursue, that Kropotkin was immersed within this network of revolutionary thinkers during his time in London. However, along with Borrello and Harman, Hale highlights the deep

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<sup>29</sup> Mark Borrello, *Evolutionary Restraints: The Contentious History of Group Selection* (Chicago: University of Chicago Press, 2010), pp. 30-9, quote on p. 38.

<sup>30</sup> Oren Harman, *The Price of Altruism: George Price and the Search for the Origins of Kindness* (New York: W.W. Norton & Company, 2010), pp. 9-37.

<sup>31</sup> Piers Hale, *Political Descent: Malthus, Mutualism and the Politics of Evolution in Victorian England* (Chicago: University of Chicago Press, 2014), pp. 206-251.

connections Kropotkin maintained with transnational scientific currents and seeks to correct the historical record about Kropotkin's scientific ideas, concluding: "Historians need to take Kropotkin more seriously than they have done to date."<sup>32</sup>

This dissertation contributes to the historiography on Kropotkin's science by taking up Piers Hale's call to engage more deeply with Kropotkin's biological work and makes the following argument concerning the issues raised:

A) This detailed investigation into the development of Kropotkin's scientific ideas argues, in contrast to prior explanations, that his was a project grounded first and foremost in science and where scientific concerns often preceded the political conclusions drawn from it. Kropotkin's science was part of a transnational intellectual movement in the late-nineteenth and early-twentieth centuries that was Russian as well as pan-European and his development can only be understood in the context of that broader trend. Rather than "national style," the development of Kropotkin's science is better understood through the lens of social ecology, in which historical actors are embedded within physical and social environments that have flexible boundaries.<sup>33</sup>

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<sup>32</sup> *Ibid.*, p. 251.

<sup>33</sup> The field is closely related to human ecology and rests on an awareness of the interdependence of the biophysical and socio-cultural domains but is broader in scope. See, for example, James C. Scott, *The Art of Not Being Governed: An Anarchist History of Upland Southeast Asia* (New Haven: Yale University Press, 2009); Amita Baviskar, *In the Belly of the River: Tribal Conflicts Over Development in the Narmada Valley* (Delhi: Oxford University Press, 1997); Guha Ramachandra (ed.) "Introduction" in *Social Ecology* (Delhi: Oxford University Press, 1994); Murray Bookchin, *The Ecology of Freedom: The Emergence and Dissolution of Hierarchy* (Palo Alto, CA: Cheshire Books, 1982); Urie Bronfenbrenner, *The Ecology of Human Development: Experiments by Nature and Design* (Cambridge: Harvard University Press, 1979).

## Social Darwinism and Evolutionary Sociology

According to Richard Lewontin, “Every political philosophy has to begin with a theory of human nature.”<sup>34</sup> While political theorists increasingly looked to the sciences as a basis for their ideas from the 17<sup>th</sup> century onwards, natural philosophers drew their assumptions about the organic world from political ideas percolating in their social environment. This positive feedback loop of ideology and biology was never more blatant than in the debates surrounding the sociological applications of Darwin’s theory of natural selection and the emergence of Social Darwinism as a political theory. Margaret Schabas has argued that Darwin’s work was “a palatable tonic for economists” because his analysis could be readily understood as “classical economics applied to the natural realm.”<sup>35</sup> Likewise, according to Robert M. Young, “Darwinism was an extension of laissez-faire economic theory from social science to biology.”<sup>36</sup> Adrian Desmond and James Moore wrote that, “Darwin’s transference of Malthusian competition from politics to animal populations gave rise to a piece of supposed ‘hard’ science that was then reapplied to society in the *Descent of Man*, bolstered by the bigotry of the day.”<sup>37</sup> In other words, historians of Social Darwinism have perceived a linear relationship between Darwin’s ideas and laissez-faire policies.

Richard Hofstadter, in his highly influential *Social Darwinism in American Thought* (1944), argued that Darwin’s theory, following Thomas Malthus, pitted animals

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<sup>34</sup> Richard Lewontin, *Biology As Ideology: The Doctrine of DNA* (House of Anansi Press, 1991), p. 61.

<sup>35</sup> Margaret Schabas, *The Natural Origins of Economics* (Chicago: University of Chicago Press, 2005), p. 144.

<sup>36</sup> Robert M. Young, “The Impact of Darwin on Conventional Thought,” in A. Symondson, ed., *The Victorian Crisis of Faith* (London, 1970), pp. 13-36; cited in M.J.S. Hodge, “England,” in Thomas F. Glick, ed., *The Comparative Reception of Darwinism* (Austin: University of Texas Press, 1972), p. 16, n. 26.

<sup>37</sup> Adrian Desmond and James Moore, *Darwin’s Sacred Cause* (New York: Houghton Mifflin Harcourt, 2009), p. 368.

against one another in a “struggle for existence” where slight competitive advantages allowed some individuals to leave more offspring than their rivals. The resulting Hobbesian war of all against all was the ideological manifesto of “those who wished to defend the political status quo, above all the laissez-faire conservatives.”<sup>38</sup> According to Hofstadter, Social Darwinism had two key attributes. First, that the catchphrases “struggle for existence” and “survival of the fittest” when applied to human life meant that “the best competitors in a competitive situation would win, and that this process would lead to continuing improvement.”<sup>39</sup> Second, society should be viewed as an organism and, therefore, “could change only at the glacial pace at which new species are produced in nature.”<sup>40</sup>

From these basic criteria, R.J. Halliday built on Hofstadter’s foundation to further define social Darwinists as eugenicists and imperialists. Halliday argues that “Social Darwinism as a political theory and a philosophy of man [is] primarily concerned with the degeneration of the genetic purity of a population and hence with the practical consequences of the breeding of the unfit.”<sup>41</sup> According to Halliday’s definition, rather than being a doctrine of individualism, Social Darwinism was primarily a theory of populations in which laissez-faire capitalism was considered the perfect environment for promoting the most “fit” members of society. Socialism, and collectivism more generally, was shunned as it allowed the unfit to survive and reproduce as the result of welfare programs, therefore reducing the fitness of the population as a whole. Because the State was far from the libertarian ideal and advocates of reform were always a threat,

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<sup>38</sup> Richard Hofstadter, *Social Darwinism in American Thought* (Boston: Beacon Press, 1955), p. 5.

<sup>39</sup> *Ibid.*, p. 6.

<sup>40</sup> *Ibid.*, p. 7.

<sup>41</sup> R.J. Halliday, “Social Darwinism: A Definition,” *Victorian Studies* 14(4), 1971, p. 392; 403.

“socialism was to be resisted and finally dismantled by means of eugenic population control.”<sup>42</sup> Likewise, the Social Darwinist was apt to “justify Imperialism as an indispensable aid to the selection of races [or] as an alternative to domestic reforms.”<sup>43</sup> These four criteria of a competitive laissez-faire ethic, conservative approach to social change, eugenic social policy, and imperial vision makes Social Darwinism, according to Hofstadter, “a kind of naturalistic Calvinism in which man’s relation to nature is as hard and demanding as man’s relation to God under the Calvinist system.”<sup>44</sup> According to Geoffrey Hodgson, ever since Hofstadter first published this work its impact has been far ranging.<sup>45</sup> There have been more than 4,000 articles or reviews mentioning “Social Darwinism” and the term has been applied to figures as far removed in geography and ideology as Herbert Spencer, Theodore Roosevelt, Mark Twain, and Adolf Hitler.<sup>46</sup> That such diametrically opposed ideologies as Spencer’s anti-State, anticolonialist philosophy and Roosevelt’s “big stick” imperialism should be under the same umbrella (not to mention an American humorist and Nazi dictator) suggests there is a serious definitional problem that needs to be resolved.

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<sup>42</sup> Ibid., p. 399.

<sup>43</sup> Ibid., p. 391.

<sup>44</sup> Hofstadter, *Social Darwinism*, p. 10.

<sup>45</sup> Geoffrey Hodgson, “Social Darwinism in Anglophone Academic Journals: A Contribution to the History of the Term,” *Journal of Historical Sociology* 17, pp. 428–463.

<sup>46</sup> Hofstadter, *Social Darwinism*, p. 20; David H. Burton, “Theodore Roosevelt’s Social Darwinism and Views on Imperialism,” *Journal of the History of Ideas* 26(1), pp. 103-118; Sherwood Cummings, “Mark Twain’s Social Darwinism,” *The Huntington Library Quarterly* 20(2), pp. 163-175; Richard Weikart, *From Darwin to Hitler: Evolutionary Ethics, Eugenics, and Racism in Germany* (New York: Macmillan, 2004); and Daniel Gasman, *The Scientific Origins of National Socialism: Social Darwinism in Ernst Haeckel and the German Monist League* (New York: Science History Publications, 1971). It should be noted, however, that Weikart and Gasman are considered to be unreliable. Weikart is a Senior Fellow for the creationist think tank The Discovery Institute and has religious motivations for connecting Darwin and Hitler. Both Weikart and Gasman’s research have also been shown to contain glaring errors. See Robert J. Richards, “Myth 19: That Darwin and Haeckel Were Complicit in Nazi Biology,” in Ronald L. Numbers (ed.) *Galileo Goes to Jail and Other Myths about Science and Religion* (Cambridge: Harvard University Press, 2009), pp. 170-8.

Many scholars have identified this problem with the political theory of Social Darwinism and there is substantial disagreement about the utility of the standard definition, or even whether the term “Social Darwinism” itself has any meaning. Gregory Claeys calls the political framework of Social Darwinism “a misnomer,” Paul Crook states that the ground on which it rests is “decidedly shaky,” Robert Bannister calls it a “myth,” Donald Bellomy refers to it as “heavily polemical, reserved for ideas with which a writer disagreed,” Thomas Leonard calls it “a red herring,” while Antonello Vergata dismisses the validity of the term entirely and insists that historians should “stop using in their explanations a term that itself needs explaining.”<sup>47</sup> A common objection by scholars to the use of Social Darwinism is that they view it as a misattribution of Darwin’s science to ideas that were already extant. For scholars writing the historiography on this topic, the standard methodology has been to utilize specific terminology such as “survival of the fittest” or “struggle for existence” that were central to Darwin’s science. This was the methodology that Hofstadter utilized in *Social Darwinism in American Thought*. Other scholars have expanded this by incorporating additional terms such as “natural selection,” “adaptation,” and “variation” to the list.<sup>48</sup> However, Leonard argues that a problem with this approach is that the core philosophy of laissez-faire Social Darwinism was already present in Herbert Spencer’s (1851) *Social Statics* eight years before Darwin’s *Origin*

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<sup>47</sup> Gregory Claeys, “The ‘Survival of the Fittest’ and the Origins of Social Darwinism,” *Journal of the History of Ideas* 61(2), p. 228; Paul Crook, “Social Darwinism and British ‘New Imperialism’: Second Thoughts,” *The European Legacy* 3(1), p. 2; Robert Bannister, *Social Darwinism: Science and Myth in Anglo-American Thought* (Philadelphia: Temple University Press, 1979); Donald C. Bellomy, ‘Social Darwinism’ Revisited. *Perspectives in American History* (N.S.) 1, pp. 1–129; Thomas C. Leonard, “Mistaking Eugenics for Social Darwinism: Why Eugenics is Missing from the History of American Economics,” *History of Political Economy* 37(1), p. 216; Antonello La Vergata, “Darwinism and the Social Sciences, 1859-1914,” *Rendiconti Lincei: Scienze. Fisiche e Naturali* 20, pp. 333-343.

<sup>48</sup> Kenneth E. Bock, “Darwin and Social Theory,” *Philosophy of Science* 22, p. 124; Robert M. Young, “Malthus and the Evolutionists,” *Past and Present* 43, p. 112; John W. Burrow, “Social Darwinism,” in *The Blackwell Encyclopedia of Political Thought* (Oxford: Blackwell, 1987), p. 481.

was published.<sup>49</sup> Likewise, the term “survival of the fittest” was coined by Spencer in 1852 and wasn’t incorporated into Darwin’s *Origin* until 1869.<sup>50</sup> Young points out that the term “struggle for existence” appeared even earlier, in Thomas Malthus’ immensely influential (1798) *Essay on the Principle of Population*, a work that inspired both Spencer and Darwin equally.<sup>51</sup> Spencer didn’t use this specific terminology until after it appeared in Darwin’s *Origin*, but he had employed Malthus’ reasoning of overpopulation and intragroup competition as early as 1852.<sup>52</sup> Barry Gale argues that the fact that terms used to define Social Darwinism already existed prior to the theory itself casts doubt on the methodology employed and may have lead to falsely attributing the theory beyond it’s actual use in the historical literature.<sup>53</sup> Bowler notes that an additional objection concerning Social Darwinism as a misnomer is that, while Spencer often championed Darwin’s evolutionism, he rejected the mechanism of natural selection that formed the basis of Darwinian biology.<sup>54</sup> Instead, Spencer embraced the key tenets of the earlier Lamarckian system such as use-inheritance, or “soft heredity,” a biologically driven hierarchy, and the belief that evolution was inherently progressive. Derek Freeman and

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<sup>49</sup> Thomas C. Leonard, “Origins of the Myth of Social Darwinism: The Ambiguous Legacy of Richard Hofstadter’s Social Darwinism in American Thought,” *Journal of Economic Behavior & Organization* 71, p. 40.

<sup>50</sup> Ibid. Spencer appealed upon Alfred Russell Wallace to pressure Darwin to accept the term, which he eventually did in the fifth edition of *Origin*. Spencer first used the phrase in his essay, “A Theory of Population, Deduced from the General Law of Human Fertility,” *Westminster Review*, 57:468-501.

<sup>51</sup> Young, “Malthus and the Evolutionists,” p. 129.

<sup>52</sup> Ibid., p. 135.

<sup>53</sup> Barry G. Gale, “Darwin and the Concept of Struggle for Existence: A Study in the Extrascientific Origins of Scientific Ideas,” *Isis* 63, pp. 321-44.

<sup>54</sup> Peter J. Bowler, *Evolution: The History of an Idea* (Berkeley: University of California Press, 1984), Following Weismann’s 1893 experiment in which he cut off the tails of mice to prove that their offspring would not inherit their loss: “Herbert Spencer, who always had insisted on a role for Lamarckism, now felt it necessary to challenge Weismann and proclaim his separation from the Darwinist camp.” (p. 239).

John Burry have therefore suggested it would be more appropriate to refer to Spencer's political philosophy as Biological Spencerism or Social Lamarckism.<sup>55</sup>

A second categorical objection is that there is no core theoretical framework that would make Social Darwinism a coherent set of principles. A political theory only possesses utility if its general principles exist independent of the thing to be explained. Without this the theory is a mere amalgamation of tenuously related ideas that do not form a unified structure. Hofstadter's solution was to emphasize Spencer and the American Episcopalian minister William Graham Sumner as his prime examples and then to reference all other Social Darwinists, in one way or another, to the influence from these primary figures. However, while scholars universally acknowledge Spencer as central to any definition of Social Darwinism and have filled multiple volumes of critical analysis based on his views, every word Sumner ever wrote on the subject was cited in Hofstadter's single chapter of less than sixteen pages. Furthermore, Halliday's argument for "making Social Darwinism and eugenics synonymous" has become problematic for multiple authors, even those who argue for the utility of the term.<sup>56</sup> For example, Leonard asks why eugenics should be a key component of laissez-faire Social Darwinism when Progressive Era reformers were just as liable to endorse it?<sup>57</sup> This is further compounded given that numerous socialists likewise advocated eugenics, such as Karl Pearson, George Bernard Shaw, and Edward Aveling.<sup>58</sup> As Mark Adams has identified, the fact

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<sup>55</sup> Derek Freeman, "The Evolutionary Theories of Charles Darwin and Herbert Spencer," *Current Anthropology* 15: 216; John N. Burry, "Social Spencerism?" *Nature* 313(28), p. 732.

<sup>56</sup> Halliday, "Social Darwinism," p. 398.

<sup>57</sup> Thomas C. Leonard, "Retrospectives: Eugenics and Economics in the Progressive Era," *Journal of Economic Perspectives* 19(4), pp. 207-224; Leonard, "Origins of the Myth," p. 38.

<sup>58</sup> Bernard Semmel, "Karl Pearson: Socialist and Darwinist," *The British Journal of Sociology* 9(2), p. 111-125; Shaw also rejected Darwinian natural selection and advocated "acquired characteristics" as advocated by Lamarck. Mike Hawkins, *Social Darwinism in European and American Thought, 1860-*

that eugenics was embraced around the world in a variety of contexts – sometimes linked to Social Darwinism and sometimes not – is especially problematic given its application in societies ranging from Bolshevik Russia to Republican Brazil and Nazi Germany.<sup>59</sup> Rather than emerging from a coherent theoretical framework, eugenics gives every indication of being simply “tacked on” to Hofstadter’s original critique of the laissez-faire conservatives.

The mechanism of inheritance, whether Darwinian natural selection or Lamarckian acquired characteristics, likewise did not always play a primary role in the acceptance of eugenics. William Schneider raised a key example in the case of France where “Neo-Lamarckism profoundly influenced the nature of eugenics,” while Darwinian theory wouldn’t become widely accepted until as late as the 1940s.<sup>60</sup> Edmond Perrier, one of the few active biologists in the French Eugenics Society, became concerned primarily with what was described as “degenerative environmental and social influences” that were believed to be inherited.<sup>61</sup> Perrier saw in nature political laws that promoted “association” and “solidarism” over competition and eugenics was a means by which to promote the progress of the nation. Schneider also notes that, “French eugenics got in Neo-Lamarckism precisely the hereditary theory it desired because its optimistic justification for health and social reform was very compatible with the political and social philosophy of the French Third Republic.”<sup>62</sup> Therefore, in order to “bring society in line with the laws of nature” the Society advocated racial segregation, ending care for the

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1945 (Cambridge: Cambridge University Press, 1997), p. 167; Diane Paul, “Eugenics and the Left,” *Journal of the History of Ideas* 45(4), p. 568 n. 4.

<sup>59</sup> Mark B. Adams, *The Wellborn Science: Eugenics in Germany, France, Brazil, and Russia* (Oxford: Oxford University Press, 1990).

<sup>60</sup> William H. Schneider, “The Eugenics Movement in France, 1890-1940,” *Ibid.*, p. 72.

<sup>61</sup> *Ibid.*

<sup>62</sup> *Ibid.*, p. 73.

“mentally deficient,” and sterilization should strict marital regulation prove unsuccessful.<sup>63</sup> As Peter Bowler observed, “The historical record shows that this theory [of Lamarckism] is just as capable of generating those harsher interpretations of humanity and society for which Darwinism itself is frequently blamed.”<sup>64</sup> This opportunistic application of Darwinian or Lamarckian theories depending on the social context was a widespread feature of racial politics and does not fit with any definition of Social Darwinism.

An additional problem to the amalgamated structure of Social Darwinism is that, given the standard definition, Herbert Spencer would also fail to apply to all the key criteria of that category. While Spencer was the chief model for Hofstadter’s interpretation of laissez-faire Social Darwinism, he was also a fervent critic of imperialism. Furthermore, while his views on the “unfit” were unambiguous, he never advocated a formal program for eliminating them from society.<sup>65</sup> Spencer’s philosophy was fundamentally anti-State, seeking a society that eschewed social programs at home and military expansion abroad. Whereas Spencer advocated that “all imperfection must disappear” and all social programs, even public education, should be abolished because it only helps the unfit to reproduce, he never advocated any centralized eugenic program.<sup>66</sup> If two of the four criteria for Social Darwinism do not even apply to the primary exemplar of this ideological category it sheds doubt on the utility of the category itself.

In his *Social Darwinism in European and American Thought* (1997) Mike Hawkins has pointed out that Hofstadter’s original definition is problematic because it

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<sup>63</sup> Ibid., pp. 75-6.

<sup>64</sup> Bowler, *The Eclipse of Darwinism*, p. 19.

<sup>65</sup> Peter J. Bowler, *Evolution: The History of an Idea* (Berkeley: University of California Press, 1984), p. 227.

<sup>66</sup> Herbert Spencer, *Social Statics*, pp. 79; 414-15.

was little more than an amalgamation of disparate ideas and couldn't be applied to any single advocate *in toto*.<sup>67</sup> However, rather than rejecting the category, Hawkins instead proposed that the ideology of Social Darwinism be expanded to include Darwinism itself. In this way the "ideology of Darwinism" would be based on four primary assumptions with Social Darwinism embedded within this category after the addition of a fifth assumption.<sup>68</sup> These assumptions consist of: 1) Biological laws govern the whole of the organic world, both human and nonhuman; 2) Population growth generates a struggle for existence over resources; 3) Physical and mental traits confer an advantage on their possessors in this struggle, or in sexual competition, and can be spread through the population by inheritance; 4) Cumulative effects of selection and inheritance over time account for the emergence of new species and the elimination of others; and 5) Biological determinism extends beyond human physical traits to the psychological and behavioral attributes that play a fundamental role in social life (such as reason and morality). Hawkins states that there is a hierarchical relationship between these five assumptions, extending from the reality of biological laws to the mechanism of evolution to their applicability for human psychology and behavior. Like Hofstadter, he then concludes with a two-pronged definition that delimits this ideological category. According to Hawkins, Social Darwinists "endorse two fundamental facts about human nature: that it is continuous with animal psychology, and that it has evolved through natural selection."<sup>69</sup>

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<sup>67</sup> Mike Hawkins, *Social Darwinism in European and American Thought, 1860-1945* (Cambridge: Cambridge University Press, 1997).

<sup>68</sup> *Ibid.*, p. 31.

<sup>69</sup> *Ibid.*, 31.

Hawkins' definition contains the basic elements of what a political application of Darwinian theory would look like, however it remains fundamentally flawed for one very important reason. By redefining Social Darwinism to make it Darwinian Hawkins would exclude most of its supposed advocates – including Herbert Spencer who rejected natural selection. Furthermore, his definition would also remove from the historical discourse any application of evolutionary ideas that advocated a Lamarckian or Neo-Lamarckian theory of inheritance. Given these inconsistencies, I take the position that incorporating the traditional concept of Social Darwinism into the broader field of *evolutionary sociology* would provide greater context to the historical applications of evolutionary thought. The advantages that this would have over previous analyses are two-fold: by not restricting the definition to laissez-faire conservatives (e.g. Hofstadter) it would allow for the inclusion of additional ideological categories not previously admitted, and by extending the reach to include non-Darwinian evolution it would avoid the “restrictionist” discourse over Darwinian purity (e.g. Hawkins) that has defined much of the scholarship in this field.<sup>70</sup> In this way, Social Darwinism would be one historical discourse in the broader field of evolutionary sociology and would be defined as a sociological application of evolutionary ideas *inspired* by Darwin's theory that justified competitive individualism and laissez-faire economic policies.

Peter Singer, in *A Darwinian Left: Politics, Evolution and Cooperation* (2000) argued that all political orientations came to see evolutionary sociology through the lens of Social Darwinism and that, with the sole exception of Kropotkin, the importance of cooperation was ignored until the 1960s.

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<sup>70</sup> For a discussion of the generalist vs. restrictionist traditions within the historical discourse, see Paul Crook, *Darwin's Coat-Tails: Essays on Social Darwinism* (New York: Peter Lang, 2007), p. 30.

The left's understandable but unfortunate mistake in regard to Darwinian thinking has been to accept the assumptions of the right, starting with the idea that the Darwinian struggle for existence corresponds to the vision of nature suggested by Tennyson's memorable (and pre-Darwinian) phrase, 'nature red in tooth and claw.' From this position it seemed only too clear that, if Darwinism applies to social behaviour, then a competitive marketplace is somehow justified, or shown to be 'natural,' or inevitable.<sup>71</sup>

However, Singer is mistaken that the left did not have their own ideas about what Darwin's theory meant for modern society and this dissertation contributes to the historiography on evolutionary sociology by moving beyond Social Darwinism to highlight the broader network of scholars, writers, and political radicals that were inspired to propose sociological applications of Darwin's ideas and makes the following argument concerning the issues raised:

B) By following the development of Kropotkin's biological thought chronologically and in conversation with other authors writing about evolutionary sociology, it is possible to identify a broader intellectual movement among the nineteenth-century political left that I refer to as Socialist Darwinism. Socialist Darwinism was a transnational movement and can be defined as the sociological application of evolutionary ideas inspired by Darwin's theory that saw cooperation and moral behavior as an outgrowth of natural processes that helped individuals succeed in the "struggle for existence" by working together as a group and therefore justified socialist economic policies. Furthermore, what is commonly defined as Social Darwinism did not emerge out of Darwin's work directly, but initially developed as a political response to Socialist Darwinism and then in continuing dialogue and polemics with the latter. The existing literature on Social Darwinism typically ignores this aspect. Hawkins

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<sup>71</sup> Peter Singer, *A Darwinian Left: Politics, Evolution and Cooperation* (New Haven: Yale University Press, 2000).

mentions the term “socialist Darwinism” in passing as part of a broader category he refers to as “reform Darwinism,” but he maintains that the socialist applications of Darwinism were primarily opposed to Darwin’s theory. Richard Weikart and Ted Benton used the same term later in relation to Germany while Caroline Ogilvie used it in the context of twentieth century England. Mark Pittenger also looked at what he called “socialist evolutionism” among the American Left while David Stack offered a survey of some prominent figures in what he preferred to call “Evolutionary Socialism.”<sup>72</sup> This dissertation will be the first to conduct a transnational analysis of Socialist Darwinism and place it within the historical context in which it emerged. Rather than the standard practice of labeling any sociological application of Darwin’s theory as Social Darwinism, this interplay between rival factions is better explained as differing interpretations of evolutionary sociology with Social Darwinism and Socialist Darwinism representing two historical categories of thought within this larger field of research.

### **Kropotkin’s Relevance to Contemporary Scientific Questions**

There are few contemporary biological questions that are more controversial than the evolution of cooperation and altruism. As historian Gregg Mitman has demonstrated, Kropotkin’s work received considerable attention in the 1930s by the Chicago School of animal behavior that included figures like W.C. Alee, Alfred Emerson, and their

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<sup>72</sup> See Mike Hawkins, *Social Darwinism in European and American Thought, 1860-1945* (Cambridge University Press, 1997), p. 151; Mark Pittenger, *American Socialists and Evolutionary Thought, 1870-1920* (University of Wisconsin Press, 1993), p. 25-42; Richard Weikart, *Socialist Darwinism: Evolution in German Socialist Thought From Marx to Bernstein* (San Francisco: International Scholars Publications, 1998); Ted Benton, “Social Darwinism and Socialist Darwinism in Germany: 1860 to 1900,” in Blackledge, P. and Kirkpatrick, G. (eds.) *Historical Materialism and Social Evolution* (London: Palgrave Macmillan, 2002), pp. 36-75; Caroline Ogilvie, *Socialist Darwinism: The Response of the Left to Darwinian Evolutionary Theory, 1880-1905*, PhD Thesis, Royal Holloway, University of London, 2002; David Stack, *The First Darwinian Left: Socialism and Darwinism: 1859-1914* (Cheltenham: New Clarion Press, 2003), p. 53.

colleagues.<sup>73</sup> However, according to evolutionary biologist Lee Alan Dugatkin, after the birth of sociobiology and behavioral ecology in the 1960s and 70s, as well as the rise of the “selfish gene” theory in the 1980s, Kropotkin’s contributions to the field of animal behavior were largely forgotten.<sup>74</sup> “When G.C. Williams and Hamilton, as well as Richard Dawkins and E.O. Wilson, came around it was the death knell for Kropotkin.”<sup>75</sup> As Dugatkin also noted, this marginalization of Kropotkin was a mistake that should be rectified.

According to Richard Dawkins in *Unweaving the Rainbow* (2000), Kropotkin should be placed on one end of a continuum along with the “gullible” anthropologist Margaret Mead and “a spate of authors reacting indignantly to the idea that nature is genetically selfish.” At the other end of this continuum are scholars such as Hobbes, Darwin, Huxley and “today’s advocates of ‘the selfish gene,’ who emphasise that nature really is red in tooth and claw.”<sup>76</sup> Likewise, Steven Pinker considers Kropotkin’s ideas to be “romantic” and beholden to “utopianism.”<sup>77</sup> Perhaps for this reason, Pinker does not mention Kropotkin once in the 834 pages of *The Better Angels of Our Nature* (2011) that focuses on explanations for the rise of human cooperation.<sup>78</sup> However, the last few decades has seen a large growth in scientific interest on the evolution of cooperation.

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<sup>73</sup> Gregg Mitman, *The State of Nature: Ecology, Community, and American Social Thought, 1900-1950* (Chicago: University of Chicago Press, 1992).

<sup>74</sup> Lee Alan Dugatkin, *The Prince of Evolution: Peter Kropotkin's Adventures in Science and Politics* (CreateSpace, 2011).

<sup>75</sup> Lee Alan Dugatkin interviewed by author. See Lee Alan Dugatkin and Eric Michael Johnson, “The Prince of Evolution: Lee Alan Dugatkin on Peter Kropotkin, Anarchism, and Cooperation in Nature,” *Scientific American*, Sept. 13, 2011, URL: <https://blogs.scientificamerican.com/primate-diaries/prince-of-evolution/>

<sup>76</sup> Richard Dawkins, *Unweaving the Rainbow: Science, Delusion and the Appetite for Wonder* (New York: Houghton Mifflin Company, 1998), p. 211.

<sup>77</sup> Steven Pinker, *The Blank Slate: The Modern Denial of Human Nature* (New York: Penguin, 2002), p. 255.

<sup>78</sup> Steven Pinker, *The Better Angels of Our Nature: Why Violence Has Declined* (New York: Penguin, 2011).

Works such as *Good Natured*, by Frans de Waal (1997), *Mother Nature* (2000) as well as *Mothers and Others* (2011) by Sarah Hrdy, *The Altruism Equation: Seven Scientists Search for the Origins of Goodness*, by Lee Alan Dugatkin (2006), *Unto Others*, by Elliot Sober and David Sloan Wilson (1998), *The Moral Animal*, by Robert Wright (1995), *Origin of Virtue*, by Matt Ridley (1998), *Altruistically Inclined?* by Alexander Field (2004), *The Genial Gene: Deconstructing Darwinian Selfishness*, by Joan Roughgarden (2009), *Moral Origins: Social Selection and the Evolution of Virtue, Altruism, and Shame*, by Christopher Boehm (2011), and *Does Altruism Exist?* by David Sloan Wilson (2015) are indicative of the attention that has been given to this topic. Given that Kropotkin was the first to pursue a Darwinian explanation for the origins of cooperation, his science deserves to be reexamined in the light of modern research.

Primatologist Frans de Waal writes in *The Age of Empathy* (2009), “Mutual aid has become a standard ingredient of modern evolutionary theories.”<sup>79</sup> However, many of the leading researchers that developed the contemporary science of cooperation were unaware of Kropotkin’s work on this subject. Central to this research is how evolution could promote cooperation among unrelated individuals, the modern framework of which was formalized by Robert Trivers in 1971. As de Waal wrote with Jessica Flack, “Trivers refined the concepts Kropotkin advanced and explained how co-operation and, more importantly, a system of reciprocity (called ‘reciprocal altruism’ by Trivers) could have evolved.”<sup>80</sup> Trivers also wrote, in language that could have come straight from Kropotkin, that a “very agreeable feature of my reciprocal altruism, which I had not

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<sup>79</sup> Frans de Waal, *The Age of Empathy: Nature’s Lessons for a Kinder Society* (New York: Harmony Books, 2009), p. 33.

<sup>80</sup> Jessica C. Flack and Frans B.M. de Waal, “‘Any Animal Whatever’: Darwinian Building Blocks of Morality in Monkeys and Apes,” *Journal of Consciousness Studies*, Vol. 7, No. 1–2, 2000, p. 4.

anticipated in advance, was that a sense of justice or fairness seemed a natural consequence of selection for reciprocal altruism. That is, you could easily imagine that sense of fairness would evolve as a way of regulating reciprocal tendencies.”<sup>81</sup> Trivers has stated that he only became aware of Kropotkin after being asked repeatedly if Kropotkin was his inspiration for reciprocal altruism.<sup>82</sup> However, even if Kropotkin’s name is often unknown by contemporary scientists, according to biologist Martin Nowak, mutual aid theory “succeeded far beyond what Kropotkin could ever have foreseen.” He notes that there are a wealth of studies in anthropology and primatology that highlight the importance of reciprocal help in early hominid societies. Likewise, textbooks on animal behavior “are filled with examples of mutual aid that range from grooming, feeding, teaching, and warning to helping in fights and joint hunting.” Nowak suggests that a reason why Kropotkin’s influence may not be more fully appreciated is due to the complications over the evolution of cooperation, chief among these the threat of free riders.

The Russian anarchist failed to see how threatened cooperation is by exploitation. What prevents mutualists from turning into parasites? Why should anyone share in a common effort rather than cheat the others? Natural selection puts a premium on individual reproductive success. How can natural selection shape behavior that is ‘altruistic,’ in the sense that the behavior benefits others at the expense of one’s own?<sup>83</sup>

Nowak is mistaken that Kropotkin failed to see this problem and address it. However, he correctly identifies the central problem in the contemporary research on the evolution of

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<sup>81</sup> Robert Trivers, *Natural Selection and Social Theory: Selected Papers of Robert Trivers* (Oxford: Oxford University Press, 2002), p. 16.

<sup>82</sup> Ibid. Also see De Waal’s interview with Trivers cited in Frans B.M. de Waal, *Good Natured: The Origins of Right and Wrong in Humans and Other Animals* (Cambridge: Harvard University Press, 1996).

<sup>83</sup> Martin A. Nowak and Karl Sigmund, “Cooperation versus Competition,” *Financial Analysts Journal* 56(4), 2000, p. 14.

cooperation.

Directly related to the problem of cooperation is the equally controversial evolutionary debate over the levels of selection, often referred to as group selection. While Darwin originally proposed the concept, it was excised from Neo-Darwinian thought following the predominance of sociobiology and “selfish gene” theory. However, with group selection gaining support during the last decade, Kropotkin’s work is directly relevant for this contemporary debate. As Frans de Waal wrote in *Good Natured* (1996), “Kropotkin cast his arguments in terms of survival of the group, or the species as a whole. Rejection of this view, known as group selection, marked the rise of sociobiology.”<sup>84</sup> Biological anthropologist Melvin Konner likewise wrote that the concept of group selection “goes back at least to Peter Kropotkin . . . and to some remarks of Darwin’s.”<sup>85</sup> Few have championed the importance of group selection more than David Sloan Wilson and, in his latest book *This View of Life: Completing the Darwinian Revolution* (2019), he highlights Kropotkin as one of six major evolutionary theorists of the nineteenth-century. According to Wilson, Kropotkin identified that “most species live in groups whose members provide mutual aid to each other” and that indigenous human societies “were primarily cooperative and that this form of cooperation could provide a model for modern society without the need for a strong central government.”<sup>86</sup>

This dissertation contributes to contemporary scientific questions about the evolution of morality and the levels of selection debate by conducting a detailed

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<sup>84</sup> Frans B.M. de Waal, *Good Natured: The Origins of Right and Wrong in Humans and Other Animals* (Cambridge: Harvard University Press, 1996), p. 23.

<sup>85</sup> Melvin Konner, “The Evolutionary Roots of Altruism,” *American Prospect*, May 22, 2015.

<sup>86</sup> David Sloan Wilson, *This View of Life: Completing the Darwinian Revolution* (New York: Knopf Doubleday, 2019), p. 27.

examination of the processes and evolutionary mechanisms involved in Kropotkin's theory of mutual aid, as well as his later writing on the direct action of environment, and makes the following argument concerning the issues raised:

C) By conducting a transnational comparison of late-nineteenth and early-twentieth century texts on the evolution of the moral sense and the mechanisms of evolutionary change, *The Struggle for Coexistence* demonstrates that Kropotkin's argument was ultimately closest to Darwin's than any of his contemporaries. Kropotkin was a committed Darwinian from his earliest encounter with *On the Origin of Species* and he was concerned about the impact to science from what he considered to be highly flawed interpretations from Neo-Darwinists like Thomas Henry Huxley and August Weismann. Kropotkin shared with Darwin a commitment to the Baconian inductive method in the construction of scientific theory and strongly opposed Weismann's deductive methodology for the same reason he opposed Marxist philosophy. Like Darwin, Kropotkin also employed an argument for the evolution of the moral sense based on multilevel selection as well as the unique articulation of *social selection* as an evolutionary mechanism to explain the evolution of within-group cooperative behavior. In contrast to most contemporary scholarship on this subject, this analysis shows that Kropotkin's theory of mutual aid did not rely on the Lamarckian mechanisms of the direct action of the environment nor the inheritance of acquired characteristics. In this sense, Kropotkin was even more committed to natural selection than Darwin was on the question of the moral sense. Finally, this dissertation demonstrates that Kropotkin's much-maligned twentieth-century work on Lamarckian inheritance is better interpreted as a robust defense of Darwin's epigenetic framework in which both heredity and

development were integrated in the process of evolutionary change. Kropotkin's extensive discussion of the newly-emerging science of evolutionary mechanics in Germany, or *Entwicklungsmechanik*, offers one of the earliest discussions of epigenetics and developmental genetics to have been written in English. Kropotkin's work on this topic has been misinterpreted by historians and biologists alike as a throwback to earlier nineteenth-century Lamarckian arguments and needs to be reexamined in context.

In order to better describe Kropotkin's science and its implications for evolutionary sociology and contemporary research it is important not to reduce his formulation to a single main thesis. For example, Todes focuses exclusively on anti-Malthusianism and incorporates all other topics within this framework. Other authors, such as Peter Bowler, emphasize the conflict between the Darwinian and Lamarckian mechanisms of heredity.<sup>87</sup> Instead, I will be looking at six key ideas or points of contention that were all crucial for the development and interpretation of Darwinism in the late-nineteenth and early-twentieth centuries.

1. Race and racism (or anti-racism). The historiography on Darwinism and race posits that the application of natural selection to human evolution resulted in the imposition of racial hierarchies in which non-white populations were perceived as "less evolved" than white populations. Debate on this topic has ranged between the question of whether racial hierarchies were a necessary outgrowth of Darwinian science or whether this was the result of others while Darwin himself, a campaigner against slavery, instead needs to be read within the nineteenth-century context.

2. Evolution or revolution ("Punctuated equilibrium"). The rates of evolutionary change were discussed by Darwin and his contemporaries but became a contentious topic

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<sup>87</sup> Peter J. Bowler, *Evolution: The History of an Idea* (University of California Press, 1983).

with the theory of “punctuated equilibrium” developed by Stephen Jay Gould in 1977 that argued such variable rates of evolution could explain periods of stasis followed by what appeared to be relatively rapid change in the fossil record (on the order of tens of thousands of years).

3. Malthusianism or anti-Malthusianism. The political economist, Thomas Malthus, coined the term “struggle for existence” that Darwin incorporated as the engine of natural selection in which more offspring would be born than could survive given available food sources and only those individuals that were the most “fit” would survive long enough to reproduce. Debate on this topic ranged between the Malthusian framework as essential for natural selection to the Malthusian assumption as an imposition of economic ideology to the argument that the Russian “national style” discarded the Malthusian metaphor without rejecting Darwinism itself.

4. The evolution of morality. Darwin argued for the evolution of morality as having a basis in the “moral sense” of sympathy among group-living animals. Debate on this topic ranged from how cooperation and altruism could equate to individual fitness benefits to whether altruism was ultimately selfish because it was calculated for personal gain.

5. Heredity (Neo-Darwinian, Lamarckian, and Epigenetic). The mechanism of natural selection versus the Lamarckian factors of the direct action of the environment (or phenotypic plasticity), the loss of traits through use-and-disuse, and the inheritance of acquired characteristics were a hotly debated topic between 1859 and the present. The rhetoric over the mechanism of heredity intensified with the rediscovery of Mendel’s pea-plant experiments and the development of genetics in the decades following 1900.

6. Eugenics. The popular movement in the early-twentieth century of selecting traits that were considered beneficial or harmful crossed the political spectrum and led toward national sterilization laws at one end and birth control policies to promote positive traits at the other. Debate centered on whether eugenics was a necessary outgrowth of Darwin's theory and if Darwin himself endorsed it or not.

These topics will be discussed in roughly chronological order following the development of Kropotkin's ideas on mutual aid.

### **Chapter Breakdowns**

*The Struggle for Coexistence* is divided into five chapters that roughly correspond to consecutive phases of Kropotkin's intellectual development and are indicative of larger themes in the history of evolutionary sociology in Russia, Europe, and England. Chapter One, *An Ethnography of Mutual Aid: Race and Indigeneity in the Russian Far East* begins by providing a macroscopic lens of anthropological practice and discourse about race in the context of Empire. Unlike England and France, whose overseas colonial empires provided encounters with starkly different peoples and customs, early nineteenth-century German and Russian ethnographers encountered a slow gradation of change as they travelled across a landed expanse from West to East. The outcome of this geographical accident was a greatly reduced emphasis about non-white people occupying a lower stage of human evolution as expressed in the scholarly literature of the period.<sup>88</sup> Rather, non-European and small-scale indigenous populations were perceived as merely representing a difference of degree rather than a difference of kind. This confluence of

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<sup>88</sup> This was a feature that would change in Germany after unification and the pursuit of overseas colonies during the late-nineteenth century.

geography and anthropology was reflected in Peter Kropotkin's ethnographic writing in the Russian Far East during the 1860s and his early experiences with indigenous populations provided a foundation for both his political anarchism and his Darwinian theory of mutual aid.

Chapter Two, *Evolution and Revolution: Darwinism and the Struggle for Progress* follows Kropotkin's trajectory from naturalist to political radical and how Darwin's theory of natural selection offered a theory of social change for prominent figures on the political left in the 1860s and 70s. In the work of Pierre-Joseph Proudhon, Kropotkin found a theorist who sought to build a new society based on the human instinct for sympathy and in Mikhail Bakunin he found a revolutionary whose vision for the future was grounded in Darwin's struggle for existence. Along with a broad coalition of socialist thinkers and activists, Kropotkin came to conceive of revolution as a faster rate of evolutionary change that offered a theory of history that pointed toward a progressive future.

Continuing with transnational social history, Chapter Three, *Social Darwinism Versus Socialist Darwinism*, documents the popular fear of socialist revolution following the calamitous events of the 1871 Paris Commune and the debates in the popular and radical press between those who advocated a laissez-faire interpretation of evolutionary sociology and those who saw Darwin's theory as a basis for a socialist society. Darwin's theory of natural selection was infused with political meaning for both naturalists and social commentators in the late nineteenth century. The industrial revolution and growth of laissez-faire capitalism resulted in vast inequalities and a growing population of urban poor. For many radicals seeking to undermine the power of Church and State, Darwin's

vision of species adapting to an environment in constant flux gave support to the growing workers' movement and challenged the assumed unassailability of the status quo. This growing conflict among naturalists, social theorists, and political radicals in Germany, France, and England highlights the rhetorical battleground upon which two opposing frameworks struggled over the political interpretation of Darwin's theory.

Chapters Four and Five provide an intellectual history of Kropotkin's biological writing between the years of 1890 – when his first essay on mutual aid was published – and 1922 with the posthumous publication of his book *Ethics: Origin and Development*. Chapter Four, *Evolution, Mutual Aid, and the Moral Sense in Transnational Context*, demonstrates that Kropotkin was aware of the conflict between Social Darwinism and Socialist Darwinism and positioned his theory so as to be strictly in line with Darwin's theoretical perspective. An important, though often neglected, aspect of Darwin's theory in the late-nineteenth century was his argument for the origin of social instincts that gave rise to shared common feelings between animals in a group. For Darwin, the "moral sense" had its foundations in the pleasure an animal felt from their social community and their sympathetic identification with the internal state of others. From this followed the emergent instinct to "perform various services for them," a trait that was promoted through natural selection when groups with a high level of reciprocation "would flourish best and rear the greatest number of offspring." This concept formed the basis for Kropotkin's theory of mutual aid and his argument incorporated a litany of examples of mutual aid in nature as well as mechanisms by which these behaviors could evolve through natural selection. Both Darwin and Kropotkin emphasized that this same "moral sense" that promoted taking the perspective of another was an evolutionary strategy that

formed the basis for the modern conceptions of social duty and justice.

Chapter Five, *Darwin's Russian Defender: Peter Kropotkin, August Weismann, and Evolutionary Epigenetics*, chronicles the development of Kropotkin's theory of heredity that he wrote during the last decade of his life and which represents the most extensive work on biology that he ever completed. Between 1910 and 1919, Kropotkin published seven papers that challenged the "preformationist" theory of heredity advocated by the German cytologist August Weismann. In place of this "hard" view of inheritance, Kropotkin argued for an epigenetic understanding of hereditary transmission that combined natural selection, environmental plasticity, and the inheritance of acquired characteristics. In doing so, Kropotkin believed that he was defending Darwin's work from the Neo-Darwinists who were intent on separating development from heredity. Kropotkin saw an inherent danger in such a separation should this conceptualization of inheritance cross the boundary from biological theory to social application in the form of eugenics. Kropotkin's epigenetic theory utilized extensive citations of experimental research from German, French, and Russian-language sources that were largely unknown in Britain and underscores the culturally-mediated discourse that framed the debate over heredity at the dawn of the genetic age.

### **Sources and Research Methodology**

Much of the materials used for the chapters in this dissertation derived from printed primary sources, including books, scholarly papers and popular articles written by naturalists, local newspapers, as well as radical periodicals and pamphlets. Certain archives provided much of the foundation for selected chapters. The Archive of the

Russian Academy of Sciences and the RAS Institute for the History of Science and Technology in St. Petersburg and the Central Archives of the Russian Academy of Sciences in Moscow provided much of the context for Chapter One. The Emma Goldman Papers in Berkeley as well as the Max Nettlau, Eleanor Marx, and Peter Kropotkin Papers at the International Institute for Social History (IISH) in Amsterdam offered important insight for Chapters Two and Three. Furthermore, the collection of radical newspapers and pamphlets housed by the IISH, including *Der Volkstaat*, *De Anarchist*, *Freiheit*, *L'Anarchie*, *La Société Nouvelle*, *L'Égalité*, *L'Émancipation*, *Le Libéraire*, *La Libre Pensée*, *La Revue Socialiste*, *Le Progrès*, *Le Révolté*, *Le Socialiste*, *La Solidarité*, *Le Travailleur*, *Clarion*, *The Commonweal*, *Freedom*, *Justice*, *New Age*, *Our Corner*, *Socialist Record*, and *To-Day* proved to be indispensable. Indeed, an important reason why this history has been so little explored is certainly due to the lack of institutional funding for the preservation of so many short-lived radical newspapers and pamphlets. As Joan Schwartz and Terry Cook have identified, “archives are established by the powerful to protect or enhance their position in society. Through archives, the past is controlled.”<sup>89</sup> The archival collection of mainstream English newspapers and magazines at the British Museum in London also offered an important lens into the popular understanding of Darwinism that would not have been possible otherwise. Private notebooks and the correspondence between naturalists were found at the Darwin Archive at Cambridge University, the Thomas Henry Huxley Collection at Imperial College London, the Royal Geographical Society Archives, the Linnean Society Archives, and the Wellcome Library Archives and Manuscripts Collection. A full list of the archives and

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<sup>89</sup> Joan M. Schwartz and Terry Cook, “Archives, Records, and Power: The Making of Modern Memory,” *Archival Science* 2, 2002, p. 1-19.

manuscripts collection is provided in the Bibliography section of this dissertation.

*The Struggle for Coexistence* aims to unpack the ideological categories as well as the political and economic assumptions interpreted into the laws of nature by leading historical actors who theorized about sociological applications of evolutionary biology. This dissertation entrenches the history of Darwinian theory at the intersection of intellectual and social history. My methodology will be to utilize Kropotkin's trajectory from Russian prince to naturalist to political radical evading authorities across Europe and England as the lens through which I engage with the larger social networks that surrounded and informed his Darwinian theory. Rather than a unique formulation, Kropotkin's theory of mutual aid was instead one theory amongst multiple related constructs across Europe that emphasized cooperation and altruism as an intrinsic feature of evolution based on what Darwin called the "moral sense."

This story about the transnational conflict over the social applications of Darwinism is ultimately the story of complementary revolutions in science and politics that came to define the late-nineteenth and early-twentieth centuries. Through this convergence of scientific and political revolutions a window is opened into the historical shift that occurred in Russia, Europe, and England, a shift that can be seen in microcosm through the ideas and work of Peter Kropotkin. He represents a vision of the world breaking from the entrenched traditions of God and State, the "great chain of being," and the rigid class structure. This was a vision of possibility, of creative passion, and one that circled the globe to inspire the Paris Commune, the Russian Revolution, universal suffrage, and anti-Franco resistance in the Spanish Civil War. It is a history that reveals how scientific ideas are embedded within political realities just as much as political

movements can be understood as ecological forces when seen through the eyes of a naturalist. Ultimately, *The Struggle for Coexistence* is the story of a single question that has occupied scholars ever since Plato: How do we work together to create a good society?

## Chapter 1

### **An Ethnography of Mutual Aid: Race and Indigeneity in the Russian Far East**

“We certainly must abandon the idea of representing human history as an uninterrupted chain of development from the pre-historic Stone Age to the present time.”<sup>90</sup>

In June, 1863 Peter Alexeyevich Kropotkin stood near the far end of a long line of assembled officers as a member of the Russian Empire’s newest army regiment: the Amur Cossacks. His modest grey uniform made him a curiosity among the hundreds of his fellow Russian officers, all of whom were dressed in their finest regalia as they awaited presentation to Tsar Alexander II. Kropotkin was scheduled to depart for Siberia the following month in what would become a five-year journey throughout the easternmost reaches of the country. To Kropotkin’s surprise, the tsar approached the 21-year-old officer and addressed his former page for the last time. “So you go to Siberia?” the tsar asked the young man. “Are you afraid to go so far?” Kropotkin replied warmly, “No, I want to work. There must be so much to do in Siberia to apply the great reforms which are going to be made.”<sup>91</sup>

Alexander II had advocated for the emancipation of the serfs soon after his succession to the throne in 1855. He urged the nobility to enact the measure by appealing to their fear of insurrection, “It is better to start to abolish serfdom from above, than to wait for that time when it starts to abolish itself from below.”<sup>92</sup> As rumors of the

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<sup>90</sup> Peter Kropotkin, “The Ethical Needs of the Present Day,” *The Nineteenth Century*, August 1904, pp. 217-8.

<sup>91</sup> Peter Kropotkin, *Memoirs of a Revolutionist*, Vol. 1, (London: Smith, Elder, & Co., 1899), p. 195.

<sup>92</sup> David Moon, *Abolition of Serfdom in Russia: 1762-1907* (London: Pearson Education, 2001), Document 14: Alexander II’s Speech to the Marshals of the Nobility of Moscow Province, 30 March 1856. A variation on this quote is that the line was merely, “It is much better that this happens from above than from below.” Larissa G. Zakharova, “Autocracy, Bureaucracy, and the Reforms of the 1860s in Russia,” *Soviet Studies in History* (Spring 1991), 6-33; George Vernadsky (ed.), *A Source Book for Russian History From Early Times to 1917*, Vol. 3, (New Haven: Yale University Press, 1972), p. 589.

impending emancipation circulated through court, young Peter wrote to his elder brother, Alexander Kropotkin, and announced the social transformation on the horizon. “The old system is destroyed, the new has not yet been created,” he wrote excitedly. “[M]aybe we will live to see Russia on par with other European states; much, much will have to change now.”<sup>93</sup> Alexander signed the law into effect on February 19, 1861 but the legislation would not be implemented for another two years, during which time the aristocracy surrounded the tsar to ensure a more favorable outcome for themselves. What had originally been hailed as liberation for the millions of peasants subjected to slavery under the landed classes ended up, in implementation, as a transition from one form of bondage to another. For while the serfs could no longer be owned outright, they were now saddled with the debt of paying their former masters back for land they had worked for generations (and at greatly inflated market values).

Now a decade into his reign, and with the reality of his limited power to transform Russian society apparent, Alexander did not express much enthusiasm at the idealistic young man’s plans for change. “Well, go,” the tsar told him, “one can be useful everywhere.” As Kropotkin recalled years later, “his face took on such an expression of fatigue, such a character of complete surrender, that I thought at once, ‘He is a used-up man; he is going to give it all up.’”<sup>94</sup> Alexander II would be assassinated on April 29, 1881 after five previous attempts on his life.

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Kropotkin states that this line was borrowed from Alexander Herzen. Peter Kropotkin, *Memoirs of a Revolutionist*, Vol. 1, p. 150.

<sup>93</sup> Peter Kropotkin to Alexander Kropotkin, March 29, 1858. “Старая система разрушается, новая не создана; это невозможно, ввели эмансипацию, бог знает, что будет из этого, притом теперь самодержавие невозможно, это должно измениться, и если не удалось в 1826, то удастся же теперь в скором времени, и авось мы доживем до того, что увидим Россию на ряду с прочими Евр[опейскими] госу дарствами; многое, многое нужно будет переменить теперь, чтоб вышло что-нибудь порядочное.” SARF. Folio 1129.

<sup>94</sup> Peter Kropotkin, *Memoirs of a Revolutionist*, Vol. 1, (London: Smith, Elder, & Co., 1899), p. 196.

The emancipation of the serfs was a turning point in Russian history and inspired an entire generation of artists and intellectuals, radicals and reformers, to depart the major cities of St. Petersburg and Moscow in order to better understand their fellow countrymen. As Kropotkin later wrote about this period, “The years 1858-1878 were years of the ethnological exploration of Russia on such a scale that nowhere in Europe or America do we find anything similar.”<sup>95</sup> Extensive expeditions were organized, such as by the Grand Duke Constantine, to conduct detailed studies of the ethnography, folklore, and economics of the diverse Russian people. A.N. Pypin’s four-volume *History of Russian Ethnography* [История Русской Этнографии] identified more than 4,000 books and review articles written on different cultural and economic conditions of Russia’s people during this twenty year period.<sup>96</sup> A new artistic movement of folk-novelists rose to chronicle realistic stories that brought a high conception of art to a representation of the poorer and uneducated peoples of the nation. Authors such as Nikolai Gerasimovich Pomyalovsky (1835-1863), Fyodor Mikhaylovich Reshetnikov (1841-1871), Alexander Ivanovich Levitov (1835-1877), Gleb Ivanovich Uspensky (1843-1902), and Nikolai Nikolaievich Zlatovratsky (1845-1911) were among the most read authors in this genre, with others such as Nikolay Ivanovich Naumov (1838-1901), Pavel Vladimirovich Zasodimsky (1843-1912), Nikolai Elpidiforovich Karonin-Petropavlovsky (1853-1892), Peter Yakubovich Melshin (1860-1911), and Sergei Yakovlevich Elpatievsky (1854-

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<sup>95</sup> Peter Kropotkin, *Russian Literature* (McClure, Phillips & Co: New York, 1905), p. 230.

<sup>96</sup> A.N. Pypin, *История русской этнографии* [History of Russian Ethnography], Vols. 1-4. (St. Petersburg: M.M. Stasyulevich, 1890).

1933) all incorporated an ethnographic lens to explore themes related to various peoples populating the countryside.<sup>97</sup>

The artists and scholars that sought to explore the diversity of perspectives throughout the Russian Empire and communicate their worldviews to a wider audience would prove pivotal for the future direction of the country just as it would be for Kropotkin's own political awakening. Russian historian and ethnographer Alexey Egorovich Zagrebin has argued that the "ethnographic turn" [этнографический поворот] Soviet historians employed in the 1920s for the formation of a national identity had its roots in this post-emancipation period.<sup>98</sup> As Kropotkin later recalled in his *Memoirs of a Revolutionist*:

"Groups of young men, some of whom were on the road to become brilliant university professors, or men of mark as historians and ethnographers, had come together about 1864, with the intention of carrying to the people education and knowledge in spite of the opposition of the Government."<sup>99</sup>

Kropotkin acknowledged that, since he was in Siberia at that time, he came to know of this movement "only by hearsay."<sup>100</sup> As a representative of the Imperial military presence

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<sup>97</sup> Most of these authors were highlighted by Kropotkin in his discussion of ethnography and Russian literature. Peter Kropotkin, *Russian Literature* (McClure, Phillips & Co: New York, 1905). Also see Rose Glickman, "An Alternative View of the Peasantry: The *Raznochintsy* Writers of the 1860s," *Slavic Review* 32 (4), December 1973, pp. 693-704; A.M. Skabichevsky, *Беллетристы-народники* [Narodnik Fiction Writers] (St. Petersburg, 1888); V.A. Korshunkov, "Имеют ли душу животные и некрещенные младенцы?" [Do Animals and Unbaptized Babies Have Souls?], *Человек* 5, 2010, pp. 122-131; Boris Gasparov, "Платонов и Решетников" [Platonov and Reshetnikov], *Quaestio Rossica* 2, 2014, pp. 176-192; Henrietta Mondry, *Pure, Strong and Sexless: The Peasant Woman's Body and Gleb Uspensky* (New York: Rodopi, 2006), pp. 13-16; Andrew Wachtel, "Telling Stories about Russian Literature," *Modern Philology* 90 (3), Feb. 1993, pp. 392-406.

<sup>98</sup> A.E. Zagrebin and K.I. Kulikov, "Этнографический поворот в «проблемных полях» истории Удмуртии, 1920-е – начало 1930-х гг.," [The ethnographic turn in the "problematic fields" of the history of Udmurtia, 1920s – early 1930s] in *Finno-Urgic Studies Yearbook*, (Izhevsk: Udmurt State University, 2014), pp. 59-70. For more on the "ethnographic turn" see James Clifford, *The Predicament of Culture: Twentieth Century Ethnography, Literature and Art* (Cambridge: Harvard University Press 1988); Anna Grimshaw and Amanda Ravetz, "The Ethnographic Turn – And After: A Critical Approach Towards the Realignment of Art and Anthropology," *Social Anthropology* 23 (4), November 2015, pp. 418-434.

<sup>99</sup> Peter Kropotkin, *Memoirs of a Revolutionist*, Vol. 2 (London: Smith, Elder & Co., 1899), p. 34.

and, later, as an explorer with the Imperial Russian Geographical Society, Kropotkin served as an agent of tsarist authority in the Far East. Nevertheless, it was this ethnographic sensibility that he would encounter in the professional literature, discuss in his correspondence, and emulate in his published work. While Kropotkin's later scientific work emphasized physical geography, it was his interest in how geographic factors shaped societal outcomes – what Soviet philosopher Vladimir Fedorovich Pustarnakov referred to as Kropotkin's "geosociology"<sup>101</sup> [геосоциологической] – that offers an important insight into Kropotkin's later political anarchism and his Darwinian framework of mutual aid. Kropotkin is widely perceived to have come to his conclusions about anarchism first and to have later sought justification using the rhetoric of science.<sup>102</sup> However, the lack of political discourse in his early diary entries and letters, the fact that he did not develop contacts with the radical diaspora of the Russian intelligentsia until he returned to St. Petersburg in 1867, and his near exclusive focus on geographic and scientific projects up until this period and after, suggest that Kropotkin the naturalist

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<sup>100</sup> Ibid.

<sup>101</sup> V.F. Pustarnakov, Проблемы Этнографии и Этнологии в Геосоциологической Концепции П.А. Кропоткина, [Problems of Ethnography and Ethnology in the Geosociological Concept of P.A. Kropotkin], *Труды Международной научной конференции, посвященной 150-летию со дня рождения П.А. Кропоткина* (Moscow, 1997) Vol. 2, Идеи П.А. Кропоткина в социально-экономических науках. pp. 110–126; V.F. Pustarnakov, *Университетская философия в России: идеи, персоналии, основные центры* [University Philosophy in Russia: Ideas, Personalities, Main Centers] (St. Petersburg: Russian Christian Humanitarian Institute, 2003); Also see A.G. Kassirov, "Философские идеи П.А. Кропоткина о единстве природы и общества," [The philosophical ideas of P.A. Kropotkin on the unity of nature and society], *Вестник Мурманского государственного технического университета* 10 (3), 2007, pp. 388-393.

<sup>102</sup> Daniel Todes, *Darwin Without Malthus: The Struggle for Existence in Russian Evolutionary Thought* (Oxford University Press: Oxford, 1989), pp. 136-142; Álvaro Girón, "Kropotkin Between Lamarck and Darwin: The Impossible Synthesis," *Asclepio* 55, 2003, pp. 189-213; Ruth Kinna, "Kropotkin's Theory of Mutual Aid in Historical Context," *International Review of Social History* 40, 1995, pp. 276-7.

came first and that his anarchism emerged later as a direct result of his Siberian experience.<sup>103</sup>

While the moral and the political aspects of Kropotkin's ideas have received a great deal of attention in the scholarly literature, his views on ethnography – particularly where they intersect with race, indigeneity, and Orientalism – have been almost entirely ignored by historians. The lack of scholarly attention to the racial dimension of Kropotkin's work is perplexing for three reasons. First, the scientific literature on human evolution in the late nineteenth and early twentieth centuries was replete with racist arguments ranging from the supposed "primitive" anatomy of nonwhite peoples to claims about the biological inheritance of inferior intelligence in these groups. Its near-complete absence in the case of Kropotkin, who consistently championed a Darwinian interpretation of human life yet avoided the language of racial hierarchy common in the Darwinist discourse (even by Darwin himself), is therefore noteworthy and wanting explanation. Second, Kropotkin's political anarchism offers no solutions since many of his fellow radicals regularly used highly derogatory racialized language and assumptions about racial improvement, such as Pierre-Joseph Proudhon, Mikhail Bakunin, Benoît Malon, or even Leo Tolstoy<sup>104</sup> (and, of course, the anti-semitism and racism that Karl

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<sup>103</sup> Kropotkin did not decide for himself that he was an anarchist until visiting radical exiles in Jura, Switzerland in 1872 after the Paris Commune. Dana Ward, "Alchemy in Clarens: Kropotkin and Reclus, 1877-1881," in Nathan J. Jun and Shane Wahl (eds.) *New Perspectives on Anarchism* (Rowman and Littlefield, 2010), p. 211. See Chapter 2.

<sup>104</sup> Michele Battini and Isabella Vergnano, *Socialism of Fools: Capitalism and Modern Anti-Semitism* (New York: Columbia University Press, 2016); Abdallah Zouache, "Proudhon et la Question Coloniale Algérienne," *Revue Économique* 67 (6), 2016, pp. 1231-44; James Allen Rogers, "Proudhon and the Transformation of Russian 'Nihilism,'" *Cahiers du Monde Russe et Soviétique* 13 (4), 1972, pp. 514-523; Edmund Silberner, "Anti-Semitism and Philo-Semitism in the Socialist International," *Judaism* 2(2), pp. 117-22; Carl Levy, "Anarchism, Internationalism and Nationalism in Europe, 1860-1939," *Australian Journal of Politics and History* 50(3), Sept. 2004, pp. 330-342; Leon Poliakov, *The History of Anti-Semitism, Volume 4: Suicidal Europe, 1870-1933* (Philadelphia: University of Pennsylvania Press, 2003), p. 82.

Marx displayed in his private correspondence is by now well known).<sup>105</sup> Finally, Kropotkin's extensive notes and published descriptions of indigenous Tungu or Oroqen populations, settled Buryats, Cossacks, rural Manchurians, as well as Chinese officials in the Russian Near and Far East offers an important insight into the ongoing debate over Russian Orientalism.<sup>106</sup>

It is my contention that Kropotkin's early ethnographic experience holds the key to understanding his mature views on the origin and development of human societies. These experiences, as revealed through diary entries and correspondence with his brother during his time in Siberia, but primarily through travel narratives that he published between 1865 and 1868, highlight his process of understanding the interconnections between race and power. Kathleen Roberts, in her analysis of alterity and the Western narrative, contends that such published accounts of European interactions with "the Other" offers a unique window into the biases of Western culture. While each narrative tends to be specific across cultures and histories, "they are employed by a given cultural group for the purpose of identity negotiation."<sup>107</sup> By defining the Other they are actually holding a mirror up to themselves. Through the negotiation of alterity in Kropotkin's early narrative we can begin to see the ethnographic lens through which he was to construct his theory of mutual aid.

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<sup>105</sup> Leon Poliakov, *The History of Anti-Semitism, Volume 3: From Voltaire to Wagner* (Philadelphia: University of Pennsylvania Press, 2003), pp. 407-410; 421-429.

<sup>106</sup> See, e.g., Adeeb Khalid, *The Politics of Muslim Cultural Reform: Jadidism in Central Asia* (Berkeley, University of California Press, 1998); Nathaniel Knight, "On Russian Orientalism: A Response to Adeeb Khalid," *Kritika: Explorations in Russian and Eurasian History* 1(4): Fall 2000, pp. 701-715.

<sup>107</sup> Kathleen Roberts, *Alterity and Narrative: Stories and the Negotiation of Western Identities* (New York: State University of New York, 2007), p. 195

## PART I

### Russian Orientalism, Ethnography, and Empire

The multi-ethnic construction of the Russian Empire has problematized the framework of Orientalism that Edward Said articulated for Western countries (primarily England and France) in their depiction of the Near and Far East. In essence, Said argued that Western thinking about the Orient, whether this was scholarly, literary, or for popular entertainment, could not be separated from the political and economic power that they held over Eastern regions and people. The depictions represented would frequently evoke an internally consistent but ultimately distorted picture of the regions and served – whether consciously or unconsciously – to justify and strengthen the West’s colonial domination over the East. Knowledge was therefore employed as a form of cultural imperialism, or hegemony, that furthered the economic and military goals of the Western powers in question.<sup>108</sup> In addition to literary tropes, Said identified Orientalism as “a scientific movement whose analogue in the world of empirical politics was the Orient’s colonial accumulation and acquisition by Europe.”<sup>109</sup> This makes the discipline of ethnography, as well as the emerging discipline of anthropology, an important component of Orientalist discourse.

However, Said mentioned Russia only in passing and subsequent research has been decidedly mixed on the applicability of Orientalism to Russian history. Some scholars, such as Kaplana Sahni or Ewa Thompson, have embraced Said’s framework as

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<sup>108</sup> The Italian communist Antonio Gramsci developed this concept of cultural hegemony in his *Prison Notebooks* while in jail during Mussolini’s rule. See Antonio Gramsci, *Prison Notebooks*, Vol. 1, Joseph A. Buttigieg and Antonio Callari (trans. and eds.) (Chicago: Columbia University Press, 2011).

<sup>109</sup> Edward Said, *Orientalism* (New York: Pantheon Books, 1978).

consistent with Russian colonial discourse in the Caucasus.<sup>110</sup> Others, such as Nathaniel Knight and David Schimmelpenninck van der Oye, have denied its relevance given that Russia was neither fully West nor fully East.<sup>111</sup> Another perspective, such as that of Susan Layton and Harsha Ram, has been to reject the binary of colonizer and colonized by introducing an “ambiguous third element,” that of the romantic artist. These Russian artists and writers may have represented an Orientalist perspective in some cases but, unlike their analogues in France and England, the majority also challenged the colonial and militaristic preconceptions that would lend support to imperial domination.<sup>112</sup> It is this third category that Kropotkin best exemplifies and is the lens through which I interpret his journey through the Orient.

Closely connected to the question of Orientalism is that of race science as a justification for and the management of imperial control over “inferior” peoples. The discipline of anthropology was born out of colonial expansion in England and France nearly simultaneously. It was a tool institutionalized in order to understand and manage “savage” peoples (ethnography) and as a quantitative race science to explain phenotypic differences between human populations (anthropometry).<sup>113</sup> Indigenous populations

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<sup>110</sup> Kalpana Sahni, *Crucifying the Orient: Russian Orientalism and the Colonization of Caucasus and Central Asia* (Bangkok: White Orchid Press, 1997); Ewa Thompson, *Imperial Knowledge. Russian Literature and Colonialism* (Westport and London: Greenwood Press, 2000).

<sup>111</sup> Nathaniel Knight, “Grigor’ev in Orenburg 1851-1862: Russian Orientalism in the Service of Empire,” *Slavic Review* 59, 2000, pp. 74-100; David Schimmelpenninck van der Oye, *Russian Orientalism. Asia in the Russian Mind from Peter the Great to the Emigration* (New Heaven: Yale University Press, 2010).

<sup>112</sup> Susan Layton, *Russian Literature and Empire: The Conquest of the Caucasus from Pushkin to Tolstoy* (Cambridge: Cambridge University Press, 1994); Harsha Ram, *The Imperial Sublime: A Russian Poetics of Empire* (Madison: University of Wisconsin Press, 2003).

<sup>113</sup> Sadiya Qureshi, *Peoples on Parade: Exhibitions, Empire, and Anthropology in Nineteenth-Century Britain* (Chicago: University of Chicago Press, 2011); Alice L. Conklin, *In the Museum of Man: Race, Anthropology, and Empire in France, 1850–1950* (Ithaca: Cornell University Press, 2013); Benoît de L’Estoile, Federico Neiburg, and Lygia Maria Sigaud (eds.), *Empires, Nations, and Natives: Anthropology and State-Making* (Durham: Duke University Press, 2005); H. Glenn Penny and Matti Bunzl (eds.), *Worldly Provincialism: German Anthropology in the Age of Empire* (Ann Arbor: University

were, with few exceptions, marginalized or exterminated following contact with the West. Those that remained became wards of the state or objects of study. As French anthropologist Claude Lévi-Strauss noted:

“It is the outcome of an historical process, which has made the larger part of mankind subservient to the other, and during which millions of innocent human beings have had their resources plundered, their institutions and beliefs destroyed while they themselves were ruthlessly killed, thrown into bondage, and contaminated by diseases they were unable to resist. Anthropology is the daughter to this era of violence.”<sup>114</sup>

While the internal history of anthropology is usually presented with the more enlightened emphasis of cultural theory,<sup>115</sup> the discipline’s primary role has been the observation and administration of colonial policies in the pursuit of Western imperialism.<sup>116</sup> As James Scott writes, “Ethnicity and ‘tribe’ begin exactly where taxes and sovereignty end.”<sup>117</sup> Anthropology was a means to measure what did not appear in formal accounting ledgers. The relationship of colonialism and anthropology, to adopt a phrase of Joseph Hooker’s in a letter to Darwin, was that of “an active handmaid, influencing its mistress most materially.”<sup>118</sup> It was the environment within which the field adapted and, consequently,

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of Michigan Press, 2003); H. Glenn Penny, “The Politics of Anthropology in the Age of Empire: German Colonists, Brazilian Indians, and the Case of Alberto Vojtečh Fric,” *Society for Comparative Study of Society and History* 45(2), Apr., 2003, pp. 249-280; Peter Pels, “The Anthropology of Colonialism: Culture, History, and the Emergence of Western Governmentality,” *Annual Review of Anthropology* 26, 1997, pp. 163-83; Andrew Apter, “Africa, Empire, and Anthropology: A Philological Exploration of Anthropology’s Heart of Darkness,” *Annual Review of Anthropology* 28, 1999, pp. 577-98; Marina Mogilner, *Homo Imperii: A History of Physical Anthropology in Russia* (Lincoln: Univ. of Nebraska Press, 2013).

<sup>114</sup> Claude Lévi-Strauss, “Anthropology: Its Achievement and Future,” *Current Anthropology*, vol. 7, 1966, p. 126.

<sup>115</sup> See, for example, Alan Barnard, *History and Theory of Anthropology* (Cambridge: Cambridge University Press, 2004).

<sup>116</sup> Eric Wakin, *Anthropology Goes to War* (University of Wisconsin Center for Southeast Asian Studies, Monograph Number 7, 1992), p. 20.

<sup>117</sup> James Scott, *The Art of Not Being Governed: An Anarchist History of Upland Southeast Asia* (New Haven: Yale University Press, 2009), p. xi.

<sup>118</sup> Charles Darwin, *The Life and Letters of Charles Darwin, Vol. 2* (London: D. Appleton, 1887), p. 110.

evolved. Colonialism, in other words, made anthropology relevant. Colonial outposts offered extensive opportunities for the collection of ethnographic data and human remains while overseas reports inspired a romantic yearning to understand the “unspoiled heathens” before they disappeared entirely.<sup>119</sup>

However, in her book on the history of Russian anthropology, *Homo Imperii*, Marina Mogilner argues that Russian anthropologists imported “race science” from France and England as a means toward modernizing their empire.

Physical anthropology [anthropometry] promised to modernize the Russian Empire not only from the inside but for the outside world as well. Speaking in the language of race, participating in the international race discourse, and defining the subjects and objects of race analysis made Russia a European country and European empire.<sup>120</sup>

In this way, Mogilner continues, Russian race scientists could participate in “explicitly colonial anthropological discourses” that justified white supremacy and the elite’s position in society based on “biological concepts of social stratification.”<sup>121</sup> Mogilner’s book has highlighted an important, and heretofore largely unexplored, aspect of Russian anthropology but opens itself up to critique due to the overreach of her central claim.<sup>122</sup>

While Mogilner has revealed a small coterie of anthropologists contributing to a racialized discourse, they were not representative of Russian anthropology in the way that race science was pursued in France and England. In nineteenth-century Russia, much like in Germany until after unification, race was not utilized as an organizing principle nor was there a system of racial hierarchy.

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<sup>119</sup> Suzanne Marchand, “Priests Among the Pygmies: Wilhelm Schmidt and the Counter-Reformation in Austrian Ethnology,” in Bunzl and Penny (eds.) *Worldly Provincialism: German Anthropology in the Age of Empire* (University of Michigan, 2003), p. 285.

<sup>120</sup> Marina Mogilner, *Homo Imperii: A History of Physical Anthropology in Russia* (Lincoln: University of Nebraska Press, 2013), pp. 5-6.

<sup>121</sup> *Ibid.*, pp. 6-7.

<sup>122</sup> See, for example, the reviews by Alexander Etkind, *Laboratorium: Russian Review of Social Research* 2, 2011, pp. 90-3 and Becky A. Sigmon, *Russian Journal of Communication* 6(3), pp. 339-342.

Mogilner highlights that there were very different discourses between the anthropologists in St. Petersburg and those in Moscow. The Moscow-based Society of Friends of the Natural Sciences, Anthropology, and Ethnography [Общество любителей естествознания, антропологии, и этнографии]<sup>123</sup> (IOLEAE) was founded in 1863 by a small group of Moscow University professors, with little institutional support, who created an organization that was primarily constituted by amateur enthusiasts. Between their founding and 1900, the Anthropological division of IOLEAE published a limited run of three journals, *Proceedings* [Труды], *News* [Известия], and *Diary of the Anthropological Division* [Дневник Антропологического Отдела] all of which amounted to total of twenty issues inclusively. After 1900, the *Russian Anthropological Journal* [Русский антропологический Журнал] (RAJ) published with few interruptions until 1916. The Ministry of Education did grant the IOLEAE an annual subsidy of 400 rubles to support RAJ, but the informal network of scholars and enthusiasts that made up the IOLEAE regularly complained about the lack of institutional support.

Mogilner highlights the IOLEAE as being separate from the larger anthropological tradition in Russia (i.e. ethnography), noting that they defined their science as “replanted into Russian (Moscow) soil directly from Europe, without any prior ‘ripening’ in St. Petersburg” and “was the Russian analogue of the French Anthropological Society.”<sup>124</sup> However, while Russia imported the anthropometry that constituted the basis for a race science, Russian anthropologists did not find race to be a

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<sup>123</sup> Mogilner translates the name as “Society of Lovers” but, given that *любителей* translates to both “lovers” and “amateurs,” I opt for Nathaniel Knight’s interpretation. See Nathaniel Knight, “Nikolai Kharuzin and the Quest for a Universal Human Science: Anthropological Evolutionism and the Russian Ethnographic Tradition, 1885-1900,” *Kritika: Explorations in Russian and Eurasian History* 9, 1 (Winter 2008), p. 88.

<sup>124</sup> Mogilner, *Homo Imperii*, p. 22.

useful category nor did they adopt an assumption of racial hierarchy: two factors that were central features of French and English anthropological discourse.

In contrast, the St. Petersburg anthropologists emphasized ethnography almost exclusively, but even those examples of scholars who imported anthropometry from Europe are illustrative of the difference between Russian anthropology and that practiced in England and France. Anthropology began to be taught as a discipline at St. Petersburg University beginning in 1887 by Eduard Yul'evich Petri (who also wrote the influential textbook *Anthropology* [Антропология] in 1890). Petri received his doctorate in medicine from Berlin specializing in physical anthropology and had “actively socialized in the German, mostly Berlin, anthropological circle.”<sup>125</sup> Mogilner argues that Petri was a preeminent figure in pursuing anthropology as “a science of colonialism” due to his emphasis on race science, anthropometry, and his published view that the *inorodtsy* should be understood as “alien people.”<sup>126</sup> However, while it is true that Petri trained students in anthropometry at St. Petersburg, Mogilner’s example is compromised by her mischaracterization of Petri’s words and ideas. To cite a simple yet glaring error, the line about “alien people” that Mogilner attributed to Petri was not actually illustrative of his views regarding indigenous people but was rather a reference concerning ancient scholars: “Among the Greek thinkers and researchers, Herodotus is foremost in revealing to us an entire world of alien people.”<sup>127</sup> Petri then goes on to point out that many of these stories, like many forerunners in ethnography, are a mixture of true information and

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<sup>125</sup> Mogilner, *Homo Imperii*, pp. 80-1.

<sup>126</sup> Mogilner, *Homo Imperii*, p. 82; citing Eduard Petri, *Antropologiya*, Vol. 1 (St. Petersburg, 1890), p. 5.

<sup>127</sup> Eduard Petri, *Antropologiya*, Vol. 1 (St. Petersburg, 1890), p. 5. “Среди греческих мыслителей и исследователей мы останавливаемся прежде всего на Геродоти, раскрывшемся перед нами целый мир чуждых народностей.”

“absurd fairy tales about one-eyed humans, people with dog heads, those without heads, and so on.”<sup>128</sup> Petri also noted that Herodotus himself was often skeptical of these tales.

While Mogilner highlights Petri’s advocacy of anthropometry as a tool in anthropological research, that is not enough to characterize him as a proponent of racist and colonial science. For example, Petri pointed out that there has been a problem with researchers using skull measurements “under the influence of phrenological and physiognomic ideals” [под влияния френологических и физиогномистических идеалов]. He goes on to detail that, contrary to the predominant view among French anthropologists, “the most capacious skulls do not correspond with the most intelligent races” [что наиболее ёмкие черепа не соответствуют наиболее интеллигентным расам].<sup>129</sup> He also cited the importance of incorporating language when classifying human groups and states that there should be “extreme caution in matters of classification by race” [Крайнюю осторожность в вопросах о классификации народов по расам].<sup>130</sup> He did not accept the idea of stable races, stating that, “our main types correspond to a certain extent on the conditional, but extremely unstable term race” [Наши основные типы до известной степени соответствуют условному, хотя и чрезвычайно неустойчивому термину расы].<sup>131</sup> On the issue of utilizing the convolutions of the brain to determine the relative intelligence of a particular race (as advocated by Paul Broca, anatomist and founder of the *Société d’Anthropologie de Paris*) Petri states that the research methodology is very poorly designed and should be treated

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<sup>128</sup> Ibid. “Не следует, однако, забывая того, что у Геродота, подобно тому, как у всех предтеч классической эпохи по этнографии и этнологии, назовем, напр., Ктезия, Мегасеена, к истинным сведениям зачастую примешиваются нелепый сказки о людях одноглазых, о людях с собачьими головами, без голов и т. п.). Сам Геродот, однако, к этим чудесам относится скептически.”

<sup>129</sup> Eduard Petri, *Antropologija*, Vol. 1, p. 87.

<sup>130</sup> Eduard Petri, *Antropologija*, Vol. 1, p. 97.

<sup>131</sup> Eduard Petri, *Antropologija*, Vol. 1, p. 107.

skeptically.<sup>132</sup> “In general, we can safely say at the present time, that neither brain weight nor crinkles in it, not to mention the microscopic structure and chemical composition, give us any information either on the division of races nor on the superior or inferior intellectual inclinations of nationalities or sexes.”<sup>133</sup> Petri likewise made his views on colonialism and white supremacy abundantly clear and deserve to be quoted at length.

The contempt that civilized people have towards the uncultured, as though they were a class of inferior beings, has a deep foundation in human nature and was the historical condition that gave Europeans the justification to take the wealth of the savages. But these views about uncultured people differ; such that, I was extremely honored to live with them and have the ability to apply a different worldview.

The shameful consequence of this European attitude towards their lesser brethren was the condoning of slavery, exploitation and extermination. . . [T]hey have to this day maintained the greedy practice of human encroachment; they flatter the self-delusions of Europeans and support the extreme representatives of science in their pursuit of a transitional link between man and the animal kingdom.

Even now, as the unity of the human race has so many defenders among men of science, this idea has been often criticized by the words of Alexander von Humboldt, so beautiful and so great for the state of science at the time: “There is no more or less noble peoples; all alike are born for freedom.”<sup>134</sup>

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<sup>132</sup> For his part, Broca held that anthropology should be “the scientific study of the human races” [*l'étude scientifique des races humaines*]. See Paul Broca, “Mémoires sur l'Hybridité,” *Mémoires d'Anthropologie* 3, 1877, p. 325.

<sup>133</sup> Eduard Petri, *Antropologija*, Vol. 1, p. 90. “Весьма слабо разработан с точки зрения сравнительной антропологии вопрос об извилинах мозга. В общем можно смело сказать, что в настоящее время ни вес мозга, ни извилина его, не говоря уже о микроскопическом строении или химическом составе, не дают нам никаких указаний ни относительно разделения рас, ни относительно высших или низших по интеллектуальным задаткам народностей или полов.”

<sup>134</sup> “Презрительное отношение культурных народов к малокультурным, как к классу низших существ, имеет глубокое основание как в человеческой природ, так и в исторических условиях, давших европейцам возможность пользоваться богатствами дикарей. Эти воззрения на некультурного человека отличаются; поэтому, необычайно живу честью и способностью применяться к различнейшим мировоззрениям.”

Эти столь позорные по своим последствиям для европейцев отношения к низшим братьям покровительствовали рабству, эксплуатации и истреблению. . . [О]ни еще по сию пору поддерживают алчный попиноления людей практики; они льстят самообольщению европейцев; они поддерживают крайних представителей естество-знания в их погоне за переходными звеньями между человеком и царством животным.

In short, while Petri was a man of his time, he was hardly a proponent of racist and colonial science.

Mogilner herself provided a useful case study that emphasizes the limited role that race science played in Russia with her overview of anthropology in Kazan. Situated in the Republic of Tartarstan – in the Volga District, the easternmost region of European Russia – Kazan was an important shipbuilding center for tsarist Russia’s Caspian fleet and the gateway to the East. One of the first imperial universities was built in Kazan (after St. Petersburg and Moscow) in 1804 and became an important center for Russian Oriental studies.<sup>135</sup> If it were indeed the case that anthropometry allowed Russian scholars to engage in “explicitly colonial anthropological discourses” in the furtherance of “biological concepts of social stratification” then Kazan would have been the ideal location. However, in Mogilner’s own estimation, this was not the case.

[T]he Caucasus should have been a Russian anthropological Eldorado, as it was widely perceived as a ‘real’ colony, separated from the metropole and settled by ‘inferior’ peoples who were to be pacified and civilized but not completely integrated or assimilated. Structurally, there were all the preconditions for the state to support race science and for the intellectuals serving in the Russian military or civic administration to empower themselves with race discourse. In reality, anthropological studies in the Caucasus enjoyed no consistent state support.<sup>136</sup>

Mogilner highlights a few scholars, all medical professionals, who sought to use European race science to study “racial pathologies,” but, unlike Moscow, Kazan scholars

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Но даже и въ настоящее время, когда единство человеческого рода находить стол много защитников среди людей науки, неоднократно подвергались нападению слова Александра Гумбольдта, столь прекрасная и столь великия для тогдашнего состояния науки: ‘нет более или же менее благородных народов; все одинаково рождены для свободы.’”

<sup>135</sup> M.S. Zakiev and R.M. Valeev, *Мирза Казем-Бек и Отечественные Востоковеды* [Mirza Kazem-Bek and the Russian Orientalists], (Kazan, 2001).

<sup>136</sup> Marina Mogilner, “Beyond, Against, and with Ethnography: Physical Anthropology as a Science of Russian Modernity,” in Roland Cvetkovski and Alexis Hofmesiter (eds.) *An Empire of Others: Creating Ethnographic Knowledge in Imperial Russia and the USSR* (Budapest: Central European University Press, 2004), p. 110.

overwhelmingly emphasized ethnography. A “self-conscious school of ethnography” emerged in Kazan as a reaction against the positivist and medicalized approach to anthropology that was occurring in Moscow. This ethnography was based on early 19<sup>th</sup> century scholars, mostly German, and was characterized by a strong civilizing mission among the non-Muslim and non-orthodox *inorodtsy* of the region. In 1878, the Society for Archaeology, History, and Ethnography [Общество Археологии, Истории и Этнографии] (ОАИЕ) was established at Kazan University whose mission was defined as a study of the “past and present of the Russian and alien [инородческого] population of the territories of the former Bolgar-Khazar and Kazan-Astrakhan kingdoms [царств].”<sup>137</sup>

The Russian Empire, in contrast to the colonial governments of England and France, engaged in a process of “internal colonization” – or “inner colonisation” as Kropotkin used the term – where it came to indigenous and Far Eastern peoples.<sup>138</sup> Alexander Etkind described this as a process in which “self-colonization was not directed away from the state borders but expanded along with the movement of these borders, filling the internal space in waves of various intensities.”<sup>139</sup> In July 1822 the Speranskii

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<sup>137</sup> Mogilner, *Homo Imperii*, p. 59.

<sup>138</sup> For Kropotkin’s use of the term see *Russian Literature* (McClure, Phillips & Co: New York, 1905), p. 230; “the ‘inner colonisation’ of Russia, which can only be compared with that of the United States.” See also Kropotkin, *Fields, Factories, and Workshops, Revised Edition* (G.P. Putnam’s Sons, New York and London, 1913), p. vi.

<sup>139</sup> Alexander Etkind, *Internal Colonization: Russia’s Imperial Experience* (Cambridge: Polity Press, 2011), p. 2. Also see David Moon, “Peasant Migration and the Settlement of Russia’s Frontiers 1550-1897,” *The Historical Journal* 40, 1997, pp. 859-893; Lewis Siegelbaum, “Those Elusive Scouts. Pioneering Peasants and the Russian State, 1870s-1950s,” *Kritika* 14, 2013, pp. 31-58; Charles Steinwedel, “Resettling People, Unsettling the Empire: Migration and the Challenge of Governance, 1861-1917,” in Nicholas Breyfogle, Abby Schrader & Willard Sunderland (eds.) *Peopling the Russian Periphery: Borderland Colonization in Eurasian History* (London: Routledge, 2007), pp. 128-147; Willard Sunderland, “Peasant Pioneering: Russian Peasant Settlers Describe Colonization and the Eastern Frontier, 1880s-1910s,” *Journal of Social History* 34, 2001, 895-922; Nicholas Breyfogle, *Heretics and Colonizers: Forging Russia’s Empire in the South Caucasus* (Ithaca: Cornell University Press, 2005); George J. Demko, *The Russian Colonisation of Kazakhstan, 1896-1916*, (Bloomington: Indiana University Press, 1969); Donald W. Treadgold, *The Great Siberian Migration: Government and*

Statute for the Administration Organization of Siberia was approved and detailed the rights and obligations between the *inorodtsy* [“aliens” or “people of different origins”] and the Russian state. Of particular interest was the way that different groups were classified based on culture and subsistence structure. While all of the indigenous categories were subject to pay taxes, or *iasak*, in the form of either coin or fur tribute, there were legal protections (on paper at least) to protect indigenous groups from abuse. The agricultural and converted natives in towns or settlements were classified as being on the same legal footing as Russians and their legal obligations would be determined “according to the legal class into which they are incorporated.” Nomadic and migratory natives, those who lived in a single territory but migrated with the seasons, were in a special legal class on equal footing with peasants, granted their home territory forbidden to Russian settlement, and could not be forcibly incorporated into an existing legal class. While it was legal to trade with nomadic and migratory natives, selling alcohol to these groups was strictly forbidden. While these protections were often selectively enforced given the distance from government power centers, they did result in legal recourse for the indigenous groups living in Siberia.

In contrast to the European notion of nationalism that rose during the nineteenth century, the Russian exploration of the *narodnost* was characterized more by respect for the indigenous cultures and local customs that characterized Russia’s vast empire. While Imperial officials in St. Petersburg frequently objected to a plurality of governing styles and customs in the eastern districts, it was more or less accepted that the Russian Empire would be administered as a collection of “territorially defined and homogenous ethnic

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*Peasant in Resettlement from Emancipation to the First World War* (Princeton: Princeton University Press, 1957).

identities.”<sup>140</sup> As Austin Jersild concludes, in his treatment of the Russian experience in the Caucasus, “The question of ‘identity’ as Russians imagined it in the nineteenth century was very different from the developing ‘principle of nationality’ in Europe.”<sup>141</sup>

### **Race and Ethnography in the Context of Empire**

In contrast to Russia, white supremacy was implicit to the discipline of anthropology from its inception in England and France but the reasons that justified it were a hotly debated topic, particularly following Charles Darwin’s *On the Origin of Species* in 1859. English anthropologists employed both ethnography and anthropometry in roughly equal measure while the French emphasized the latter. German and Russian anthropologists, however, focused almost exclusively on ethnographic investigations and eschewed anthropometry. This can be explained based on the broad regional differences between England/France and Germany/Russia and the divergent experiences each region had with overseas colonialism. England and France were both extensively involved with colonial rule in North and South America, Africa, the West and East Indies, and Hong Kong. The assumptions of white supremacy had been honed over hundreds of years of colonial rule and anthropometry served as a scientific means to prove it. Germany, however, was late to the colonial project with their first colony not occurring until 1884. As Matti Bunzl and H. Glenn Penny noted, “nineteenth-century German anthropology was neither characterized by colonial concerns, nor interested in organizing the world’s

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<sup>140</sup> Austin Jersild, *Orientalism and Empire: North Caucasus Mountain Peoples and the Georgian Frontier, 1845-1917* (Montreal: McGill-Queen's Press, 2002), p. 85.

<sup>141</sup> *Ibid.*, p. 60.

peoples according to evolutionary sequences.”<sup>142</sup> With unification not even occurring until 1871, ethnography was primarily employed in order to catalogue the formerly separate ethnicities within the coalescing German Empire. Russian scientists received most of their professional training in German universities, with a smaller minority studying in France. Furthermore, with the exception of Alaska across the Bering Strait, Russia never engaged in overseas colonies. As Edward Said wrote in *Culture and Imperialism*:

Russia, however, acquired its imperial territories almost exclusively by adjacence. Unlike Britain or France, which jumped thousands of miles beyond their own borders to other continents, Russia moved to swallow whatever land or peoples stood next to its borders, which in the process kept moving farther and farther east and south.”<sup>143</sup>

By the time anthropology emerged as a discipline in the nineteenth-century, the Russian population was spread out over a vast inland Empire – touching Europe to the west, the Middle East to the south, and Asia to the east – and encompassed a continuity of racial characteristics that did not fit into a black-white dichotomy. Consequently, even though Russians imported anthropometry from France in the late nineteenth-century, the “mixed race” complement of the Russian Empire did not make it a useful tool in classifying or explaining the Russian population. Ethnography, however, proved essential to understanding and managing different cultural groups in the Russian government’s project of internal colonization.

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<sup>142</sup> Matti Bunzl and H. Glenn Penny, “Rethinking German Anthropology, Colonialism, and Race,” in Bunzl and Penny (eds.) *Worldly Provincialism: Germany Anthropology in the Age of Empire* (University of Michigan, 2003), p. 1.

<sup>143</sup> Edward Said, *Culture and Imperialism* (New York: Vintage Books, 1994), p. 10.

## Ethnography, Geography, and the German-Russian Discourse

In contrast to England and France, pre-Imperial German anthropology, as Benoit Massin has argued, could best be described as “anti-racist”<sup>144</sup> until the 1880s and the romantic tradition of science – as exemplified in Alexander von Humboldt’s *Kosmos* – was the guiding framework for ethnographic investigations.<sup>145</sup> Consequently, ethnography developed in Germany as a branch of geography rather than as a race science of its own.<sup>146</sup> As Humboldt wrote, the scientific worldview was one of “a unity in diversity of phenomena; a harmony, blending together all created things, however dissimilar in form and attributes.” This unity was achieved “by means of the mutual dependence and connection existing between them.”<sup>147</sup> As an explorer, geographer, and natural historian, Humboldt was considered the foremost *Naturwissenschaftler* of his day and his emphasis on the relationship between humans and their environment contributed substantially to the development of how both geography and anthropology were conducted in Germany.<sup>148</sup> Rather than the Romantic *Naturphilosophie* of Schelling, Fichte, and Hegel, (“vague and poetic garb” in his words) Humboldt emphasized the inductive method of documenting “the physical history of the world” without a

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<sup>144</sup> Benoit Massin, “From Virchow to Fischer: Physical Anthropology and ‘Modern Race Theories’ in Wilhelmine Germany,” in George W. Stocking (ed.) *Volkgeist as Method and Ethic* (Madison: University of Wisconsin Press, 1998), p. 80.

<sup>145</sup> Published in five volumes between 1845 and 1862, the fifth published posthumously based on Humboldt’s notes.

<sup>146</sup> German geography would not be formally established as a discipline in Germany until unification in 1871. Han F. Vermeulen, *Before Boas: The Genesis of Ethnography and Ethnology in the German Enlightenment* (Lincoln: University of Nebraska Press, 2015), pp. 269-355; Stephanie Leitch, *Mapping Ethnography in Early Modern Germany: New Worlds in Print Culture* (New York: Springer, 2010), p. 65.

<sup>147</sup> Laura Dassow Walls, *The Passage to Cosmos: Alexander von Humboldt and the Shaping of America* (University of Chicago Press, 2009), p. 236.

<sup>148</sup> Matti Bunzl, “Franz Boas and the Humboldtian Tradition: From Volkgeist and Nationalcharakter to an Anthropological Concept of Culture,” in George W. Stocking (ed.) *Volkgeist as Method and Ethic* (University of Wisconsin Press, 1998).

preconceived law by which different factors could be deduced from it. As “partial facts,” all natural phenomena should “be considered only in relation to the whole.”<sup>149</sup> In this way, Humboldt emphasized how geography and anthropology were deeply interrelated and highlighted the influence that “the physical phenomena on its surface [has] on the migration, laws, and manners of nations and all the principal historical events enacted upon the face of the earth.”<sup>150</sup>

Humboldt was joined in this unification of geography and anthropology by others, such as geographer Karl Ritter and Wilhelm Heinrich Riehl. While Humboldt did not pursue the connection in any detail, he did emphasize that the earth’s “physical phenomena . . . influence the intellectual advancement of mankind.”<sup>151</sup> However, his protégé Karl Ritter would go on to make the connection between nature and humanity explicit: “The customs of individuals and nations differ in all countries, because man is dependent on the nature of his dwelling-place.”<sup>152</sup> In order to identify the natural laws that influenced the social lives of people in their environment, Ritter followed an inductive method very much in keeping with his mentor that incorporated both geographical and ethnographic evidence.<sup>153</sup> For example, in a study of the Arabian Peninsula in his *Geography in Relation to Nature and the History of Man* [Die Erdkunde im Verhältnis zur Natur und zur Geschichte der Menschen], Ritter first provided an external framework that described the physical geography of the region and then filled this in with detailed ethnographic descriptions of the various peoples’ material, social,

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<sup>149</sup> Ibid., pp. 38-9; Alexander von Humboldt, *Cosmos, Vol. 1*. Trans. E.C. Otte. (New York, 1845/1864), p. 24; 55.

<sup>150</sup> Humboldt, *Cosmos, Vol. 1*, p. 48.

<sup>151</sup> Ibid., p. 23.

<sup>152</sup> Carl Ritter, *Geographical Studies*. Trans. W. L. (Gage, Boston, 1863), p. 318.

<sup>153</sup> Ibid., p. 86.

and intellectual culture as well as their anthropometrical appearance. Ritter followed this with a detailed cultural history of the region that included migratory movements, political transformations, as well as acculturation. As a consequence of this approach, according to contemporary German anthropologist and historian Klaus E. Müller, “Ritter’s *Erdkunde* can thus be described with good justification as a kind of ethnography (*Völkerkunde*).”<sup>154</sup>

Ultimately, German anthropologists saw human diversity through a contextual lens: that of particular histories whose cultures were shaped by their environment and the contingencies of time.<sup>155</sup> Whereas British and French ethnological societies referred to their subject as the study of races, German sources defined it as *Völkerkunde*, the study of peoples.<sup>156</sup> The terms *Völkerkunde* and *Ethnographie* first appeared in the work of historian and linguist August Ludwig Schlözer in his 1771 book *Allgemeine Nordische Geschichte*, a scholar who worked in both Göttingen and St. Petersburg where he developed an “ethnographic method” that was practiced by his students through the nineteenth century.<sup>157</sup> As Hans Fischer concluded in his history of the terms *Völkerkunde* and *Ethnographie*:

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<sup>154</sup> Klaus E. Müller, “Carl Ritter und die Kulturhistorische Völkerkunde Darstellung und Überlegungen,” *Paideuma: Mitteilungen zur Kulturkunde* 11 (1965), pp. 24-57.

<sup>155</sup> Bunzl and Penny, “Rethinking German Anthropology,” pp. 12-14.

<sup>156</sup> Han F. Vermeulen, *Before Boas: The Genesis of Ethnography and Ethnology in the German Enlightenment* (University of Nebraska Press, 2015), p. 8.

<sup>157</sup> Han F. Vermeulen, “Origins and institutionalization of ethnography and ethnology in Europe and the USA, 1771-1845,” in Vermeulen and Roldán (eds.) *Fieldwork and Footnotes: Studies in the History of European Anthropology* (Routledge: London and New York, 1995), pp. 42-3. Another important German scholar who influenced the direction of anthropology was Adolf Bastian whose discussion of the “psychic unity of mankind” was an integral component in the work of Tylor, Boas, and Malinowski (Boas even served as an apprentice to Bastian in Berlin prior to the latter’s emigration to the United States). See Klaus-Peter Koepping, *Adolf Bastian and the Psychic Unity of Mankind: The Foundations of Anthropology in Nineteenth-Century Germany* (New York: University of Queensland Press, 1984); Koepping, “Enlightenment and Romanticism in the Work of Adolf Bastian,” in Vermeulen and Roldán (eds.) *Fieldwork and Footnotes: Studies in the History of European Anthropology* (Routledge: London and New York, 1995), pp. 75-91.

“Zusammenfassend läßt sich zunächst festhalten: ‘Völkerkunde’ und ‘Ethnographie’ sind offenbar gleichzeitig und in gleicher Bedeutung – da das eine als Übersetzung des anderen.”

[*In summary, the following can be said: ‘Völkerkunde’ and ‘Ethnographie’ clearly appeared simultaneously and with identical meanings – one was the translation of the other.*]<sup>158</sup>

In this way, “ethnography” was closely tied with geography in the German tradition whereas “anthropology” emphasized physiological descriptions of human difference, a distinction that also formed the basis of the Russian school.<sup>159</sup>

Kropotkin himself highlighted many of these attributes of German geography in his review of *Die Erdkunde: eine Darstellung ihrer Wissensgebiete, ihrer Hilfswissenschaften und der Methode ihres Unterrichtes*, an edited collection by Maximilian Klar.<sup>160</sup> In Germany and Austria, “the need is being felt to raise the level of geographical education,” a field that had recently been widened “so as to require from him acquaintance with a number of natural and anthropological sciences.”<sup>161</sup> Of special importance was the concept of “*Kultur-geographie*,” or what Dr. Becker referred to as “an opportunity to point out the mutual interaction of geological, orographical, and climatic conditions, and their influence upon the conditions of human life and human work.” This term was not invented by Becker but had a long history in the works of Humboldt and Ritter before being coined by Ernst Kapp in 1845.<sup>162</sup> Geographer and ethnographer Friedrich Ratzel, who emphasized the “inseparable bond between

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<sup>158</sup> Hans Fischer, “„Völkerkunde“, „Ethnographie“, „Ethnologie“: Kritische Kontrolle der frühesten Belege,” *Zeitschrift für Ethnologie*, Bd. 95, H. 2 (1970), p. 181. My translation.

<sup>159</sup> On the importance of ethnography on geographic knowledge see David Livingstone and Charles Withers (eds.) *Geography and Enlightenment* (University of Chicago Press, 1999), pp. 121-123.

<sup>160</sup> Peter Kropotkin, “The Position of Geography in Science and Education,” *The Geographical Journal*, Vol. 25, No. 6, 1905, pp. 667-70.

<sup>161</sup> *Ibid.*, p. 668.

<sup>162</sup> Ernst Kapp, *Philosophische oder vergleichende allgemeine Erdkunde als wissenschaftl. Darstellung der Erdverhältnisse und des Menschenlebens nach ihrem inneren Zusammenhang*, 2 vols., Braunschweig: G. Westermann, 1845.

geography and history,” subsequently coined the related concept of *Anthropogeographie*.<sup>163</sup>

This German framework was not influenced by colonial interests as to the source of information about indigenous people nor with an ethno-nationalist vision to defend, as it was in England and France. Furthermore, the polycentric nature of German scholarship added to this difference in orientation since no one school could dominate the discipline. The multiplicity of regional centers for anthropology, located in Leipzig, Hamburg, Stuttgart, Munich, and Cologne as well as Berlin contributed to the diversity of perspectives in contrast to the dominant influence that London or Paris had for their respective countries.<sup>164</sup> It was only beginning around the end of the century, following the collusion of anthropologists with German colonialism, that anthropology in Germany increasingly forged a link between colonial politics, biology, and eugenics.<sup>165</sup>

Nineteenth-century Russian anthropology was significantly closer to the German tradition than it was to either France or England and even institutionalized ethnography as one of the four pillars of geographical research.<sup>166</sup> There has been a long history of scientific exchange between Russia and Germany dating back to the origin of the Russian

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<sup>163</sup> Friedrich Ratzel, *Anthropogeographie*, Vol. 1 (Stuttgart, 1882), p. 32.

<sup>164</sup> Bunzl and Penny, “Rethinking German Anthropology,” p. 15.

<sup>165</sup> Germany maintained colonies in Togoland, Cameroon, and New Guinea beginning in 1884 with Rwanda, Wituland (Kenya), Samoa, Nauru, as well as the Solomon, Marshall, Bougainville, Mariana, and Caroline Islands between 1885-89. Andrew Zimmerman, “Adventures in the Skin Trade: German Anthropology and Colonial Corporeality,” in Bunzl and Penny (eds.) *Worldly Provincialism: Germany Anthropology in the Age of Empire* (University of Michigan, 2003), pp. 156-178. This was furthered by anthropologists’ work in the prisoner of war camps during WWI, as their practice of measuring and objectifying Europeans using anthropometry, led to the conflation of race, nation, and *Volk*. See Andrew Evans, “Anthropology at War: Racial Studies of POWs during World War I,” in Bunzl and Penny (eds.) *Worldly Provincialism: Germany Anthropology in the Age of Empire* (University of Michigan, 2003), pp. 198-229.

<sup>166</sup> Roland Cvetkovski and Alexis Hofmeister (eds.), *An Empire of Others: Creating Ethnographic Knowledge in Imperial Russia and the USSR* (Budapest: Central European University Press, 2014), p. 41-2; Nathaniel Knight, “Science, Empire, and Nationality: Ethnography in the Russian Geographical Society, 1845-1855,” in *Imperial Russia: New Histories for the Empire*, (eds.) J. Burbank and D.L. Ransel (Bloomington: Indiana University Press, 1998), pp. 108-141.

Academy of Sciences, with most scientists emigrating from Germany.<sup>167</sup> In the field of embryology, for example, nearly all of the leading researchers – such as Kaspar Friedrich Wolff, Khristian Pander, and Karl Maksimovich von Baer – were either German or Baltic German and the nineteenth-century orientation of the field was one characterized by *Naturphilosophie*.<sup>168</sup> The same applied to the field of geography, where Humboldt, Ritter, and Ratzel were the leading theorists influencing the direction taken by the Russian Geographical Society from its foundation in 1845.<sup>169</sup> As Nathaniel Knight noted, “Conceptions of ethnography in Russia continued to be shaped well into the 1880s by the views of the early 19th-century German geographers Alexander von Humboldt and Karl Ritter, who posited the close interdependence between human culture and the surrounding environment.”<sup>170</sup> Further, Germany “provided a direct stimulus and an important source of inspiration” for the push to explore the Russian Far East, particularly the Amur.<sup>171</sup> Common to both Russia and Germany was a belief that understanding and incorporating “the people” – the *narod* in Russia and the *Volk* in Germany – was an important goal for creating a strong national power.<sup>172</sup> Furthermore, since there were no

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<sup>167</sup> When Peter I founded the RAS in 1725 it was made up of researchers “mostly from Germany and German-speaking Switzerland.” Yu. A. Zolotov, “Russian Academy of Sciences,” *Journal of Analytical Chemistry* 56 (8), Aug. 2001, p. 711. Also see Loren R. Graham, *Science in Russia and the Soviet Union: A Short History* (Cambridge: Cambridge University Press, 1993), p. 19.

<sup>168</sup> L. Ya. Blyakher, *History of Embryology in Russia from the Middle of the Eighteenth to the Middle of the Nineteenth Century*, (trans.) Hosni Ibrahim Youssef and Boulos Abdel Malek (Washington, D.C.: Smithsonian Institution, 1982), pp. 141-204.

<sup>169</sup> Mark Bassin, “Geographical Determinism in Fin-de-siècle Marxism: Georgii Plekhanov and the Environmental Basis of Russian History,” *Annals of the Association of American Geographers* 82 (1), 1992, pp. 3-22; Mark Bassin, “The Russian Geographical Society, the ‘Amur Epoch,’ and the Great Siberian Expedition 1855–1863,” *Annals of the Association of American Geographers* 73 (2), 1983, pp. 240-256.

<sup>170</sup> Nathaniel Knight, “Nikolai Kharuzin and the Quest for a Universal Human Science: Anthropological Evolutionism and the Russian Ethnographic Tradition, 1885–1900,” *Kritika: Explorations in Russian and Eurasian History* 9 (1), 2008, p. 90.

<sup>171</sup> Mark Bassin, *Imperial Visions: Nationalist Imagination and Geographical Expansion in the Russian Far East, 1840–1865*, (Cambridge: Cambridge University Press, 1999), p. 41.

<sup>172</sup> *Ibid.*

institutions for post-graduate scientific education in Russia, researchers in many scientific fields were required to travel abroad, primarily Germany, in order to pursue professional study.<sup>173</sup> This “brain circulation” continued into the twentieth and twenty-first centuries, with more than twice as many Russian scholars traveling to Germany than to France or the United States combined, following the transnational knowledge networks that have developed over the past three centuries.<sup>174</sup> This reflects what Steven Shapin referred to as the “local patterns of training and socialization” that affected how science developed in Russia.<sup>175</sup>

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<sup>173</sup> Loren R. Graham, *Science in Russia and the Soviet Union: A Short History* (Cambridge: Cambridge University Press, 1993), p. 80.

<sup>174</sup> Heike Jöns, “‘Brain circulation’ and Transnational Knowledge Networks: Studying Long-Term Effects of Academic Mobility to Germany, 1954-2000,” *Global Networks* 9 (3), 2009, pp. 315-338, Table 4; Basak Bilecen and Thomas Faist, “International Doctoral Students as Knowledge Brokers: Reciprocity, Trust and Solidarity in Transnational Networks,” *Global Networks* 15 (2), 2015, p. 225.

<sup>175</sup> Steven Shapin, “Here and Everywhere: Sociology of Scientific Knowledge,” *Annual Review of Sociology* 29, 1995, pp. 289-321; Steven Shapin, “Placing the View from Nowhere: Historical and Sociological Problems in the Location of Science,” *Transactions of the Institute of British Geographers* 23, 1998, pp. 5-12.

## PART II

### Peter Kropotkin, Ethnography, and the Russian Far East ‘Zomia’

While Peter Kropotkin later became famous for his anti-authoritarian views, his earliest experiences as a naturalist were as a representative of Russian state power. He described one such trip for *Notes of the Siberian Branch of the Imperial Russian Geographical Society* [Записки Сибирского отдела Императорского Русского Географического общества] in 1865.<sup>176</sup> Kropotkin had been appointed “official of special missions in Eastern Siberia” and joined an expedition in order to find a direct overland route from the southeastern border of the Trans-Baikal region through Manchuria to the Amur River.<sup>177</sup> The Trans-Baikal had previously been under Chinese control dating back to the 1689 Treaty of Nerchinsk, extending north from the Amur River to the Stanovoy Mountains and east to the Argun River. Following the 1860 Convention of Peking the region was now in Russian control and Kropotkin joined an expedition organized by Commander Buxhowden of the Second Brigade and led by Sargent Sofronov. Joining them was a team of four Cossack proprietors (собственников), six hired hands (наемных людей), forty-one horses, three small horse-drawn wagons, and a four-wheeled cart loaded with goods. Ostensibly, the expedition was to find a track over the Great Khingan range so that Cossack drovers could more easily travel from Trans-Baikal into Amur province, though a strategic aim to acquire the

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<sup>176</sup> Peter Kropotkin, “Две Поездки в Маньчжурию в 1864 Году” [Two Trips to Manchuria in 1864], *Записки Сибирского отдела Императорского Русского Географического общества*, 1865, 8:1, pp. 1-120.

<sup>177</sup> Martin A. Miller, *Kropotkin* (University of Chicago Press, 1976), p. 64.

territory that divided these regions may have existed.<sup>178</sup> Sofronov and Kropotkin both concealed their military identity “because, in China, Russian officers are not permitted; they only let merchants with goods travel through.”<sup>179</sup> Nevertheless, there was immediate concern from the Cossacks that this was a military expedition rather than purely an issue of trade and Kropotkin “had to explain to them that it was not an official who was going with them but a private individual who himself intended to trade with the Chinese.”<sup>180</sup> A subsequent expedition into Manchuria followed the Songhua River from its junction with the Amur to the Chinese town of Jilin. For this journey a staff colonel was in charge and the company included an astronomer, doctor, two topographers to map the region, and twenty-five soldiers (whose rifles were hidden under coal in a barge under tow).

Kropotkin studied the geographical and ethnographic texts of Eastern Siberia and Manchuria prior to his departure but was particularly enamored by Humboldt’s *Kosmos*.<sup>181</sup> Kropotkin had finished the first volume by December 1862 in which he wrote to his brother from Chita that he had “learned a great deal about the movement of scientific issues,” and finished the second volume by August 1863 in Khabarovsk on the eastern frontier, thirty kilometers from the Chinese border.<sup>182</sup> Humboldt’s work became, for Kropotkin, an exemplar for how science should be communicated, an ideal expression

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<sup>178</sup> George Woodcock and Ivan Avakumovic, *The Anarchist Prince: Peter Kropotkin* (New York: Schocken Books, 1950), p. 68.

<sup>179</sup> И.И. Роров, *Минувшее и пережитое, I. Детство и годы борьбы* (Ленинград, Издательство Колос, 1924), p. 159.

<sup>180</sup> Peter Kropotkin, “Две Поездки в Маньчжурию в 1864 Году,” *Записки Сибирского отдела Императорского Русского Географического общества* 8(1), 1865, p. 4. “Пришлось растолковать им, что с ними идет не чиновник, а частный человек, который сам намерен торговать с китайцами и т.п.”

<sup>181</sup> Kropotkin also read the work of the German geographer and ethnographer Karl Ritter. Kropotkin, *Memoirs of a Revolutionist*, Vol. 1, p. 182.

<sup>182</sup> Letters from Peter to Alexander Kropotkin, December 8, 1862 and August 1, 1863. *Письма Александру Кротопкины Переписка, Том Второй, 1862-1871* (Moscow: Academia, 1933), pp. 62-7 & 124-26. “Вообще из «Космоса» я узнал довольно много о движении научных вопросов.”

of the “philosophy and the poetry of nature, the methods of all the exact sciences, and an inspired conception of the life of nature.”<sup>183</sup> He further wrote, “We have not had among us so gifted a traveler and philosopher as Humboldt was,” and, along with Karl Ritter, represented the “high standard of scientific reasoning and philosophical generalisations.”<sup>184</sup> Throughout his diary and travel writing, Kropotkin showed the same penchant for following Humboldt’s inductive approach to reasoning and the thick description of flora and fauna in which to base future conclusions upon.<sup>185</sup>

Kropotkin followed the same approach with the different peoples he encountered, including the Cossacks, Buryat, Yakut, Daur, and Tungus/Oroqen where he included detailed descriptions of their customs, appearance, and lifestyles. The word “Cossack” was a generalized term for runaway serfs who had fled European Russia in the sixteenth century. While there were as many as twenty-two distinct Cossack groups – ranging from the Amur River in eastern Siberia to the Don River basin at the Azov Sea – they had little in common but a historical connection through servitude and a largely egalitarian social structure.<sup>186</sup> Few Cossacks had previously settled the remote Amur region, given that it was a 3,500-mile journey from the Volga. Therefore, in order to force settlement of the Amur, between 1851 and 1862 about 16,000 men and women of the Transbaikalian Cossack Host were transported to the region and installed on small settlements.<sup>187</sup>

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<sup>183</sup> Kropotkin, *Memoirs of a Revolutionist*, Vol. 1, p. 104.

<sup>184</sup> Peter Kropotkin, “What Geography Ought To Be,” *The Nineteenth Century* 18, 1885, p. 940.

<sup>185</sup> See, for example, the detailed botanical and zoological descriptions published in *Сибирский вестник* on June 4, Nov. 16, & Dec. 28, 1866 and April 17, 1867. Kropotkin also detailed extensive lists of scientific equipment requested and the shipping of samples, including 25 stuffed birds, 25 species of insect, 70 plant species, and about 100 rock samples.

<sup>186</sup> James Scott, *The Art of Not Being Governed: An Anarchist History of Upland Southeast Asia* (New Haven: Yale University Press, 2009), p. 157 & 260.

<sup>187</sup> James Forsyth, *A History of the Peoples of Siberia: Russia’s North Asian Colony, 1581-1990* (Cambridge: Cambridge University Press, 1992), pp. 214-15.

The Buryat were a semi-nomadic people originally from the Lake Baikal region of south-central Siberia. On the western side of Lake Baikal many Buryat had adopted a sedentary way of life – constructing octagonal-shaped wooden cabins with a smoke-hole in the center of the roof – and cultivated millet, barley, and buckwheat. However, east of the lake, most Buryat continued to preserve their traditional Mongol way of life based around horses and cattle, migrating between pastures, and living in felt-covered yurts. They forged their own iron implements, traded with Cossacks and Mongols, and spoke a language that was a mixture of Mongolian, Turkic, Sanskrit, and Chinese.<sup>188</sup> According to Kropotkin, the Buryat were uniformly adamant about the “equality of rights.” Just as Darwin had described among the Patagonian Fuegians, if one member of the society were given a portion of food it would be immediately divided equally among those who were present.

According to the customs of the Bourriats, who live in Sayany, near the Okinski Outpost, when a ram is killed, the whole village comes to the fire where the feast is being prepared, and all take part in the meal. The same custom existed also among the Bourriats of the Verkholensky district.<sup>189</sup>

The Daur people occupied the Amur valley as far as Zeya and their language was related to those of the Tungus and Manchurians. They lived in an area that was never fully subjugated by the Chinese despite frequent invasions since the fourteenth century. They lived in fortified towns and practiced agriculture on the border between China, Manchuria, and Russia where the shifting borders and difficult terrain left them largely insulated from incorporation into any of the national polities.

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<sup>188</sup> James Forsyth, *A History of the Peoples of Siberia: Russia's North Asian Colony, 1581-1990* (Cambridge: Cambridge University Press, 1992), pp. 84-6.

<sup>189</sup> Peter Kropotkin, *Ethics: Origin and Development* (New York: Dial Press, 1924), p. 75, n. 11.

Finally, the Tungus (or Oroqen, from the Ewenki term Orochon that means “possessing reindeer”)<sup>190</sup> were the most numerous people of the region that extended beyond the Lena River and Lake Baikal.<sup>191</sup> Their Ewenki language was most similar to Manchurian and many of the twenty distinct tribes spoke various dialects. They were primarily nomadic forest dwellers and lived in readily transportable conical dwellings made from wooden poles and animal skins, which, like their reindeer or elk skin clothing, were reminiscent of the indigneous peoples from Northwest America. The Tungus would utilize domesticated reindeer as beasts of burden for carrying their children or for moving camp to follow the herds and used their does for milk. They were highly egalitarian and viewed their domesticated reindeer as the property of the entire clan. Their concept of mutual assistance, which was considered essential in such a hostile environment, included free access to the store-houses that were set up at various points in the forest.<sup>192</sup> Their commitment to egalitarianism was so great that, as Kropotkin later wrote, “I remember how vainly I tried to make some of my Tungus friends understand our civilisation of individualism: they could not, and they resorted to the most phantastical suggestions.”<sup>193</sup> In the upland steppes to the southeast of Lake Baikal, the Tungus had adopted the horse-riding and yurt dwellings of the predominant Mongolian population.<sup>194</sup> These “Horse-Tungus” were also known as the Solon, Manegir, or Birar based on their

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<sup>190</sup> Kropotkin differentiates between the Oroqen people who live by hunting and gathering and the Tungus who do not follow their traditional ways but have adopted other ways of living.

<sup>191</sup> There was an estimated population of 36,000 in the seventeenth-century. James Forsyth, *A History of the Peoples of Siberia: Russia's North Asian Colony, 1581-1990* (Cambridge: Cambridge University Press, 1992), pp. 48-55 & 206.

<sup>192</sup> *Ibid.*, p. 50.

<sup>193</sup> Peter Kropotkin, “Mutual Aid Among Savages,” *The Nineteenth Century*, April 1891, p. 554.

<sup>194</sup> James Forsyth, *A History of the Peoples of Siberia*, p. 53.

clan affiliation.<sup>195</sup> However, other scholars suggest that the Horse-Tungus were actually “Mongolized Daur” that had migrated to Russia from China in the 17<sup>th</sup> century.<sup>196</sup>

In sum, the area ranging from the southern tip of Lake Baikal to the eastern borders of Russia, China, and Mongolia were represented by a diverse mixture of peoples and cultures.

Khori Buriads, short of land because of Russian peasant settlements, made agreements with the Mongols and regularly went long distances to pastures in Mongolia each summer, while mixed Russian-Buriad-Tungus Cossacks similarly crossed the Argun River to use land on the Chinese side. Eastern Trans-Baikalia in the mid-19<sup>th</sup> century came to have an ethnic mixture even more complex and fluid over time than in Tannu-Urianghai, resulting in a patchwork of administrative areas. It included sedentary Cossacks of mixed parentage, sent to man the border by the Tsarist authorities, along with mobile Buriads, Khamnigan, Evenki and so-called ‘Tungus’, who overlapped with some of the former and were administratively categorised as ‘wandering’ and ‘nomadic’ groups.<sup>197</sup>

While there was a great deal separating the various peoples that lived in the Amur, a common theme running through their collective histories was that of resistance to state control. The Cossacks were frequently recruited as mercenaries during Russian incursions to the east, but this history is filled with reports of mutiny, insurrection, and the refusal to fight once Cossack battalions had accumulated enough personal fortune from raiding villages.<sup>198</sup> The Buryat, Daur, Yakuts, and Oroqen all lived on the borders

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<sup>195</sup> Kropotkin notes that the Cossacks in his company when he travelled to Manchuria in 1864 referred to the horse-riding Tungus of that region as the Solon [солоны]. Kropotkin noted that these Tungus spoke Mongolian as if it were their native language. Kropotkin, “Две поездки в Маньчжурию в 1864,” *Записки Сибирского отдела Императорского Русского Географического общества*, No. 8, 1865, pp. 1-120.

<sup>196</sup> V.Z. Nanzatov, “Урульгинский котел: взаимодействие дагуров, солонов, монголов, маньчжуров, бурят и эвенков на востоке Бурятии” [Uralginsky cauldron: Interactions between Dagurs, Solons, Mongols, Manchus, Buryats, and Evenks in the east of Buryatia], *Вестник Бурятского научного центра Сибирского отделения Российской академии наук* 3(7), 2012, pp. 99-108.

<sup>197</sup> Caroline Humphrey, “Is Zomia a Useful Idea for Inner Asia?” *Mongolian Journal of Anthropology, Archaeology and Ethnology* 8(1), 2015, pp. 100-1.

<sup>198</sup> James Scott, *The Art of Not Being Governed: An Anarchist History of Upland Southeast Asia* (New Haven: Yale University Press, 2009), pp. 259-261.

between the polities of Russia, Mongolia, and China. These are heavily mountainous regions that, to this day, remain sparsely populated and with national boundaries that may exist on a map but which have little physical presence.

This “joint frontier” encompassing the Russian Far East, northeast China, and eastern Mongolia has never been fully developed by modern states, leading some scholars to argue that it represents a “Zomia.”<sup>199</sup> The term Zomia was originally used to define a neglected region in upland South East Asia that was remote, lacked centers or state control, was ethnically diverse, and politically ambiguous. For Van Schendel and James Scott, this was the mountainous region overlapping the national borders of China, Thailand, Laos, Vietnam, and Myanmar. As Scott elaborated, this cross-border zone should be understood as a distinct area for scholarly analysis because the diverse peoples of the region had all maintained a common culture of avoiding incorporation under state control. This makes Zomia both a metaphorical idea, a region previously ignored because it was considered to be remote and unimportant, and a physical space in which the people that lived there shared a common history and values. Nianshen Song argues for an extension of Zomia to this Russia-China-Mongolia borderland region east of Lake Baikal in order to better understand its “unique historical agency, with its own developmental

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<sup>199</sup> Zomia was a term coined by Van Schendel and elaborated by James Scott. See W. van Schendel, “Geographies of Knowing, Geographies of Ignorance: Jumping Scale in Southeast Asia,” *Environment and Planning D: Society and Space* 20, 2002, pp. 647-668; James Scott, *The Art of Not Being Governed: An Anarchist History of Upland Southeast Asia* (New Haven: Yale University Press, 2009). For extensions of Zomia see: Jing Huang and Alexander Korolev, *The Political Economy of Pacific Russia: Regional Developments in East Asia*, (New York: Springer, 2016), pp. 54-7; Caroline Humphrey, “Is Zomia a Useful Idea for Inner Asia?” *Mongolian Journal of Anthropology, Archaeology and Ethnology* 8(1), 2015, pp. 92-107; Nianshen Song, “Northeast Eurasia as Historical Center: Exploration of a Joint Frontier,” *The Asia-Pacific Journal* 13(2), 2015, pp. 1-19; Sara Schneiderman, “Are the Central Himalayas in Zomia? Some Scholarly and Political Considerations Across Time and Space,” *Journal of Global History* 5(2), 2010, pp. 289-312; Seok-Joon Hong, “The Social Formation and Cultural Identity of Southeast Asian Frontier Society: Focused on the Concept of Maritime Zomia as Frontier in Connection with the Ocean and the Inland,” *Journal of Marine and Island Cultures* 5(1), 2016, pp. 28-35.

dynamic.”<sup>200</sup> Going further, Caroline Humphrey identifies four distinct Zomias of the Russian Far East/Inner Asia region: 1) Altai, at the modern day Russia-China-Mongolia-Kazakhstan border, 2) the Hubsugul/Tyva/Oka, or “Buryatia” region at the northern Russia-Mongolia border south of Lake Baikal, 3) the Barga/Chita/Hulun-Buir, or “Dauria,” region at the eastern Russia-China-Mongolia border, and 4) Ejin Gol/Alasha at the southernmost portion of the Mongolia-China border.<sup>201</sup> These regions, particularly the highly mountainous landscape from Buryatia to Dauria, represent unincorporated zones with a distinct identity.

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<sup>200</sup> Nianshen Song, “Northeast Eurasia as Historical Center: Exploration of a Joint Frontier,” *The Asia-Pacific Journal* 13(2), 2015, p. 14.

<sup>201</sup> The *Altai Zomia* (1) is a mountainous region crosscut by four national boundaries: Russia, China, Mongolia, and Kazakhstan. The inhabitants were mountain pastoralists or cultivators and their ethnicity was fluid, veering between Turkic and Mongolian. The *Buryatia Zomia* (2) incorporates the Hubsugul Depression in Mongolia and the Oka and Tunka valleys of the Eastern Sayan Mountains in Russia. They were composed of Turkic-language Oroqen reindeer herders and hunter-gatherers as well as Mongol-speaking Buriad pastoral populations that existed in the political hinterland between Qing Manchu border posts and the Tsarist Russian border. The *Dauria Zomia* (3) overlaps the borders of Russia, Mongolia, and China. Until international borders were more rigidly enforced from the mid-1920s onwards, large groups of Buriad, Daur, and Oroqen peoples habitually crossed between each without hindrance for pasturing, hay-making, hunting, and trading. Local leaders repeatedly tried to set up autonomous sovereign polities in the region and there were several large-scale conflicts between these independent polities and late Qing government attempts to further colonize Mongolia. The *Alashan Zomia* (4) consists of oasis-like valleys set in the deserts, sand dunes, and craggy mountains at the edge of the Gobi Desert. The region was beyond the edge of the Chinese-settled agricultural areas of Gansu and Ningxia and was cut off by mountains and desert to place it outside the main Mongolian steppe zone. The region passed between Chinese and Mongol jurisdiction multiple times and was composed of Khoshuud Mongols from Altai who fled back to Qing domains after pressure from the Tsarist government, Khalkhas Mongols escaping the revolution in Mongolia, Chinese and Mongol Muslim camel-herders, and non-Muslim Chinese trading families from Shanxi. See Caroline Humphrey, “Is Zomia a Useful Idea for Inner Asia?” *Mongolian Journal of Anthropology, Archaeology and Ethnology* 8(1), 2015, p. 95.

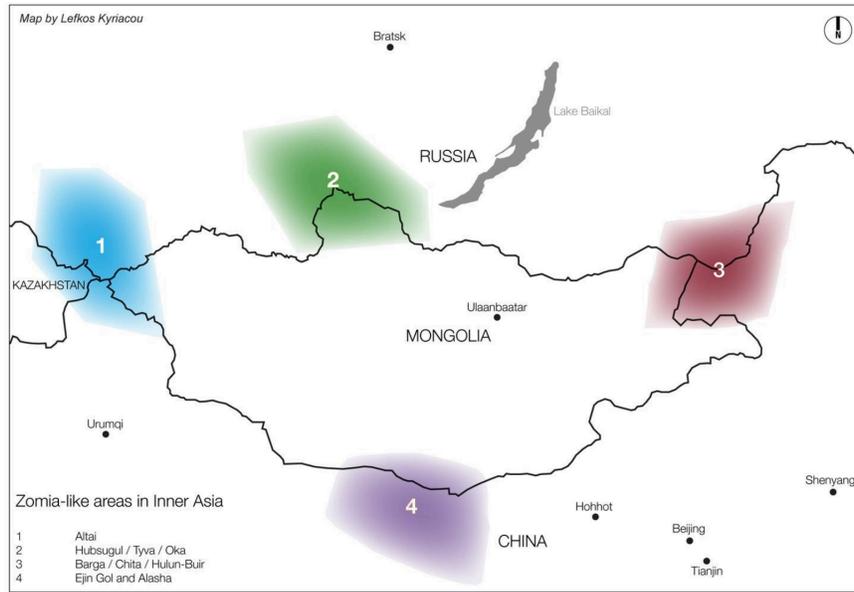


Figure 1.1. The four “Zomias” of the Russian Far East/Inner Asia. From Caroline Humphrey, “Is Zomia a Useful Idea for Inner Asia?” *Mongolian Journal of Anthropology, Archaeology and Ethnology* 8(1), 2015, p. 95.

For the purposes of the current study, this classification of the Russian Far East borderlands as Zomia is significant since Peter Kropotkin would spend significant amounts of time in the first three of the four regions identified by Humphrey during his five-year expedition, with extensive exploration in the Buryatia and Dauria regions that she identifies as the best examples fitting Scott’s criteria.<sup>202</sup> Buryatia, “was a range of dispersed, more or less egalitarian, clan-based societies, with self-sufficient and varied economies. . . People adhered to their own way of life and were resistant to outside influences.”<sup>203</sup> They primarily relied on hunting, indigenous forms of agriculture, artisan production, silver mining, and trading that would supplement what was primarily a livestock economy. While, in Dauria, “the relative isolation of the area, the diversity and fluidity of ethnic identities, the mobile populations, the maintenance of of clan identities,

<sup>202</sup> Ibid., pp. 98-102.

<sup>203</sup> Ibid., p. 99.

the cross border trade, the oral culture, and the repeated, short-lived projects [provided] a degree of regional independence from imperial domination.”<sup>204</sup> These regions maintained a complex ethnic mixture, were left largely unincorporated into any national polity, and were frequently characterized by a fierce resistance to being controlled by Russian, Chinese, or Mongol authorities. It is therefore noteworthy that the young naturalist and explorer, who would later become the “father of modern anarchism,” would spend the formative years of his life in a region characterised by local autonomy, freedom of movement, and a resistance to being controlled by the state.

When Kropotkin first encountered some of these far eastern peoples, such as the settled Buryat, he was impressed with their industriousness and curiosity. After he arrived in Taluyu in March, 1864 he wrote in his diary, “I didn’t meet a single [Russian or Cossack] farmer in the field, but the Buryat were all working.” Of course, as a representative of the Russian elite and an officer in the Imperial Army, Kropotkin brought with him all of the traditional biases and assumptions of his culture and class. In Irkutsk Kropotkin described the Mongolian llamas at a local chapel as “the most unproductive” of the local inhabitants and who were “mercilessly robbing” the settled Buryat farmers.<sup>205</sup> While, in Tunka, he wrote with annoyance, “I’ve been standing here for two hours today. The Buryat have just organized their horses, even though they had

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<sup>204</sup> Ibid., p. 101.

<sup>205</sup> “Около дацана живут 13 лам, народ самый непроизводительный, с кучею прислужников и разных должностных при дацане. Все это питается на счет прихода и нещадно обирает его.”

been warned for several days.”<sup>206</sup> He added that the local people were tricky to study, “especially the Buryat, without knowing their language. But we’ll see.”<sup>207</sup>

However, over time the young explorer adapted to his new conditions and began making detailed observations of local customs and cultures. In 1865 Kropotkin’s description of his eastern travels were published in the *Russian Courier* [Русский вестник], a popular science magazine based in St. Petersburg.<sup>208</sup> He described how there was abundant game of bison, fox, and elk but only a few nomadic Oroqen hunters with their traditional weapons. Unlike the Russians or Cossacks, this indigenous group used all parts of the animal so that there would be “a festive meal with the family” as well as clothing and material for covering their yurt, “usually consisting of tree limbs and branches, which made the warm, felted yurt of the Mongolians feel something like a palace.”<sup>209</sup> Speaking through a Tungu intermediary fluent in their Ewenki language, Kropotkin would utilize their local knowledge to learn the names of rivers and physical landmarks.<sup>210</sup> However, Kropotkin noted that not all of the Oroqen continued to live by

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<sup>206</sup> From Peter Kropotkin to Alexander Kropotkin, May 16, 1865. *Петр Александр Кропоткины Переписка, Том Второй, 1862-1871* (Moscow: Academia, 1933), p. 178. “Сегодня с 2-х часов стою здесь-буряты не нала-дили коней до сих пор, хотя их предупреждали за несколько дней.”

<sup>207</sup> From Peter Kropotkin to Alexander Kropotkin, May 16, 1865. *Ibid.* “Народ здешний очень мудроно изучить, особенно бурят, не зная языка. Впрочем, посмотрим.”

<sup>208</sup> Peter Kropotkin, “Поездка из Забайкалья на Амур чрез Манчжурию,” *Русский вестник*, No. 6. 1865, pp. 585-681.

<sup>209</sup> *Ibid.* “Если счастье послужит и он настреляет достаточно зверей, чтобы можно было пропитаться выручкой с их рогов, тогда будет и праздничная пища в семье и материал для одежды и для крыши юрты, обыкновенно состоящей из древесных сучьев и ветвей, перед которой теплая войлочная юрта монгола нечто вроде дворца.”

<sup>210</sup> There has been a long history of European explorers relying upon and taking credit for indigenous local knowledge. See, e.g. Alix Cooper, *Inventing the Indigenous: Local Knowledge and Natural History in Early Modern Europe* (Cambridge: Cambridge University Press, 2007); Harold Cook, *Matters of Exchange: Commerce, Medicine, and Science in the Dutch Golden Age* (New Haven: Yale University Press, 2007); Neil Safier, *Measuring the New World: Enlightenment Science and South America* (Chicago: University of Chicago Press, 2008); Julie Cruikshank, *Do Glaciers Listen? Local Knowledge, Colonial Encounters, and Social Imagination* (Vancouver: UBC Press, 2010); James C. Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven: Yale University Press, 1998); Tina Loo, *States of Nature: Conserving Canada’s Wildlife in the Twentieth Century* (Vancouver: UBC Press, 2006); Paul Nadasdy, *Hunters and Bureaucrats: Power, Knowledge,*

hunting and gathering. “There are those who fall into bondage [которые попадают в кабалу] to the Daur,” he wrote, referring to the Mongolic-language farming people originally from along the Nen River of Inner Mongolia. Having fallen into debt to the farmers, the Oroqen would be provided with guns and tasked with supplying the Daur households with game (and especially the horns which were “highly respected by the Chinese”). In exchange, the Oroqen would be given some millet and a little extra gunpowder. In his diary, Kropotkin went on to note that government officials would also exploit the Oroqen people. They were made to pay an annual tribute but would frequently fall behind and would be “fleeced excessively” [дерут непомерно].<sup>211</sup> Frequently, they would become dependent on liquor and fall into greater debt. However, Kropotkin also noted that many of the Russian Cossacks experienced the same treatment. Of those indigenous peoples that had adopted agriculture, “settling next to the Chinese, adopting their way of life and methods of cultivation, the Oroqen have not yet adopted the Chinese work ethic and their (relative) neatness but live much poorer and dirtier.”<sup>212</sup> Many seemed to have adopted the cultural attitudes of the settled populations that they were emulating, with one individual from a group of settled “samagir” Oroqen referring to the unsettled “nominsky” Oroqen as “beast-people...very poor, and thieves.”<sup>213</sup>

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*and Aboriginal-State Relations in the Southeast Yukon* (Vancouver: UBC Press, 2003). Also see Clifford Geertz, *Local Knowledge: Further Essays in Interpretive Anthropology* (New York: Basic Books, 1983).

<sup>211</sup> Peter Kropotkin, *Дневник П. А. Кропоткина* [Diary of P.A. Kropotkin], (Москва – Петроград: Государственное издательство, 1923), p. 165.

<sup>212</sup> Peter Kropotkin, “Поездка из Забайкалья на Амур чрез Манчжурию,” [Trip from Transbaikalia to Amur through Manchuria], *Русский вестник*, No. 6. 1865, p. 671. “Но, поселившись рядом с Китайцами, переняв их образ жизни, их способы обработки земли, Орочоне не переняли еще от Китайцев их трудолюбия и их (относительной) опрятности, и живут гораздо беднее и грязнее.”

<sup>213</sup> Peter Kropotkin, “Две поездки в Маньчжурию в 1864,” *Записки Сибирского отдела Императорского Русского Географического общества*, No. 8, 1865, pp. 1-120.

“Здесь орочоны — самагиры, очень не любят номинских: «зверь—народ, говорил один из них, живут очень бедно и воры, а попадешь к ним, с голоду умрешь, если своего нет».” Kropotkin was told there were four distinct “kinds” of Oroqen, “baeir, samair, gurair and maneir.”

It was clear to Kropotkin that the Russian and Chinese immigrants to the region had radically transformed the indigenous communities. He noted that “in the old days there were often clashes between the ‘trappers’ [промышленные] and the Oroqen,” but as he travelled through the region it was obvious who the victors had been. On several occasions his expedition encountered Oroqen hiding in fear as the horses and wagons approached. “In fright they asked the Cossacks not to touch their wives and children who had been left behind.”<sup>214</sup> After Kropotkin’s team descended down the mountain they encountered a large military camp of Daur soldiers with native women and children living amongst them in squalor. The scene morally offended Kropotkin, which, he noted, “was in sharp contrast to the Oroqen encampments” he had seen earlier.

“There is poverty, oppression, and dirt. Daur soldiers, marching in the service, sold vodka for any elk or goat skins, and the Oroqen women feast without their husbands. They cook suspicious glop. Vodka is passed over the young children with their mouths open, dirty, and ragged, sitting around campfires that give free play to the flames on their white, lovely teeth. Their eyes seem to sparkle in anticipation of food.”<sup>215</sup>

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<sup>214</sup> Peter Kropotkin, “Поездка из Забайкалья на Амур через Манчжурию,” *Русский вестник*, No. 6. 1865, p. 668. “Кругом все мертво: время от времени только раздается «рявканье» гурана (самца дикой козы); людей не видно, в одном только месте наткнулись мы на двух прятавшихся за деревом ороchon. С испугом просили они казаков не трогать их жен и детей, оставленных в таборе, к которому мы скоро должны были дойти.”

<sup>215</sup> *Ibid.*, p. 669. “Там нищета, загнанность, грязь. Солдаты-дауры, шедшие на службу, продали водки за какие-нибудь лосиные или козьи шкуры, и ороchonки пируют без мужей. Варится подозрительная бурда; водка обходит всех; дети с открытыми ртами, грязные, ободранные сидят у костров, давая огню свободно играть на их белых, прелестных зубах.” This was not the only time Kropotkin noted the impact of civilization on the local population. In a diary entry from July 16, 1863 he wrote, “I have often noticed that old Buryats have a clever and cunning facial expression, why do young people not have this? . . . They look with inexpressible stupidity at the passers-by, their faces sunburnt, rags on their head, a robe on their bare bodies, with rags on their legs, and what nonsensical eyes. What is this? Killing them with our civilization? It cannot be otherwise.” [Я не раз замечал, что у старых бурят умное и хитрое выражение лица довольно часто. Отчего у молодых этого нет? До такой степени тупоумные лица у всех, что ни на что не похоже. Смотрят с невыразимую глупостью на проезжающих; лица, обожженные солнцем, тряпки на голове, халат на голом теле, отрепья на ногах, и какие бессмысленные глаза. Что же это? Убивание их нашею цивилизациею? Не иначе.] Kropotkin, *Дневник*, p. 112.

The ultimate purpose of the expedition was for Kropotkin to disguise himself as a trader and, along with experienced Cossack merchants, travel from the Transbaikal region of Russia to the Amur River through northwestern China to identify the potential for trade. After experiencing the seemingly borderless regions of Dauria that existed outside of centralized government control, Kropotkin was noticeably irritated by the rigid system imposed by the Chinese authorities. As his caravan arrived in the city of Mergen (present day Nenjiang), a flood of poor residents crowded into the road to observe these “barbarians with white faces.” Meeting the foreign traders was an elderly official “stupefied by opium” and his young subordinate dressed in a pristine blue cape over his long gray tunic and an “elaborately embroidered silk tobacco pouch” hanging from his belt. A policeman joined them, “who, for love of the game, mercilessly whipped the heads of those who were pushing forward.” Taken inside the official headquarters by their Chinese host, Kropotkin saw “whips hanging on the wall, heavy leather boots, and other implements of punishment.” Once there they proceeded to engage in “tedious ceremonies, smiles, nods, coaxing on our part to accept gifts,” all of which ended in failure. At one point during the negotiations “a drunken buffoon even thought to feel my face for which he was ignominiously driven away by the senior official [Амбань].”<sup>216</sup>

What comes through in Kropotkin’s involvement with Chinese and Mongolian peoples is that, while a few descriptions support an Orientalist framework, he ultimately rejected the imperial pursuits of the Russian Empire. While his depictions are certainly

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<sup>216</sup> Kropotkin, “Поездка из Забайкалья на Амур чрез Манчжурию,” *Русский вестник* 6, 1865, p. 674. “Амбань, истый китаец, принял нас вежливо донельзя, В комнате с развешанными по стенам плетями, башмаками из толстой кожи и другими атрибутами кары, имеющимися в руках амбана для наказывания провинившихся, толпились прислужники, чиновники, во время переговоров пьяный шут вздумал щупать мое лицо, за что и был с позором отогнан амбанем. После утомительных церемоний, улыбок, поклонов, уговариваний с нашей стороны принять подарки и отказов с другой, угощения и т. п. мы вернулись назад. Результаты визита были неутешительны.”

unflattering, they are reserved for the Chinese authorities and soldiers whereas he seems to have nothing but sympathy for the peasants and indigenous peoples who were unlucky enough to cross their path. Kropotkin's early hesitation concerning Russian Imperial goals, and the subsequent rejection of his military career, places him in the category of the "ambiguous third element" common among romantic artists as highlighted by Harsha Ram.<sup>217</sup> This is exemplified by a diary entry, in which Kropotkin noted that older Buryats often have "a clever and cunning facial expression," while the young "look with inexpressible stupidity on those passing by." He subsequently answers his own implicit question as to the cause of this intergenerational difference. "What is this? Killing them with our civilization? It could not be otherwise."<sup>218</sup> In this way, Kropotkin was more reminiscent of Alexander von Humboldt or Mikhail Lermontov, romantic explorers and writers who described what they saw through their particular cultural lens but who rejected any justification for imperial control.

Furthermore, Kropotkin rejected the concept of race as a "permanence of type" and spent considerable time discussing racial and cultural hybridity, such as the Russian Cossacks of the 2<sup>nd</sup> Calvary Brigade who had been stationed along the Mongolian border for generations. Kropotkin noted the common subsistence structure of cattle herding between these border Cossacks and the Mongols, their prowess in handling horses, the simplicity of their food compared to the Cossacks of the western Russian steppe, a desire to show off domestic gentility with large mirrors, lamps, and a common style of luxury

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<sup>217</sup> Harsha Ram, *The Imperial Sublime: A Russian Poetics of Empire* (Madison: University of Wisconsin Press, 2003).

<sup>218</sup> Kropotkin, *Дневник*, July 16, 1863, p. 112. "Я не раз замечал, что у старых бурят умное и хитрое выражение лица довольно часто. Отчего у молодых этого нет? До такой степени тупоумные лица у всех, что ни на что не похоже. Смотрят с невыразимою глупостью на проезжающих; лица, обожженные солнцем, тряпки на голове, халат на голом теле, отрепья на ногах, и какие бессмысленные глаза. Что же это? Убивание их нашей цивилизацией? Не иначе."

clothing among women. Kropotkin likewise noted the border Cossacks' darker-skinned faces and their slightly more Mongolian facial features. "In many respects," Kropotkin wrote, "there are striking similarities here between the Russian people and their Mongolian neighbors."<sup>219</sup> He concluded that, through a process of cultural assimilation and intermarriage, the Cossacks developed "a tanned and slightly more Mongolian-type face" [загорелые лица и часто попадающийся слегка монгольский тип лица] and "will necessarily 'little by little' speak in Mongolian and complete the original character of the local Cossacks."<sup>220</sup> As Kropotkin later summarized the conception he held of his homeland in his discussion of ethnography in *Russian Literature*, it was a nation represented by multiethnic diversity: "Several races have settled upon the territory of European Russia, and different portions of the population have followed different lines of development."<sup>221</sup>

It is also clear that Kropotkin distinguished the hereditary aspects from the environmental ones through another discussion of a Cossack population that lived in thirteen separate villages of the Nerchinsk District along the Argun river. Here, in "one of the most fertile valleys in the whole Baikal" lived a population with a high incidence of "goiters and cretinism." The local doctor, by the name of Kashin, determined that the disease was caused by "the nature of the terrain and the way of life" and speculated that it was due to a lack of iodine in the water.<sup>222</sup> The doctor's recommendation was to move

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<sup>219</sup> Peter Kropotkin, "Из Восточной Сибири," [From Eastern Siberia], *Современная летопись* 33, 1864, pp. 5-7.

<sup>220</sup> Peter Kropotkin, "Из Восточной Сибири," *Современная летопись*, 30, 1864, pp. 12-13; "непреречно «мало-мало» говорит по-монгольски, довершают оригинальный характер здешнего казачества."

<sup>221</sup> Kropotkin, *Russian Literature* (New York: McClure, Phillips & Co., 1905), p. 225.

<sup>222</sup> Kropotkin, "Из Восточной Сибири," *Современная летопись* 19, 1864, pp. 9-12; *Современная летопись* 20, pp. 7-9.

the village to a different region where the terrain would improve the physical condition of the villagers. Kropotkin was highly critical of this interpretation.

“The article written by Dr. Kashin on this subject could not convince in any way that the reason for goiters was necessarily the area, because, first of all, he did not pay any attention to heredity, which affects with particular force the mountain ravines where marriages are for the most part practiced between residents of the same village (a phenomenon said to be fairly common in general in the Trans-Baikal region, where there are whole villages filled with people that have the same surname) and, secondly, it was not demonstrated with even one example, but only a general statement that resettlement to another locality would decrease goiters and that the children would be without goiters.<sup>223</sup>

In this way, Kropotkin was making a nuanced argument based on the interplay of biology and the environment rather than privileging one as the exclusive cause. Kropotkin knew that intermarriage between close relations was more likely to result in the accumulation of harmful biological traits (even though the precise hereditary mechanism was not yet unknown). He therefore argued that the highly mountainous region had limited the ability of villagers to marry outside of their local environment (i.e. exogamy) and had, consequently, resulted in the increase of goiters and cretinism in these communities. However, to Kropotkin’s consternation, the authorities took Kashin’s conclusions seriously and forcibly evicted all thirteen villages to the Amur where, according to Kropotkin, their situation deteriorated as a result of the poor growing conditions. This

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<sup>223</sup> “Статья, написанная г. Кашиным по этому поводу, никак не могла убедить, чтобы причиной зоба непременно была местность, потому что, во-первых, он вовсе не обратил внимания на наследственность, которая с особенною силой влияет в горных лощинах, где браки большею частью совершаются между жителями одних и тех же деревень, — явление, как говорят, довольно часто встречающееся вообще в Забайкалье, где есть целые деревни, наполненные лицами одной и той же фамилии, а во-вторых, совершенно не доказал и не подтвердил даже ни одним примером, выразившись общею фразой, что с переселением в другую местность уменьшаются зобы и дети бывают не зобатые (последнее положительно невероятно).”

aspect of Kropotkin's "geosociology"<sup>224</sup> [геосоциологической], drawing on the geographical concepts in Ritter's *Erdkunde* and Becker's *Kultur-geographie*, could best be defined today as a form of environmental determinism.<sup>225</sup> For Kropotkin, the environment provided a strong influence on the way that biological and cultural traits were expressed.<sup>226</sup>

[T]he development of each nationality was the consequence of several great natural laws, imposed by the physical and ethnical characters of the region it inhabited; that the efforts made by other nationalities to check its natural development have been mere mistakes; that political frontiers are relics of a barbarous past; and that the intercourse between different countries, their relations and mutual influence, are submitted to laws as little dependent on the will of separate men as the laws of the motion of planets.<sup>227</sup>

Geography was not primary, nor was biology, but both were crucial for shaping the direction of culture and history as he would elucidate in his later essays on mutual aid. This was an interpretation consistent with the prevailing views of Russian geography in the nineteenth century, heavily influenced by German scholars such as Humboldt, Ritter, and Ratzel and critical of both the social evolutionism prominent in England and the "persistence of type" as it was advocated in France.<sup>228</sup>

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<sup>224</sup> V. F Pustarnakov, "Проблемы Этнографии и Этнологии в Геосоциологической Концепции П.А. Кропоткина," *Труды Международной научной конференции, посвященной 150-летию со дня рождения П.А. Кропоткина* (Moscow, 1997) Vol. 2, Идеи П.А. Кропоткина в социально-экономических науках. pp. 110–126; V. F Pustarnakov, *Университетская философия в России: идеи, персоналии, основные центры* (Издательство, Русского Христианского Гуманитарного Института, 2003); A.G. Kassirov, "Философские идеи П.А. Кропоткина о единстве природы и общества," *Вестник Мурманского государственного технического университета* 10 (3), 2007, pp. 388-393.

<sup>225</sup> V. F Pustarnakov, "Познавательное и Ценностное в Мировоззрении Молодого Петра Кропоткина," *Труды Комиссии по научному наследию П.А. Кропоткина*, Vol. 1 (Moscow, 1992).

<sup>226</sup> This role of the environment on genetic expression will be highlighted in Chapter 6.

<sup>227</sup> Kropotkin, "What Geography Ought To Be," *The Nineteenth Century*, Dec. 1885, pp. 942-3.

<sup>228</sup> Nathaniel Knight, "Nikolai Kharuzin and the Quest for a Universal Human Science: Anthropological Evolutionism and the Russian Ethnographic Tradition, 1885–1900," *Kritika: Explorations in Russian and Eurasian History* 9 (1), 2008, p. 109.

## Conclusion: Ethnography and Geosociology in Kropotkin's Theory of Mutual Aid

The importance of ethnography to Kropotkin's later work, and that of his own experience in the Far East Zomia, can be seen in Kropotkin's later theory of mutual aid. While ethnography was not the primary field that Kropotkin engaged in professionally, it was one of the four pillars in German-Russo geographical practice.<sup>229</sup> While Kropotkin belittled some Russian ethnographers as “collectors of fairy tales” [собирателей сказок],<sup>230</sup> ethnography was clearly important throughout Kropotkin's life. He wrote to Elie Mechnikov to request work on the ethnography of Mordovians (one of the largest indigenous populations of Russia with groups scattered throughout the Volga-Urals region).<sup>231</sup> He planned to write a book on Finland in his spare time, based on his series “Letters from Finland” in *Proceedings of the Russian Geographical Society*, that would combine “its geography and geology and the like, as well as its ethnography.”<sup>232</sup> He was a close friend with Dmitry A. Clements (1848-1914), the director of the ethnographic

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<sup>229</sup> The terms *ethnography* and *ethnology* were used interchangeably during the nineteenth century. According to contemporary definitions, ethnography is the detailed study of individual societies while ethnology is the comparison and analysis of characteristics between societies. In this way, the latter can be understood as a plural form of the former.

<sup>230</sup> Letter from Peter Kropotkin to Fedor Romanovich von der Osten-Sacken, September 6, 1871. In this letter Kropotkin turns down the position as Secretary of the Russian Geographical Society and worried that the position would be filled by someone who didn't understand physical geography. RGADA . F. 1385. Also see his letter to John Scott Keltie, October 6, 1898 in which he refers to the “ethnography (mostly folklore)” published by the Geographical Society as “what physical geographers would consider to be nonsense.” [Оно публикует, конечно, массу такого, что физико-географы считают вздором — в отделениях этнографии (главным образом фольклор) и статистики.] RGSA, JS Keltie Files, 1881-1910. However, Kropotkin also utilized fairy tales and folklore in his work, so the distinction is more about how the authors used quantitative versus qualitative information to form conclusions. See Kropotkin, *Russian Literature*, pp. 7-14; Kropotkin, *Ethics: Origin and Development*, (trans.) Louis S. Friedland and Joseph R. Piroshnikoff (New York: Dial Press, 1924), p. 63. He also favorably reviewed the book *Folklore: Its Importance, Its Aims, and Its Methods* by Dr. R. Fr. Kaindl for *The Geographical Journal*. See “The Position of Geography in Science and Education,” *The Geographical Journal* 25(6), June 1905, p. 670.

<sup>231</sup> Letter from Peter Kropotkin to Ilyich Mechnikov, October 31, 1882. SARF. F. 6753

<sup>232</sup> Letter from Peter Kropotkin to Ilyich Mechnikov, April 3, 1883. SARF. F. 6753. He was especially eager to read the work of Andreas Johan Sjögren, a philologist and ethnographer with a specialty in Finno-Ugric societies and former director of the Ethnographic Museum in St. Petersburg. See Letter to Letter to Ilyich Mechnikov, April 12, 1883. SARF. F. 6753.

department of the Russian Museum of Alexander III, whom he met as part of the radical “Tchaikovsky Circle.”<sup>233</sup> He introduced the Polish-Russian cultural anthropologist and ethnographer Bronisław Piłsudski to Sir John Scott Keltie of the Royal Geographical Society and recommended his ethnographic materials on the indigenous Ainu of Japan be sent to renowned British anthropologist James Frazer. He was also well versed in the primary anthropological literature of the day, such as that of Lewis Henry Morgan and Edward Tylor whose concept of unilinear social evolutionism through tripartite stages of development was the dominant theoretical position until the 1920s.<sup>234</sup> Furthermore, his familiarity with the German and Russian ethnographic literature is made clear by the overwhelming preponderance of these sources in his two papers on mutual aid among “savages” and “barbarians.”<sup>235</sup> Kropotkin’s attitude toward ethnography can best be summed up by his passionate defense of the field published in the December 1885 edition of *The Nineteenth Century*.

In fact, rightly understood, ethnography hardly could be compared with anything else, as an instrument for developing in children and youths the love to mankind as a whole, the feelings of sociability and solidarity with every human creature, as well as self-devotion, courage, and perseverance in a word, all the best sides of human nature.<sup>236</sup>

By the time Kropotkin had formulated his theory of mutual aid in human societies, he came to the subject having already immersed himself in the literature on ethnography in addition to Darwinism. As a result, Kropotkin rejected the racist assumptions between “lower” and “higher” races that were common features of the Darwinist discourse.

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<sup>233</sup> Ibid.

<sup>234</sup> Letter from Peter Kropotkin to John Scott Keltie, May 30, 1910. RGSA. J.S. Keltie Files, 1881–1910.

<sup>235</sup> This was unusual for British publications that privileged English sources primarily with French a distant second. Peter Kropotkin, “Mutual Aid Among Savages,” *The Nineteenth Century*, April 1891; Peter Kropotkin, “Mutual Aid Among the Barbarians,” *The Nineteenth Century*, Jan. 1892.

<sup>236</sup> Kropotkin, “What Geography Ought To Be,” *The Nineteenth Century* 18, Dec. 1885, p. 946.

Many Russian naturalists had already been operating within an evolutionary framework prior to the publication of *On the Origin of Species* in 1859 and were quick to adopt Darwin's theory – where it was “afforded a most sympathetic and enthusiastic reception.”<sup>237</sup> Kropotkin likewise identified as an evolutionist as early as 1858 after a series of lectures on transformism by the zoologist Karl Franzevich Roullier at Moscow University.<sup>238</sup> Kropotkin first read *On the Origin of Species* when the German translation entered Russia in 1863 and Darwin's theory was a frequent topic in the letters he sent to his brother from Siberia. In one letter, dated July 11, 1863 Kropotkin reflected on the variations he observed between the insects he encountered in Siberia that were clearly related to similar species from their home. He suggested an experiment whereby insects with a short lifespan and high reproductive rate could be kept in an artificial environment and then moved to a slightly different environment. By allowing the insects to “live and grow in these conditions, then again change the conditions little by little” over time you could “show the transitional form between the species.”<sup>239</sup> In another letter he noted the

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<sup>237</sup> Alexander Vucinich, *Darwin in Russian Thought* (University of California Press, 1988), p. 17.

<sup>238</sup> Kropotkin, *Memoirs of a Revolutionist*, Vol. 1, p. 114.

<sup>239</sup> Letter from Peter to Alexander Kropotkin, July 11, 1863. *Петр Александр Кротопкины Переписка, 1862-1871* (Moscow: Academia, 1933), pp. 119-124. “Я много и давно думал о происхождении растительных и животных видов, когда приходилось заглядываться здесь на растения и на насекомых. Меня всегда смущала неопределенность понятия «вид», ведь многие различно определяют его; мне казалось, что самое определение если не исключает, то затрудняет возможность доказать, что один вид может переходить в другой: казалось, что чуть только будет несколько признаков таких, что можно бы признать их за промежуточный переход, как уже говорят — это отдельный вид. Но вы покажите переходную форму между видами; опыты, производство промежуточных форм прямым совокуплением, — нелепость; непременно следовало бы ставить животное в схожие (но не совсем) условия, дать ему жить и плодиться в этих условиях, потом снова изменять условия понемножку и т.д. Опыты продолжались бы сотни лет, но они могли бы приводить к каким-нибудь результатам. Для опыта надо бы брать животных, которые живут на земле сравнительно недавно и скоро и много плодятся, выбирать из них согласно заданной цели, а не брать собак и т.п. Насекомые и растения скорее привели бы к цели. На насекомых особенно я засматривался; здесь я вижу тех же насекомых, что и в России, но вид у них совсем другой, напр., ухвертка, ты их знавал в Никольском; здесь они с крыльями, и то не все, рога на хвосте длиннее, у иной растут только крылья, цвет желтее. Положительно не поверю, чтоб все разнообразные породы собак, одичавши, пришли к тому первообразу, от которого когда-то произошли, и много таких

large size of the incisors on a tarbagan marmot that his group killed in Dauria and considered how useful it would be to compare related species. “Such comparative zoology and botany should be very interesting, especially one that will explain the similarity of different species in connection with their way of life.”<sup>240</sup>

Kropotkin’s earliest published writing on human evolution and mutual aid appeared a month after Darwin’s death, in May 1882, with his essay “La Loi et l’Autorite” [Law and Authority] in the Geneva-based anarchist journal he founded, *Le Revolte*. There, he argued, when analyzing the customs of indigenous societies there were two distinct currents that could be observed: 1) universal sociable feelings and habits exist that are beneficial to the group, and 2) there are no laws or authority figures forcing individuals to behave cooperatively. Instead, Kropotkin held, “like those habits which men call instincts in animals: they come from a useful evolution, necessary to support the society in their struggle for existence.”<sup>241</sup> Nearly a decade later, he would make this idea the central basis for his theory of mutual aid.

Darwin was quite right when he saw in man’s social qualities the chief factor for his further evolution, and Darwin’s vulgarisers are entirely wrong when they maintain the contrary.”<sup>242</sup>

Much like in all social animals, these sociable feelings – or the moral sense as Darwin referred to it – had evolved by natural selection because it allowed more individuals to thrive collectively in the harsh struggle for existence.

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мыслей. Я слишком мало, даже вовсе не знаю фактов, а письмо твое кстати, и все, что ты напишешь о происхождении видов, будет для меня интересно.”

<sup>240</sup> Letter from Peter Kropotkin to Alexander Kropotkin, June 18, 1864. SARF Folio 1129. “Такая сравнительная зоология и ботаника должны быть очень интересны, особенно та, которая будет объяснять еще сходство различных видов в связи с их образом жизни.”

<sup>241</sup> Peter Kropotkin, “La Loi et l’Autorite II,” *Le Revolte*, May 27, 1882, p. 1. “Ils se developpent d’eux-memes, par la force meme des choses, comme ces habitudes que l’homme a nomme instincts chez les animaux: ils proviennent d’une evolution utile, necessaire meme, pour maintenir la societe dans la lutte pour l’existence qu’elle doit soutenir.”

<sup>242</sup> Kropotkin, “Mutual Aid Among Savages,” *The Nineteenth Century*, April 1891, p. 557.

Much like Eduard Petri would five years later, Kropotkin condemned the European exploitation and murder of indigenous people and the assumptions of inferiority. “Until now the Europeans have ‘civilised the savages’ with whiskey, tobacco, and kidnapping; they have inoculated them with their own vices; they have enslaved them.”<sup>243</sup> However, by understanding that all people develop along their own lines in the context of their particular environment and, by virtue of adaptations that all group-living animals have evolved, “these ‘savages’ have understood how to develop highly in their societies the same sociable feelings which we Europeans are so proud to profess, but so seldom practise.”<sup>244</sup> Further, Kropotkin pointed out that many of the “barbarous customs” Europeans readily scoffed at could actually be understood in context as necessary practices in order to survive harsh environments (such as maternal infanticide so that a mother can better raise her other children, “whom she cherishes and nurses better than millions of European mothers do”).<sup>245</sup> By placing the derogatory terms such as “savage” and “lower races” in quotations, Kropotkin clearly indicated that he rejected these attitudes that were common in the discourse of his day. Nor was this an isolated occurrence. Kropotkin likewise made reference to “the so-called lower races” on multiple other occasions, making it clear that he did not support this racist position.<sup>246</sup> Finally, while Kropotkin utilized the language of hierarchical categories of human development,

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<sup>243</sup> Kropotkin, “What Geography Ought To Be,” *The Nineteenth Century*, Dec. 1885, p. 943.

<sup>244</sup> Ibid.

<sup>245</sup> Kropotkin would subsequently expand on the contextual practices of infanticide, elder suicide/euthanasia, and cannibalism that Europeans commonly objected to in his essay, “Mutual Aid Among Savages.”

<sup>246</sup> See Kropotkin, *Memoirs of a Revolutionist*, Vol. 2 (London: Smith, Elder & Co., 1899), p. 317; Letter to George Brandes, January 12, 1906, in *Correspondance de Georg Brandes*, Vol. 2 L’Angelterre et al Russie (Copenhagen: Rosenkilde og Bagger, 1956), p. 279. He also uses the phrase “the so-called inferior races.” See Peter Kropotkin, *The Conquest of Bread*, (London: The Knickerbocker Press, 1907), p. 91. Furthermore, throughout his final publication, he placed the words “savage,” “barbarian,” and even “tribal” in quotations to indicate their loaded and derogatory connotations. See Kropotkin, *Ethics: Origin and Development*, p. 311.

he did so either in its neutral, rather than its modern derogatory sense, or to subvert their common use in discussions of the subject.<sup>247</sup> Following his paper on mutual aid among “savages,” Kropotkin described mutual aid among the “barbarians” and proceeded to undermine the familiar tropes his English readers would have encountered time and again. As such, “the imaginary barbarian – the man who fights and kills at his mere caprice – existed no more than the ‘bloodthirsty’ savage.”<sup>248</sup> Kropotkin was aware of the prejudice of his readership and his purpose was to undermine the familiar trope by exposing it.

In contrast to the common assumption of social evolution as it existed in England and France, Kropotkin instead articulated an argument for cultural relativism that was mediated by geographic or environmental conditions. Some Kropotkin scholars have mistakenly interpreted his discussion of evolutionary progress as embracing the same value-laden hierarchy as Lewis Henry Morgan’s sequence that extended from savagery and barbarism to civilization.<sup>249</sup> For Morgan, “the history of the human race is one in source, one in experience, and one in progress.”

Since mankind were one in origin, their career has been essentially one, running in different but uniform channels upon all continents, and very similarly in all the tribes and nations of mankind down to the same status of advancement.<sup>250</sup>

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<sup>247</sup> Alan Barnard, “Mutual Aid and the Foraging Mode of Thought: Re-Reading Kropotkin on the Khoisan,” *Social Evolution & History* 3(1), 2004.

<sup>248</sup> Kropotkin, “Mutual Aid Among the Barbarians,” *The Nineteenth Century*, Jan. 1892, p. 110.

<sup>249</sup> See, e.g., Graham Purchase, *Peter Kropotkin: Ecologist, Philosopher and Revolutionary*, PhD Thesis, University of New South Wales, 2003, pp. 32-3; Kenneth N. Rabe, *Evolutionary Ethics and Moral Idealism: Kropotkin’s Theory of Anarchist Communism*, PhD Thesis, University of Madison-Wisconsin, 2002, pp. 147-8; David Miller, “The Neglected (II) Kropotkin,” *Government and Opposition* 18(3), July 1983, pp. 321-2; Bob Galois, “Ideology and the Idea of Nature: The Case of Peter Kropotkin,” *Antipode* 8(3), Sept. 1976, p. 7; Arthur M. Lewis, *Evolution: Social and Organic*, 3<sup>rd</sup> Edition (Chicago: Charles H. Kerr & Company, 1908), p. 106.

<sup>250</sup> Lewis Henry Morgan, *Ancient Societies* (New York: Henry Holt and Company, 1877), p. vi; vii.

Consequently, all indigenous societies that were in the stage of “savagery,” had simply yet to reach the necessary level of technological development in order to advance into the next stage of evolution. However, while Kropotkin utilized Morgan’s stages as descriptive categories, he did not follow Morgan (or Darwin, for that matter) in asserting that all societies necessarily *would* pass through these stages.

For, in fact, the evolution of mankind has not had the character of one unbroken series. Several times civilisation came to an end in one given region, with one given race, and began anew elsewhere, among other races. But at each fresh start it began again with the same clan institutions which we have seen among the savages.<sup>251</sup>

For Kropotkin, those societies that had increased in scale and complexity over time all shared certain characteristics in common in the present day, just as those that remained as small-scale societies had certain characteristics in common. However, a society that made different choices, or were subject to different geographic or environmental conditions, may not have reached the same stage of development (or may have done so at a different rate) than another contemporaneous society. As an example of these different choices, Kropotkin hypothesized that a group of hunters that hunted individualistically, rather than a society that united to share their resources collectively, would “stand quite differently with regard to the means of subsistence.”<sup>252</sup> In support of this, he pointed to the small number of “higher” mammals that maintained a solitary existence – and those that did seemed to be dwindling compared to the truly social mammals. However, in terms of empirical evidence for his view of human societies, Kropotkin cited the fact that most small-scale indigenous populations were ones that lived in marginal or harsh environments.

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<sup>251</sup> Peter Kropotkin, “Mutual Aid Among the Barbarians,” *The Nineteenth Century*, Jan. 1892, p. 102.

<sup>252</sup> Peter Kropotkin, “The Scientific Bases of Anarchy,” *The Nineteenth Century*, Feb. 1887, p. 246.

Save a few tribes clustering in the less accessible highlands, the ‘savages’ represent a girdle which encircles the more or less civilised nations, and they occupy the extremities of our continents, most of which have retained still, or recently were bearing, an early post-glacial character. . . [T]heir arts and implements are those of the neolithic age; and, notwithstanding their racial differences, and the distances which separate them, their modes of life and social institutions bear a striking likeness. So we cannot but consider them as fragments of the early post-glacial population of the now civilised area.<sup>253</sup>

As such, there were no “lower” or “higher” races, nor were some populations a degenerate form of once civilized societies. In this way, Kropotkin anticipated much of the cultural relativism of the German-born American anthropologist Franz Boas, whose full articulation would not be realized until *The Mind of Primitive Man* in 1911. Indeed, at the Proceedings of the International Conference dedicated to the 150<sup>th</sup> anniversary of the birth of Kropotkin held in Moscow in 1997, V.F. Pustarnakov stated, “There is no doubt that in his anthropological sketches Kropotkin was guided by a noble set of values: the idea that all people are equal and that there is no higher and lower races.”<sup>254</sup>

In contrast to the emphasis on race as it existed in England and France, Kropotkin argued that the evolution of human societies was one in which there were distinct “lines of development” that were modified by geographical contours and the contingency of individual choice.

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<sup>253</sup> Kropotkin, “Mutual Aid Among Savages,” *The Nineteenth Century*, April 1891, pp. 542-3, n. 8; *Mutual Aid*, pp. 83-4.

<sup>254</sup> “Несомненно, что в своих этнологических этюдах Кропоткин руководствовался благородной ценностной установкой: мыслью о том, что все люди равноценны, что нет расы высшей и рас низших.” В.Ф.Пустарнаков, “Познавательное и Ценностное в Мироззрении Молодого Петра Кропоткина,” *Труды Комиссии по научному наследию П.А. Кропоткина* (Moscow, 1992), Vol. 1. p. 64.

We certainly must abandon the idea of representing human history as an uninterrupted chain of development from the pre-historic Stone Age to the present time. Just as in the evolution of the animal series we consider the insects, the birds, the fishes, the mammals, as separate lines of development, so also in human history we must admit that evolution was started several times anew – in India, Egypt, Mesopotamia, Greece, Rome, and finally in Western Europe, beginning each time with the primitive tribe and the village community.<sup>255</sup>

However, if the lines were considered separately, Kropotkin argued that in each of them – particularly Europe since the fall of the Roman Empire – there was a continual widening of the concept of mutual aid and support, from clan to tribe, then to nation, and finally to an international union of nations. This historical trajectory was, of course, no guarantee that such social evolution would continue indefinitely. But the progressive direction in at least one line of development seemed clear. If the population of Europe could be aroused to action, it might be possible to make this potential a reality. It was in this interrelationship of ethnography, geography, and biology – interpreted as it was through the lens of his first-hand experiences in the Russian Far East Zomia – that Peter Kropotkin eventually became an anarchist.

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<sup>255</sup> Peter Kropotkin, “The Ethical Needs of the Present Day,” *The Nineteenth Century*, August 1904, pp. 217-8.

## Chapter 2

### Evolution and Revolution: Darwinism and the Struggle for Progress

“No attempt, however, has been made scientifically to determine the ratio of evolution, nor have the chief elements of the problem (the state of mind of the masses) been taken into account by the evolutionist philosophers.”<sup>256</sup>

#### Introduction

In June 1866, Kropotkin the naturalist lay at a crossroads. Consumed by the daily work of “geology or ethnography that I study on expeditions,” he was increasingly drawn to the political and economic questions that lay at the heart of society. Gone were the romantic descriptions of nature viewed through a Humboldtian lens, of forces and counterforces reaching a temporary equilibrium. Now his letters more often described the “enslavement of the worker by capital” that he witnessed in the Lena goldmines, and “the great law of diminishing returns with an increase in work.”<sup>257</sup> There was the brutal suppression of a “Polish insurrection” near Lake Baikal (that was actually a failed escape attempt by a group of exiles) and subsequent execution of the five ringleaders. Political prisoners, kept on the edge of starvation, hungrily accepted crusts of bread offered by peasants that weren’t in much better shape themselves. Then there was economic manipulation of the market by owners of capital so that cattle farmers in Dauria were perpetually under their control. “I may say now, that I lost in Siberia whatever faith in

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<sup>256</sup> Peter Kropotkin, “The Scientific Bases of Anarchy,” *The Nineteenth Century*, Feb. 1887, p. 245; Peter Kropotkin, *Anarchist Communism: Its Basis and Principles* (London: “Freedom” Office, 1905), p. 11.

<sup>257</sup> Letter from Peter to Alexander Kropotkin, June 17, 1866. SARF, Folio 1129. “порабощение рабочего капиталом, на проявление великого закона уменьшения вознаграждения с увеличением работы.”

State discipline I had cherished before,” Kropotkin recalled.<sup>258</sup> He had been reading about societal problems and yet, as he relayed to his brother, he was plagued by questions. It was clear that inequality and the abuse of power were the primary culprits for the injustices he had witnessed, but what was the solution? The “creation of public capital” as Pierre-Joseph Proudhon had suggested through the nationalization of banks? Exposing the injustice through “propaganda” written directly for the affected workers? Perhaps the power of capital itself could be challenged through workers associations? Or maybe it was “necessary to use force to undermine capital, and to not support it even indirectly.” However, at the same time, Kropotkin knew that capital was necessary for science to advance, and “without this science the proletariat will never break free.” As he described the daily tasks of collecting barometer measurements, rock samples, and the copious notetaking required in order to provide evidence for his theory of glacial formations in Siberia, he regularly questioned what value his scientific pursuits could have in the face of so much suffering. “I do not know if such a life is useful. . . Perhaps the social question will overtake me so much that I will be torn away from physics.”<sup>259</sup> The final entry in his Siberian notebook before returning to St. Petersburg read, “Life in this society is becoming noticeably more unpleasant every day.”<sup>260</sup>

On March 18, 1871 there was an event of seismic proportions that would redirect Kropotkin’s life down a new evolutionary path and plunge Europe into political and ideological turmoil. On that day, the social faultlines of economic inequality that

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<sup>258</sup> Kropotkin, *Memoirs of a Revolutionist*, Vol. 1, p. 251.

<sup>259</sup> Letter from Peter to Alexander Kropotkin, June 27, 1866. SARF, Folio 1129. “Не знаю, полезна ли такая жизнь. . . Быть может, общественные вопросы займут меня настолько, что оторвут от физики.”

<sup>260</sup> Peter Kropotkin, *Дневник*, November 1866, p. 261. “Жизнь в этом обществе становится с каждым днем заметно неприятнее.”

Kropotkin had seen in Siberia suddenly revealed themselves in Paris as a revolutionary society of workers occupied the *Hôtel de Ville* and declared the city an independent federation. The French military had recently been defeated by the Prussian Empire and, with foreign troops on the edge of the city, members of the International Workingmen's Association moved to enact the revolutionary platform they had been developing over the previous four years. Kropotkin's correspondence from the early 1870s shows that he followed reports from Paris closely in the St. Petersburg press and each new development brought increased excitement that the long awaited workers uprising had arrived.

Throughout Europe, everywhere, the workers and their supporters, men of progress and the future, are trying to take the issue from the national point of view to the international one, or, as Chernyshevsky put it, from the national to the popular.<sup>261</sup>

However, the occupation would only last for two months and when the Versailles forces entered the city there ensued vicious street-fighting and guerilla tactics. The number of Communards killed is under dispute – with figures ranging from 5,700 to more than 30,000 – but the consensus remains that the majority of those who died were summarily executed after the French national forces had taken the city.<sup>262</sup> An internal military report acknowledged “very large numbers of prisoners whom the angry soldiers shot without mercy.”<sup>263</sup> According to one doctor who witnessed the execution of his patients, there was nothing people suspected of being Communards could do.

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<sup>261</sup> Letter from Peter to Alexander Kropotkin, August 5, 1870. *Перепуска, 1862-1871*, p. 221. “Во всей Европе, всюду рабочие и их сторонники, люди прогресса и будущего стараются свести вопрос с национальной точки зрения на международную или, как выразился Чернышевский, с национальной на народную. А победные войны ведут только к усилению национальной точки зрения.”

<sup>262</sup> Robert Toombs, “How Bloody was La Semaine Sanglante of 1871? A Revision,” *The Historical Journal* 55 (3), 2012.

<sup>263</sup> Report by 2nd division of 2nd corps, SHAT Lu 7, cited in Toombs, “How Bloody was La Semaine Sanglante of 1871?” p. 682.

You are not merely outside the law, you are outside humanity. Neither age nor sex shall save you and yours. You shall die, but first you shall taste the agony of your wife, your sister, your mother, your sons and daughters, even those in the cradle! Before your eyes the wounded man shall be taken out of the ambulance and hacked with bayonets or knocked down with the butt end of a rifle. He shall be dragged living by his broken leg or bleeding arm and flung like a suffering, groaning bundle of refuse into the gutter.<sup>264</sup>

The decision to engage in a massacre had been the intended goal, as the head of France, Adolphe Thiers, informed the nation. “The soil of Paris is strewn with their corpses. This frightful spectacle will serve as a lesson, it is to be hoped, to the fools who dared to declare themselves partisans of the Commune.”<sup>265</sup> For Kropotkin, the Paris Commune and the brutality of its suppression resolved the internal conflict between science and society that had plagued him four years earlier. The decision by Thiers had proved to be the decisive action compelling Kropotkin to get personally involved. “The order, finally, is the drowning in the blood of the Commune of Paris,” he wrote in outrage, as “men, women and children, shredded by the shells, machine-gunned, buried in the quicklime under the pavements of Paris.”<sup>266</sup>

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<sup>264</sup> The quote is attributed to a hospital surgeon who was allowed to finish bandaging the leg of an eighteen-year-old girl before soldiers removed her to be shot in the street outside. Arthur Arnould, *Histoire Populaire et Parlementaire de la Commune de Paris*, Vol. 3 (Bruxelles: H. Kistemaekers, 1878), p. 113. “Quoi que tu fasses, tu vas périr! Si l’on te prend les armes à la mains, — la mort! si tu déposes les armes, — la mort! si tu frappes, — la mort! Si tu implores, — la mort! De quelque côté que tu tournes les yeux: à droite, à gauche, devant, derrière, en haut, en bas, — la mort! Tu es non seulement hors la loi, mais hors l’humanité. Ni l’âge, ni le sexe, ne sauraient te sauver, ni toi, ni les tiens. Tu vas mourir, mais avant tu savoureras l’agonie de ta femme, de ta sœur, de ta mère, de tes filles, de tes fils, même au berceau! On ira, sous tes yeux, prendre le blessé dans l’ambulance pour le hacher à coup de sabre-baïonnette, pour l’assommer à coup de crosse de fusil. On le tirera, vivant, par sa jambe brisée ou son bras saignant, et on le jettera dans le ruisseau, comme un paquet d’ordures qui hurle et qui souffre.”

<sup>265</sup> Assemblée Nationale, *Annales de l’Assemblée Nationale*, Vol 3, May 13 to July 11, 1871 (Paris: Imprimerie et Librairie du Journal Officiel, 1871), p. 135. “Le sol de Paris est jonché de leurs cadavres. Ce spectacle affreux servira de leçon, il faut l’espérer, aux insensés qui osaient se déclarer partisans de la commun.”

<sup>266</sup> Peter Kropotkin, *Paroles d’un Révolté* (Paris, 1885), p. 102. “L’ordre, enfin, c’est la noyade dans le sang de la Commune de Paris. C’est la mort de trente mille hommes, femmes et enfants, déchiquetés par les obus, mitraillés, enterrés dans la chaux vive sous les pavés de Paris.”

After returning from Siberia in 1867, Kropotkin had embarked on a promising career as general secretary of the Physical Geography section of the Imperial Russian Geographical Society. His ethnographic reports and geological evidence that glaciers had once covered all of northern Russia brought him a certain measure of scientific fame and the possibility of being elected President of his scientific society. The scientific community was initially dubious that glacial activity could have extended as far south as the Chernozem; the idea that the Earth's climate could fluctuate so dramatically was considered highly unlikely. Only a few scientists had been willing to consider the possibility and none for the past forty years. However, Kropotkin's descriptions of "smoothly polished mountain tops" and granite boulders of up to five meters in length with no other granite formations for miles in any direction proved persuasive. Rocks of such magnitude could not have fallen from the distant mountains nor been washed to their present location by torrential rivers. "It is more probable to assume that these masses are brought from the tops of the valley only by ice," he wrote in his initial 1867 report.<sup>267</sup> With five detailed analyses and a redrawing of the orographical contours of Siberia now completed, the Russian scientific community had come to endorse his theory and provided Kropotkin with a grant to pursue further research in Finland and Sweden to confirm his theory.

The Commune had been in existence for just over one month when Kropotkin presented his research on the cataclysmic event that had reshaped Europe in the

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<sup>267</sup> Peter Kropotkin, "Поездка в Окинский караул," [A Trip to the Oka Guard], *Записки Сибирского отделения Императорского Русского географического об-ва*, 9-10, 1867, XI. Джунбулак и Хикушка, pp. 1-94. "Громадность этих валунов, отсутствие вблизи от этого места подобных гранитов как на правом, так и на левом берегу, — все это наводит на предположение, что массы эти не могли также свалиться с соседних гор. Вероятнее предположить, что эти массы принесены с вершин долины не иначе, как льдами."

Pleistocene. He noted that even though plants and animals had undergone only minor morphological changes since the Tertiary period, representing the slow process of evolution, with the end of the Ice Age and retreat of the glaciers the distribution of flora and fauna had been transformed with nearly all species being affected by the global environmental changes. “It is easy to understand what a tremendous impact such distribution of seas and land should have on the dispersal of organisms.”<sup>268</sup> The presence of a glacial period in recent human history likewise had direct impact on modern life, particularly for the rural poor, that science could help illuminate. “We plow and sow on dilluvial deposits. . . And if geology can in general come to the aid of the study of soils, then, of course, it is most possible to achieve this by studying the newest, glacial and post-glacial formations.”<sup>269</sup> It is clear that by 1871 Kropotkin was already thinking in terms of evolutionary changes experiencing periods of rapid revolutionary upheaval that could directly impact the lives of future generations. He likewise saw parallels to contemporary social problems and complained bitterly about the intellectuals in his social circle that repeated sophisms “about the slowness of evolution [and] the inertia of the lower classes,”<sup>270</sup> that seemed to have no basis in either science or society. The environment, as Kropotkin knew, would also prove to be crucial in the development of social progress.

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<sup>268</sup> Peter Kropotkin, “Представление Отделения Географии Физической,” *Журнал заседания Совета Императорского Русского Географического Общества* 7(4), 1871, pp. 200-4. “Легко понять, какое громадное влияние должно было иметь такое распределение морей и суши на расселение организмов, в числе которых мы находим уже почти всех, без исключения, представителей современной флоры и фауны.”

<sup>269</sup> Ibid. “Мы пашем и сеем на диллувиальных наносах, они покрываются борами, ими мостим мы наши улицы и т.д. И если геология может вообще прийти на помощь изучению почв, то, конечно, более всего возможно этого достигнуть изучением новейших, — ледниковых и после-ледниковых образований.”

<sup>270</sup> Peter Kropotkin, *Memoirs of a Revolutionist*, Vol. 2, p. 120.

## Darwinism and Rates of Evolutionary Change

As Peter Bowler has identified, the idea that social change followed a process of progressive evolution was ubiquitous in nineteenth-century Europe and Darwin's theory merely livened what was already a commonly held assumption.<sup>271</sup> While Darwin regularly peppered his 1859 *Origin* with qualifying language that emphasized historical contingency and environmental circumstances for the evolution of traits, there was no mistaking the progressive thrust of his theory. "And as natural selection works solely by and for the good of each being, all corporeal and mental endowments will tend to progress towards perfection," he wrote in the conclusion to his first edition.<sup>272</sup> Elsewhere he made clear that this was historical progress because "the more recent forms must, on my theory, be higher than the more ancient; for each new species is formed by having had some advantage in the struggle for life over other and preceding forms."<sup>273</sup>

By 1871 Darwin's theory of natural selection was already more than a decade old and the implications for human life were widely debated within philosophical and political circles. While historians have emphasized this trend among liberal commentators of social Darwinism that evoked a *laissez faire* political sensibility, there has been relatively little analysis of the radical and revolutionary left who frequently made use of the same arguments but for different ends. For example, David Stack has provided a broad overview of what he identified as the "Darwinian Left," Valentino Gerratana and Paul Heyer have looked at Darwin's ideas through the lens of Marxism,

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<sup>271</sup> Peter J. Bowler, *The Invention of Progress: The Victorians and the Past* (Oxford: Basil Blackwell, 1989).

<sup>272</sup> Charles Darwin, *On the Origin of Species* (London: John Murray, 1859), p. 489.

<sup>273</sup> Charles Darwin, *On the Origin of Species*, pp. 336-7. To emphasize this point, Darwin made clear that if any eocene fauna or flora were placed in competition with currently existing inhabitants, the eocene species "would certainly be beaten and exterminated."

Ted Benton, Richard Weikart, and Manfred Steger have looked at the use of Darwin by socialists in Germany, while Mark Pittenger has looked at a similar development among American socialists.<sup>274</sup> However, there has been little analysis of the transnational character of this movement. In the years leading up to the Paris Commune, radicals employed Darwin's theory and utilized it either as a rhetorical tool or as a justification for their actions. If all of nature was in a state of constant change, as Darwin proposed, and if organisms both shape and are shaped by their environment, there was no basis on which the existing structure of society need remain static. From this perspective, society should be constructed from the bottom-up in line with a Darwinian view of progress. Consequently, social revolution would merely provide an increased tempo to the natural process that evolution was already moving toward.

Many Russian naturalists were already operating within an evolutionary framework and were quick to adopt Darwin's theory – where it was, according to Alexander Vucinich, “afforded a most sympathetic and enthusiastic reception.”<sup>275</sup> Kropotkin likewise identified as an evolutionist even prior to the publication of Darwin's *Origin* and recalled a series of lectures on transformism by the zoologist Karl Franzevich Roullier at Moscow University in 1858.<sup>276</sup> Kropotkin first read *On the Origin of Species* when the German translation entered Russia in 1863 and Darwin's theory was a frequent

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<sup>274</sup> David Stack, *The First Darwinian Left: Socialism and Darwinism, 1859-1914* (Cheltenham: New Clarion Press, 2003); Valentino Gerratana, “Marx and Darwin,” *New Left Review* 35, 1974, pp. 60-82; Ted Benton, “Social Darwinism and socialist Darwinism in Germany: 1860-1900,” *Rivista di Filosofia* 73, 1982, pp. 79-112; Mark Pittenger, *American Socialists and Evolutionary Thought, 1870-1920* (Madison, 1993); John R. Durant, “Scientific Naturalism and Social Reform in the Thought of Alfred Russel Wallace,” *British Journal for the History of Science* 12, 1979, pp. 31-58; Paul Heyer, *Nature, Human Nature, and Society: Marx, Darwin, Biology, and the Human Sciences* (London, 1982); Richard Weikart, *Socialist Darwinism: Evolution in German Socialist Thought from Marx to Bernstein* (London, 1999); Manfred B. Steger, *The Quest for Evolutionary Socialism: Eduard Bernstein and Social Democracy* (Cambridge, 1997).

<sup>275</sup> Vucinich, *Darwin in Russian Thought*, p. 17.

<sup>276</sup> Kropotkin, *Memoirs of a Revolutionist*, Vol. 1, p. 114.

topic in the letters he sent to his brother from Siberia. In one letter, dated July 11, 1863 Kropotkin reflected on the variations he observed between the insects he encountered in Siberia that were clearly related to similar species from their home. He suggested an experiment whereby insects with a short lifespan and high reproductive rate could be kept in an artificial environment and then moved to a slightly different environment. By allowing the insects to “live and grow in these conditions, then again change the conditions little by little” over time you could “show the transitional form between the species.”<sup>277</sup> In another letter he noted the large size of the incisors on a tarbagan marmot that his group killed in Dauria and considered how useful it would be to compare related species. “Such comparative zoology and botany should be very interesting, especially one that will explain the similarity of different species in connection with their way of life.”<sup>278</sup>

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<sup>277</sup> Letter from Peter to Alexander Kropotkin, July 11, 1863. In *Пепениска*, [Correspondence], 1862-1871, pp. 119-124. “Я много и давно думал о происхождении растительных и животных видов, когда приходилось заглядываться здесь на растения и на насекомых. Меня всегда смущала неопределенность понятия «вид», ведь многие различно определяют его; мне казалось, что самое определение если не исключает, то затрудняет возможность доказать, что один вид может переходить в другой: казалось, что чуть только будет несколько признаков таких, что можно бы признать их за промежуточный переход, как уже говорят — это отдельный вид. Но вы покажите переходную форму между видами; опыты, производство промежуточных форм прямым совокуплением, — нелепость; непременно следовало бы ставить животное в схожие (но не совсем) условия, дать ему жить и плодиться в этих условиях, потом снова изменять условия понемножку и т.д. Опыты продолжались бы сотни лет, но они могли бы приводить к каким-нибудь результатам. Для опыта надо бы брать животных, которые живут на земле сравнительно недавно и скоро и много плодятся, выбирать из них согласно заданной цели, а не брать собак и т.п. Насекомые и растения скорее привели бы к цели. На насекомых особенно я засматривался; здесь я вижу тех же насекомых, что и в России, но вид у них совсем другой, напр., ухвертка, ты их знавал в Никольском; здесь они с крыльями, и то не все, рога на хвосте длиннее, у иной растут только крылья, цвет желтее. Положительно не поверю, чтоб все разнообразные породы собак, одичавши, пришли к тому первообразу, от которого когда-то произошли, и много таких мыслей. Я слишком мало, даже вовсе не знаю фактов, а письмо твое кстати, и все, что ты напишешь о происхождении видов, будет для меня интересно.”

<sup>278</sup> Letter from Peter to Alexander Kropotkin, June 18, 1864. SARF Folio 1129. “Такая сравнительная зоология и ботаника должны быть очень интересны, особенно та, которая будет объяснять еще сходство различных видов в связи с их образом жизни.”

In the summer of 1872 Kropotkin turned down the offer of President of the Physical Geography Department and instead travelled to the Jura Mountains in Switzerland to make contact with members of the International Workingmen's Association, that he had previously known only by reputation. It was there, in the isolated towns along the French-Swiss-Belgian border, that he witnessed an egalitarian social movement unlike anything he had previously encountered. While Kropotkin had heard of Mikhail Bakunin's reputation as a revolutionary, it was in 1872 that he first began to read his "brilliant articles on the historical progress of mankind towards freedom" in the journal *Progrès*.<sup>279</sup> Bakunin, whose father had pursued professional studies in zoology, was well versed in contemporary natural history and employed his reading on biology – and Darwin's work, in particular – to express his commitment that socialist revolution was simply an acceleration of the natural course of societal evolution. As Kropotkin read voraciously on the socialist literature that had been produced over the previous years, he came to see evolution and revolution as merely different forms of Darwinian progress.

I began gradually to understand that revolutions, i.e. periods of accelerated rapid evolution and rapid changes, are as much in the nature of human society as the slow evolution which incessantly goes on now among the civilized races of mankind. And each time that such a period of accelerated evolution and thorough reconstruction begins, civil war may break out on a small or on a grand scale.<sup>280</sup>

While Darwin's theory of evolutionary change was generally understood to happen gradually over immense timescales, this rate was contingent on environmental circumstances and could be faster or slower as a result.<sup>281</sup> "Species of different genera

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<sup>279</sup> Kropotkin, *Memoirs of a Revolutionist*, Vol. 2, p. 74.

<sup>280</sup> Kropotkin, *Memoirs of a Revolutionist*, Vol. 2, p. 77.

<sup>281</sup> See e.g. Frank H.T. Rhodes, "Darwinian Gradualism and its Limits: The Development of Darwin's Views on the Rate and Pattern of Evolutionary Change," *Journal of the History of Biology* 20 (2), pp.

and classes have not changed at the same rate, or in the same degree.”<sup>282</sup> For example, Darwin noted that morphologically modern crocodile fossils had been found amongst extinct forms of mammals and reptiles in sub-Himalayan deposits. While most species of Silurian Molluscs had changed greatly throughout the fossil record, the Silurian *Lingula* differed little from living species of that genus. In most cases, Darwin wrote, land-dwelling animals “seem to change at a quicker rate than those of the sea” and there was also “reason to believe that organisms, considered high in the scale of nature, change more quickly than those that are low.”<sup>283</sup> However, Darwin also considered it likely that the evolution of a novel adaptation that conferred a significant advantage could result in a period of rapid evolution.

I may here recall a remark formerly made, namely that it might require a long succession of ages to adapt an organism to some new and peculiar line of life, for instance to fly through the air; but that when this had been effected, and a few species had thus acquired a great advantage over other organisms, a comparatively short time would be necessary to produce many divergent forms, which would be able to spread rapidly and widely throughout the world.<sup>284</sup>

In the third edition of *Origin*, Darwin responded to a criticism of the German paleontologist (and translator of the German edition) Heinrich Bronn by stating there had been an “erroneous supposition that all the species of a region are believed by me to be changing at the same time.”<sup>285</sup> That Bronn raised this objection is notable since the view that there could be a variable rate of evolutionary change was widespread in German biology. Karl Ernst von Baer and Ernst Haeckel had each developed a theory of evolution

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139-157; Warren D. Allmon, “Darwin and Palaeontology: A Re-Evaluation of His Interpretation of the Fossil Record,” *Historical Biology* 28 (5), pp. 680-706.

<sup>282</sup> Darwin, *On the Origin of Species*, 1<sup>st</sup> Edition (London: John Murray, 1859), p. 313.

<sup>283</sup> Darwin, *On the Origin of Species*, 1<sup>st</sup> Edition, p. 313.

<sup>284</sup> Darwin, *On the Origin of Species*, 1<sup>st</sup> Edition, p. 303.

<sup>285</sup> Darwin, *On the Origin of Species*, 3<sup>rd</sup> Edition, (London: John Murray, 1861), p. 139.

that relied on a flexible rate of change through a process of orthogenesis.<sup>286</sup> From his application of embryological development to paleontology, von Baer argued that slight deviations of embryological characters advanced species along a linear and progressive path of change. Haeckel's biology was subsequently an attempt to integrate Darwin's theory with the orthogenetic progress and Lamarckian inheritance of acquired characteristics that was widely supported amongst German naturalists. Haeckel's theory relied on principles of acceleration and deceleration in order to explain why the fossil record shows differential rates of change. Theodor Eimer articulated this variable tempo of evolutionary change in orthogenesis when he stated: "Varieties and species are therefore in reality nothing but groups of forms standing at different stages of evolution, that is, at different stages of phyletic growth, whether it be that they outstripped their fellows or their fellows them in the process of evolution."<sup>287</sup>

Herbert Spencer had been inspired by von Baer's orthogenesis when adding an evolutionary component to his philosophy since "the ascending stages of each individual organism is also the law which holds of the ascending grades of organisms of all kinds."<sup>288</sup> Societal progress, in Spencer's estimation, was based ultimately on cooperative

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<sup>286</sup> Vucinich notes that, "Without Haeckel's powerful and catalytic influence Russian Darwinism would not have been the same." Von Baer emigrated to St. Petersburg following his embryological work where he became a leading geographer and ethnographer. See Stephen Jay Gould, *Ontogeny and Phylogeny* (Cambridge: Harvard University Press, 1977); Stephen Jay Gould, *The Structure of Evolutionary Theory* (Cambridge: Harvard University Press, 2002), p. 353; Sabine Brauckmann, "Karl Ernst von Baer (1792-1876) and Evolution," *The International Journal of Developmental Biology* 56, 2012, pp. 653-660; Vucinich, *Darwin in Russian Thought*, p. 195.

<sup>287</sup> Gustav Heinrich Theodor Eimer, *Die Entstehung der Arten auf Grund von Vererben erworbener Eigenschaften nach den Gesetzen organischen Wachstums* (Jena: Verlag von Gustav Fischer, 1888), p. 34. "Abarten und Arten sind also im Wesentlichen nichts als auf verschiedenen Stufen der Entwicklung, bzw. auf bestimmten Stufen des phyletischen Wachstums stehende Gruppen von Formen, sei es, dass sie ihren Genossen, oder dass diese ihnen in der Weiterentwicklung rasch vorauseilten, so dass die Verbindung durch Zwischenformen bald verloren ging, oder dass örtliche Trennung die Absonderung begünstigte."

<sup>288</sup> Herbert Spencer, *An Autobiography*, Vol. 1 (New York: D. Appleton and Company, 1904), pp. 445-446.

interactions. “From the lowest living forms upwards, the degree of development is marked by the degree in which the several parts constitute a cooperative assemblage.”<sup>289</sup> However, while Spencer believed that this linear progress in society could be “perturbed” or “retarded,” he did not accept that the successive stages of society could be advanced beyond “a certain normal rate.”<sup>290</sup> Critics of Spencer’s philosophy, such as Nikolai Mikhailovsky in Russia, likewise embraced Von Baer’s linear progress but turned this around and argued the competition that occurred during the “struggle for existence” would actually be regressive in society because, by Spencer’s own estimation, those cooperative groups that were deemed more advanced would be the victims of “degenerate groups” that only sought social power.<sup>291</sup> While the assumption of progress was largely universal in the nineteenth century, the details of what constituted that progress were often under dispute.

### **Evolution and Revolution in the Jura Mountains**

This embracing of social evolutionary explanations by radicals intent on societal change was consistent with their revolutionary, anti-clerical, and anti-authoritarian perspective in much the same way that Jean-Baptiste Lamarck’s 1808 theory of transformism was embraced by socialists in the early nineteenth century.<sup>292</sup> These same evolutionary ideas had been exported to Britain and were used as ideological weapons by

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<sup>289</sup> Herbert Spencer, *First Principles*, 2<sup>nd</sup> Edition (London: Williams and Norgate, 1867), p. 328.

<sup>290</sup> Herbert Spencer, *The Study of Sociology* (London: Henry S. King and Co., 1873), pp. 365-6.

<sup>291</sup> Nikolai Mikhailovsky, “Что такое прогресс?” *Отечественные записки* 9, 1869. Also see Alexander Yudin, “N.K. Mikhailovsky and H. Spencer: The Struggle for Individuality,” *Вестник Томского Государственного Университета* 2(130), 2014, pp. 141-7.

<sup>292</sup> For example, Barthélemy-Prospér Enfantin (1796–1864), Philippe-Joseph Buchez (1796–1865), Pierre and Jules Leroux (1797–1871 and 1806–1883, respectively), Victor Considérant (1808–1893), Abel Transon (1805–1876) and other Utopian Socialists of the 1830s all embraced Lamarckian transformism as a conception of economic and social change. See Ludovic Frobert, “French Utopian Socialists as the First Pioneers in Development,” *Cambridge Journal of Economics* 35 (4): 729-749.

radical reformers in the 1830s and 1840s to challenge aristocratic and Church privilege.<sup>293</sup> In the same year that Lamarck published his evolutionary treatise, Charles Fourier published his *Théorie des Quatre Mouvements et des Destinées Générales* in which he argued, from a naturalistic perspective, that empathy and cooperation were the primary means by which society could advance. “Fourier and his acolytes were interested in the balance of nature, respect for ecology and awareness of the mutual relationship between all forms of life.”<sup>294</sup> Fourier insisted that human behavior was motivated by instinctual drives that could not be significantly altered or suppressed, a theoretical perspective that represented a significant departure from philosophical assumptions that human nature was a *tabula rasa*.<sup>295</sup> Over the course of twenty years – work that was continued by his student at the *École Polytechnique*, Victor Considerant, until 1871 – Fourier promoted the concept of *phalanstère*, or as Considerant coined the term, “communes.”<sup>296</sup> In the isolated protection of Considerant’s home in the Jura Mountains – particularly the villages of La Chaux-de-Fonds and Le Locle – these socialist principles thrived among the watchmakers and artisans along the French-Swiss border, where Kropotkin made the decision that would change the course of his life. “All discussions about the impracticability of socialism and the necessary slowness of evolution are of little value, because the speed of evolution can only be judged from a close knowledge of the human beings of whose evolution we are speaking,” he wrote about his time in Jura.

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<sup>293</sup> Adrian Desmond, *The Politics of Evolution: Morphology, Medicine, and Reform in Radical London* (Chicago: University of Chicago Press, 1989).

<sup>294</sup> Pamela M. Pilbeam, *French Socialists Before Marx: Workers, Women and the Social Question in France* (McGill-Queen's Press, 2000), p. 199.

<sup>295</sup> *Ibid.*, 220-1.

<sup>296</sup> Jonathan Beecher, *Victor Considerant and the Rise and Fall of French Romantic Socialism* (Berkeley: University of California Press, 2001), p. 138. Guillaume discussed meeting with Considerant in Jura between 1869-71 and Considerant would later play an active role in the Paris Commune. James Guillaume, *L'Internationale*, Vol. 1, p. 90.

“[W]hen I came away from the mountains, after a week’s stay with the watchmakers, my views upon socialism were settled. I was an anarchist.”<sup>297</sup>

The workers solidarity movement that Kropotkin encountered in France and Switzerland made frequent use of naturalistic arguments for their notion of socialism as a representation of evolutionary progress. For example, the followers of the socialist radical Auguste Blanqui were as interested in the new biology as they were the new politics and “readily accepted the arguments of those social scientists who tried to derive a model of social change from Darwin’s theory of natural selection.”<sup>298</sup> The Paris-based newspaper *La Libre Pensee*, founded by the Blanquist Henri Verlet in January 1870, adopted a radically atheistic and anti-clerical perspective and many of the contributors gravitated around Blanqui, Fourier, or Proudhon.<sup>299</sup> The paper regularly discussed the work of Darwin, through the interpretation of Clémence Royer, along with other Darwinists such as Karl Vogt, Ernst Haeckel, John Tyndall, and Ludwig Büchner. Paul Lafargue, who at that time was a Proudhonian and would later wed Karl Marx’s daughter, cited Darwin extensively, considering him to be “one of the greatest Englishmen of the century.”<sup>300</sup> In describing Darwin’s work Lafargue noted, “These hypotheses will appear hazardous and even false to people who admit theological traditions; but these hypotheses are the only ones we can have in the present state of human knowledge.”<sup>301</sup> The Parisian “journal of principles,” *La Solidarité*, made frequent allusions to natural history and

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<sup>297</sup> Kropotkin, *Memoirs of a Revolutionist*, Vol. 2, p. 59; 73.

<sup>298</sup> Patrick H. Hutton, *The Cult of the Revolutionary Tradition: The Blanquists in French Politics, 1864-1893* (University of California Press, 1981), Pp. 159-60.

<sup>299</sup> Jacqueline Lalouette, “Une Rencontre Oubliée: La Libre Pensée Française et les Savants Matérialistes Allemands (1863-1870),” *Romantisme* 73, 1991, pp. 57-67.

<sup>300</sup> Leslie Derfler, *Paul Lafargue and the Founding of French Marxism, 1842-1882* (Cambridge: Harvard University Press 1991), pp. 79-80.

<sup>301</sup> Paul Lafargue, *La Libre Pensee* 4, February 12, 1870, p. 2. “Ces hypothèses paraîtront hasardées et même fausses aux gens qui admettent des traditions théologiques; mais ces hypothèses sont les seules que nous puissions avoir dans l’état présent des connaissances humaines.”

Darwin's theory, stating in a January 1867 editorial that order in the natural and social world was entirely due to "the invariability of natural laws" in which everything must evolve following natural forces of "succession and development." Ultimately, for those who had committed themselves to social change, "our everyday lives are based on this conviction. . . We do not conceive the social order otherwise than the physical order."<sup>302</sup>

In March, the journal emphasized that Darwin's theory, even though it rests ultimately on competition and death, should be understood as optimistic because, through it, "we observe the order which results" from the interactions between organisms following natural laws. "Let us see in their painful efforts, in the destruction of organisms or in their transformations, the upward movement of beings that never ceases to rise from degree to degree."<sup>303</sup> Later that same year, the journal criticized a scientific theory because the author "even separates himself from Lamarck and Darwin in the sense that he rejects the idea of a continuous series built up from a primitive unity," a perspective that would deny "the progress of all other organisms."<sup>304</sup> James Guillaume, editor for the *Bulletin de la Fédération Jurassienne*, noted that members of the IWMA in 1867-68 would regularly attend lectures on physiology, the "origin of the human races," and the promulgation of

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<sup>302</sup> Paul Lafargue, *La Solidarité: Journal des Principes*, Jan. 1, 1867, p. 19. "Les lois chimiques et biologiques s'y associent aux lois mathématiques; mais là aussi l'ordre règne. Dans le monde terrestre comme dans le monde céleste, l'ordre résulte pour nous du concours des forces, de la coordination des mouvements, de la précision, en un mot, et de l'invariabilité des lois naturelles. Notre science, notre prévoyance, notre pratique, notre vie de tous les jours sont basées sur cette conviction."

<sup>303</sup> Paul Lafargue, *La Solidarité: Journal des Principes*, March 1, 1867, p. 43. "... nous constatons l'ordre qui résulte de leurs rapports ramenés à l'unité par des lois de plus en plus compréhensives. Voyons dans leurs douloureux efforts, dans la destruction de leur organisme ou dans ses transformations, le mouvement ascensionnel de l'être qui ne cesse de s'élever de degré en degré."

<sup>304</sup> Paul Lafargue, *La Solidarité: Journal des Principes*, Dec. 1, 1867, p. 4. "[I] se sépare même de Lamarck et de Darwin, en ce sens qu'il repousse l'idée d'une série continue qui ferait sortir d'une unité primitive. . . à des progrès dans tous les autres organismes."

“free scientific thought.”<sup>305</sup> He noted that the primary function of the IWMA was assisting workers toward “defining their instincts” (*définir leurs instincts*) and that this had “transformed the usual physiology of our population” (*transformé la physiologie habituelle de notre population*).<sup>306</sup> This belief in the physiological evolution of populations through radical organizing was shared throughout the IWMA such that “social science alone can give us the means to realize this evolution of humanity.”<sup>307</sup> This perspective was one that had evolved over the previous thirty years under the influence of two of the most prominent figures of the radical left: Pierre-Joseph Proudhon and Mikhail Bakunin.

### **Proudhon, Bakunin, and the Darwinian Struggle**

Kropotkin was familiar with the concept of anarchism prior to his visit to Switzerland based on his reading of Pierre-Joseph Proudhon, philosopher of mutualism and Bakunin’s chief influence. While he died in 1865, it was to Proudhon that the majority of Communards found their inspiration, with supporters of Fourier and Blanqui making up the remainder within the ranks of the IWMA.<sup>308</sup> “All the administrative, economic, and political measures taken by the Commune drew their inspiration from Proudhon.”<sup>309</sup> Karl Marx, who had long been at odds with Proudhon’s anarchism, later

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<sup>305</sup> James Guillaume, *L’Internationale: Documents et Souvenirs*, Vol. 1 (Paris: Société nouvelle de librairie et d’édition, 1905), pp. 89-90.

<sup>306</sup> *Ibid.*, p. 183; 120.

<sup>307</sup> Emile Aubry, *Association Internationale des Travailleurs, Section Rouennaise. De Son Role Dans Les Circonstances Actuelles* (Rouen: Imprimerie de E. Cagniard, 1870), p. 9. “La science sociale peut, seule, nous donner les moyens de réaliser cette évolution de l’humanité.”

<sup>308</sup> Peter Marshall, *Demanding the Impossible: A History of Anarchism* (Oakland, PM Press, 2009), pp. 235-6.

<sup>309</sup> George Gurvitch, *Proudhon* (Paris: Presses Universitaires de France, 1965), pp. 65-6.

placed the blame for the failure of revolutionary action in Paris on “proudhonism.”<sup>310</sup>

Like Bakunin would later, Proudhon made regular use of natural history to support his vision of a stateless society in which religion served as just another means of controlling the masses. Proudhon demonstrated the dual attachments to scientific positivism and a philosophy grounded in naturalism that would be central to radicals in the nineteenth century. Much like Karl Marx, Proudhon saw his philosophy as the scientific study of economic and social systems. For example, in a letter to M. Villiaumé in 1856 he compared his own work on the analysis of economics to that of Cuvier’s work on fossils.

The social world appeared to me in a chaotic state, as the underground world appeared to Cuvier; I took hold of the ideas, the institutions, the phenomena, the search for meaning, definition, law, relations, analogies, etc., etc., labeling my pieces, until it was possible for me to assemble the whole, as Cuvier assembled the skeleton of the dinotherium or of any other antediluvian.<sup>311</sup>

It was with this naturalistic perspective that Proudhon advanced his theory of mutualism in human society.

The expression of natural instincts were integral to Proudhon’s philosophy of social progress. However, given that his body of work predated Darwin’s *Origin*, there was only a single mention of Darwin in Proudhon’s vast correspondence. However, that mention is significant in that he came down in favor of the English naturalist against a critique leveled by Jean Pierre Flourens, *secrétaire perpétuel* of the French Academy of

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<sup>310</sup> Paul Thomas, *Karl Marx and the Anarchists* (New York: Psychology Press, 1980), pp. 175-249; Karl Marx, *The Civil War in France* (New York: International Publishers, 1933).

<sup>311</sup> Letter from Proudhon to M. Villiaumé, January 24, 1856. In M.N. Villiaumé, *Proudhon Expliqué par Lui-Même: Lettres Inédites de P.-J. Proudhon à M.N. Villiaumé* (Paris: Alcan-Lévy, 1866), p. 7. *Lemonde social m'apparaissait à l'état chaotique, comme le monde souterrain apparaissait à Cuvier; je m'emparai donc des idées, des institutions, des phénomènes, en cherchant le sens, la définition, la loi, les rapports, les analogies, etc., etc., étiquetant mes pièces, jusqu'à ce qu'il me fût possible de composer le tout, comme Cuvier composait le squelette du dinotherium ou de tout autre antédiluvien.*

Sciences.<sup>312</sup> Flourens was one of the earliest and most pronounced critics of Darwin's theory and his 1864 book *Examen du Livre de M. Darwin sur l'Origine des Espèces* "deals with Mr. Darwin as the first Napoleon would have treated an 'idéologue,'" as T.H. Huxley remarked.<sup>313</sup> While Proudhon confessed that he enjoyed "the manner of M. Flourens, his praises, his lucidity," he could not accept his overall conclusions against Darwin's theory of transmutation.<sup>314</sup> Proudhon firmly believed that "there have been great epochs of creation, as well as transformation; I think that creation and transformation are in this case synonymous." This was a point of view that Proudhon had earlier stated in a letter to A.M. Bergmann, in that he accepted the transformation of the human physical form from an ancestral animal species but held that it now "varies only within rather narrow limits" (*varie que dans des limites assez étroites*) and, where it came to human evolution, believed in a "plurality of places for the formation of our species" (*la pluralité des lieux de formation de notre espèce*).<sup>315</sup> He further wrote to J.A. Langlois, in response to an argument by Quatrefages (most likely from his 1861 book *Unité de l'Espèce Humaine*),<sup>316</sup> that, while, "I fully agree with the specific unity of mankind" he could not accept that this unity meant there was an identical origin for all races. "I believe

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<sup>312</sup> Jean Pierre Fournier, *Examen du Livre de M. Darwin sur l'Origine des Espèces* (Paris: Garnier Frères, 1864).

<sup>313</sup> A disdainful approach to argument that Huxley felt "passes the limits of good breeding." Thomas Henry Huxley, "Criticisms on 'The Origin of Species,'" *The Natural History Review*, 1864, republished in *Lay Sermons, Addresses, and Reviews* (New York: D. Appleton and Company, 1880), p. 313.

<sup>314</sup> Letter from Proudhon to Eugène Noël, August 16, 1864. In Pierre-Joseph Proudhon, *Correspondance de P.-J. Proudhon Precedee d'Une Notice Sur P.-J. Proudhon par J.-A. Langlois, Vol. XIV* (Geneva: Slatkine Reprints, 1971), pp. 28-9. "Je vous avoue que j'aime assez la maniere de M. Flourens, ses eloges, sa lucidite, etc., bien que je ne marche pas a sa suite dans la question qui nous occupe aujourd'hui."

<sup>315</sup> Letter from Proudhon to A.M. Bergmann, July 6, 1864. In Pierre-Joseph Proudhon, *Correspondance de P.-J. Proudhon Precedee d'Une Notice Sur P.-J. Proudhon par J.-A. Langlois, Vol. XIII* (Geneva: Slatkine Reprints, 1971), p. 310-11.

<sup>316</sup> Jean Louis Armand de Quatrefages, *Unité de l'Espèce Humaine* (Paris: Librairie de L. Hachette et Cie, 1861).

that in this he [Quatrefages] has done violence to science out of love for Genesis.”<sup>317</sup>

Proudhon believed that any observed biological inferiority in others races was a result of “local influences” (chiefly climate and other environmental pressures) that produced “nuances of temperament” between populations. Nevertheless, as Proudhon wrote in his posthumously published *Théorie de la Propriété*, “if nature has created them unequal in their faculties of realization, the tendency of civilization and laws are to restrict in practice the effects of this inequality by giving all the same guarantees and, as far as possible, the same education.”<sup>318</sup> In this way, Proudhon may have assumed racial inequality as a biological reality, but the society he imagined was one that would be of benefit for all races by “reducing the inequality of conditions and fortunes” (*réduire l'inégalité des conditions et des fortunes.*)<sup>319</sup>

However, even though Proudhon was not an ardent supporter of Darwin’s theory, he would ultimately anticipate by thirty years conclusions that Darwin came to in his *Expression of the Emotions in Man and Animals* (1872). In Proudhon’s most celebrated work, his 1841 *Qu'est-ce que la Propriété?*, he asked the question, “Does the moral sense, in man and in the brute, differ by nature or only by degree?”<sup>320</sup> Coming down firmly on the latter, Proudhon advanced the argument that society is a direct

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<sup>317</sup> Letter from Proudhon to A.M. J.A. Langlois, April 12, 1862. In Pierre-Joseph Proudhon, *Correspondance de P.-J. Proudhon Precedee d'Une Notice Sur P.-J. Proudhon par J.-A. Langlois, Vol. XII* (Geneva: Slatkine Reprints, 1971), p. 44-5. “Je suis parfaitement d'accord de l'unité spécifique de l'humanité; mais je ne conclus pas avec Quatrefages de cette unité spécifique à une origine identique pour toutes les races; je crois qu'en cela il a fait violence à la science par amour pour la Genèse.”

<sup>318</sup> Proudhon differentiated between two human cognitive capacities, *facultés de production* and *facultés de réalisation*, the latter of which was associated with abstract thought.

<sup>319</sup> Pierre-Joseph Proudhon, *Théorie de la Propriété suivie d'un Nouveau Plan d'Exposition Perpétuelle* (Paris: Librairie Internationale, 1866), pp. 146-7 “Ceci revient à dire que les citoyens sont tous de même droit et de même dignité dans l'État; que si la nature les a créés inégaux quant aux facultés de réalisation, la tendance de la civilisation et des lois est de restreindre dans la pratique les effets de cette inégalité, en donnant à tous les mêmes garanties et, autant que possible, la même education.”

<sup>320</sup> Pierre-Joseph Proudhon, *Qu'est-ce que la Propriété*, (Paris, 1840), p. 194. “Le sens moral, dans l'homme et dans la brute, differe-t-il par la nature ou seulement par le degre?”

manifestation of the human instinct for social engagement. He cited examples of the human instinct for sympathy – a mother protecting her son, a man diving into water to save a stranger from drowning, giving alms to a man in poverty, the Samaritan who helps an injured traveller – as situations that Proudhon argued came out of “an internal attraction towards his fellow, by a secret sympathy which causes him to love, congratulate, and condole.” If a person was to resist this instinct and follow the purely selfish motive in each of these circumstances, “it requires an effort of will against nature,” and, as such, “in this respect there is no entrenched difference between man and the animals.”<sup>321</sup> Proudhon then offered multiple examples of non-human animals engaging in actions reflective of this same moral sense: mothers offering support to their weakened offspring, “with a courage which reminds us of our heroes dying for their country,”<sup>322</sup> certain species that unite for hunting purposes and sharing their prey, elephants that help their companions that have fallen into a ditch, cows that will form circles with their calves in the center in order to repel wolves, as well as horses and pigs that will rush to the spot where they hear a cry of distress from one of their number. However, while Proudhon pointed out that there remain multiple examples of quarrelling, fighting, and abuse in these other species as well, such “touching demonstrations of society, fraternity, and love of neighbour” reveal that “[t]he social instinct, in man and

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<sup>321</sup> Ibid., p. 197. “Dans tous ces cas, l’homme est mu par un attrait intérieur pour son semblable, par une secrète sympathie, qui le fait aimer, conjouir et condouloir: en sorte que, pour resister a cet attrait, il faut un effort de la volonté contre la nature. Mais tout cela n’établit aucune différence tranchée entre l’homme et les animaux.”

<sup>322</sup> Ibid., p. 197. “Chez eux, tant que la faiblesse des petits les rend chers a leurs meres, en un mot les leur associe, on voit celles-ci les défendre au péril de leurs jours avec un courage qui rappelle nos heros mourant pour la patrie.” A sentiment that evokes Darwin’s later depiction of non-human animal cooperation.

beast, exists to a greater or lesser degree – its nature is the same.”<sup>323</sup> This social instinct observed among non-human animals was more advanced and sophisticated in humans and formed the basis for Proudhon’s argument for justice as a human universal. He argued that the notion of justice was not as simple as earlier philosophers had made it out to be, but was actually an emergent property that built from an innate moral sense and added the conceptual understanding of equality to create this founding principle of civilization. “It springs from the social instinct on the one hand, and the idea of equal merit on the other; just as the notion of guilt arises from the feeling that justice has been violated, and from the idea of free will.”<sup>324</sup> This led to Proudhon’s ultimate naturalistic basis for justice and human society, in that “[t]o practise justice is to obey the social instinct; to do an act of justice is to do a social act.”<sup>325</sup>

After Proudhon’s death, one of his closest collaborators and literary executor, J.A. Langlois, wrote his two-volume *L’Homme et la Révolution* (1867) elaborating and extending his mentor’s work. Key to developing Proudhon’s theory of revolution was an articulation of the “well-established fact” of evolution. In presenting his argument,

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<sup>323</sup> Ibid., p. 197. “Ajourons cependant, pour être juste en tout, que ces démonstrations si touchantes de société, de fraternité, d’amour du prochain, n’empêchent pas les animaux de se quereller, de se battre et de se déchirer à belles dents pour leur nourriture et leurs galanteries; la ressemblance eux et nous est parfaite. L’instinct social, dans l’homme et dans la bête, existe du plus moins: sa nature est la même.”

<sup>324</sup> Ibid., p. 206. “La notion de juste, que les philosophes ont crue simple, est donc véritablement complexe; elle est fournie par l’instinct social d’une part, et par l’idée de mérite égal de l’autre; de même que la notion de culpabilité est donnée par le sentiment de la justice violée et par l’idée d’élection volontaire.”

<sup>325</sup> Ibid. p. 196. “Pratiquer la justice, c’est obéir à l’instinct social; faire un acte de justice, c’est faire un acte de société.” This justice, however, was not to be extended to women as Proudhon made clear in a footnote. See Ibid., pp. 214-5. “The difference of the sexes places a barrier between them like that placed between animals by a difference of race. Consequently, far from advocating what is now called the emancipation of woman, I should incline, rather, if there were no other alternative, to put her into reclusion.” [*L’homme et la femme ne vont pas de compagnie. La différence des sexes élève entre eux une séparation de même nature que celle que la différence des races met entre les animaux. Aussi, bien loin d’applaudir à ce qu’on appelle aujourd’hui émancipation de la femme, inclinerais-je bien plutôt, s’il fallait en venir à cette extrémité, à mettre la femme en réclusion.*]

Langlois offered a thought-experiment nearly identical to the one Kropotkin imagined two years earlier. He asked the reader to imagine that individual animals were to be placed in a common environment and left, undisturbed, for a century.

Will the apparent characteristics which they present in a hundred years be significantly different from those which they present today? Obviously not. What will create a new race or a distinct species, will be its change of norm. . . [T]hat is how Mr. Darwin can respond to Mr. Flourens.”<sup>326</sup>

Langlois continued by pointing out that, those naturalists who refuse to acknowledge the evolution of species are ultimately “condemned by logic to assert the convertibility of entire kingdoms.”<sup>327</sup> Because it is impossible to admit that mammals have always existed on earth, by denying the transmutation of species they are forced into the position of accepting spontaneous generation. Ultimately, Langlois concluded that the transmutation of species was essential to human freedom. Organisms living in the same environment eventually become equivalent under the influence of a “common condition of life.” As evidence of this, Langlois cited the reknowned geographer and naturalist Elisée Reclus, noting that it “has long been observed that the negro transported to Europe sees his characteristic color begin to lighten,” while similar conditions have been observed in the northern United States. Likewise, in all regions of Europe “where there is a political and social demarcation between the aristocratic class and the working class” a similar physiological difference exists as well. For Langlois, any system that institutionalized

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<sup>326</sup> J.A. Langlois, *L'Homme et la Révolution. Huit études, dédiées à P.-J. Proudhon*, Vol. 1 (Paris: Germer Bailliere, 1867), p. 422.

<sup>327</sup> Ibid. “Chose curieuse et qui n'a pas été suffisamment remarquée: les naturalistes qui nient la convertibilité des espèces sont con damnés par la logique à affirmer la convertibilité des régnes.”

inequality ultimately created a stratified environment that modified the physiology of those impacted, in effect creating an evolutionary abridgement of their inherent liberty.<sup>328</sup>

This clear application of a Lamarckian evolutionary process should, however, be placed into context. The historiography of evolutionary science is notably Whigish, particularly in its treatment of Darwinian biology.<sup>329</sup> Darwin's chief goal was to articulate his mechanism of natural selection as the primary process of transmutation. However, as he made clear, this was not to deny other mechanisms such as phenotypic plasticity (also commonly referred to as "use and disuse") or the inheritance of acquired characteristics through the direct action of environment, the two "fundamental laws" that made up Lamarck's concept of heredity.<sup>330</sup> Darwin made this explicit in his Introduction:

"Naturalists continually refer to external conditions, such as climate, food, &c., as the only possible cause of variation. . . I am convinced that Natural Selection has been the main but not exclusive means of modification."<sup>331</sup> However, in a letter sent to Francis

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<sup>328</sup> Ibid., pp. 429-434.

<sup>329</sup> In 1985 David Kohn edited *The Darwinian Heritage*, a 1,138-page guide to the Darwin historiography including an 80-page bibliography containing almost 3,200 entries. Kohn wrote that "what characterizes the present community is a belief in the importance of Darwin. This high regard for Darwin is its central tenet." David Kohn, *The Darwinian Heritage* (New York: Macmillan, 1985). Also see Timothy Lenoir, "The Darwin Industry," *Journal of the History of Biology* 20, 1987, pp. 115-30; Michael Ruse, "The Darwin Industry: A Guide," *Victorian Studies* 39 (2), 1996, pp. 217-235;

<sup>330</sup> Lamarck's two laws were as follows: "*First law*: In every animal that has not reached the end of its development, the more frequent and sustained use of any organ will strengthen this organ little by little, develop it, enlarge it, and give to it a power proportionate to the duration of its use; while the constant disuse of such an organ will insensibly weaken it, deteriorate it, progressively diminish its faculties, and finally cause it to disappear. *Second law*: All that nature has caused individuals to gain or lose by the influence of the circumstances to which their race has been exposed for a long time, and, consequently, by the influence of a predominant use or constant disuse of an organ or part, is conserved through generation in the new individuals descending from them, provided that these acquired changes are common to the two sexes or to those which have produced these new individuals." Jean-Baptiste Lamarck, *Philosophie Zoologique*, (Paris, 1809), p. 235, cited in Richard W. Burkhardt, Jr., "Lamarck, Evolution, and the Inheritance of Acquired Characters," *Genetics* 194 (4), 2013, pp. 793-805.

<sup>331</sup> Darwin, *On the Origin of Species*, p. 3. The two examples he offers in the Introduction where natural selection must be called in are a woodpecker adapted to catch insects under the bark of a tree and misseltoe that requires birds to transport its seeds as well as insects to pollinate between flowers.

Darwin about criticism he received from St. George Mivart Darwin wrote, “I complain of his incessantly speaking as if I trusted exclusively to natural selection. . . I maintain that no one has taken such pains as I have to show what use and disuse have actually done.”<sup>332</sup>

Also, as Darwin wrote to Morris Wagner, “In my opinion the greatest error which I have committed, has been not allowing sufficient weight to the direct action of the environment, i.e. food, climate, &c., independently of natural selection.”<sup>333</sup> Darwin’s hereditary concept of *pangenesis* was likewise fundamentally Lamarckian in that particles known as gemmules transmitted biological material inherited from parents as well as that which was gained from the environment through habit.<sup>334</sup> Darwin consistently expanded on his sections devoted to the inheritance of acquired characteristics to the point that the sixth edition of *Origin* contained an entirely new chapter devoted to the topic. Consequently, the division between the categories of “Darwinism” and “Lamarckism” are functionally meaningless until the late 1880s.<sup>335</sup>

This feature of nineteenth-century evolutionary dynamics will be treated at greater length in Chapter 5. What can be said unequivocally about the case of Langlois is that he was

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<sup>332</sup> Letter from Charles Darwin to Francis Darwin, after January 21, 1871. DCP-LETT-7425.

<sup>333</sup> Letter from Darwin to Morris Wagner, October 13, 1876 in Francis Darwin (ed.) *The Life and Letters of Charles Darwin*, Vol 3 (London: John Murray, 1887), p. 158.

<sup>334</sup> R.C. Olby, “Charles Darwin’s Manuscript of Pangenesis,” *The British Journal for the History of Science* 1 (3), pp. 251-63; Jonathan Hodge, “Le Darwin de la Pangenèse,” *Comptes Rendus Biologies* 333 (2), 2010, pp. 129-33; Mary Jane West-Eberhard, *Developmental Plasticity and Evolution* (Oxford: Oxford University Press, 2003), pp. 188-93.

<sup>335</sup> George Romanes made the distinction between Darwinism and “Neo-Darwinism” in reference to the followers of August Weismann who separated all Lamarckian influences from the process of evolution. “The school of Weismann may properly be called Neo-Darwinian: pure Darwinian it certainly is not.” George Romanes, “Lamarckism versus Darwinism,” *Nature* 38, 1888, p. 413. The term appeared earlier in Samuel Butler’s *Unconscious Memory* (1880), (pp. 33-4) but as this book was not widely cited by the primary actors involved, I prefer the later date set by Romanes. The following year Alfred Russel Wallace published his book *Darwinism: An Exposition of the Theory of Natural Selection With Some of its Applications* that articulated the same position that Romanes critiqued.

ignorant of the contemporary literature on the question of race and climate, given that the German-Russian naturalist Peter Simon Pallas had discredited that hypothesis in 1780.<sup>336</sup>

Whereas Proudhon identified the evolution of cooperation to be the key factor in human progress, Mikhail Bakunin adopted a specifically Darwinian framework involving the “struggle for existence” in his theory of revolutionary progressivism. Bakunin was the leading voice for anarchist communism following Proudhon’s death and is considered by scholars to be the founder of the international anarchist movement. He was fundamental in the organization of the International Workingmen’s Association in France and Switzerland (a role in which he ultimately clashed with Marx given their conflicting views on centralized versus decentralized action). Bakunin was strongly influenced by Proudhon’s libertarian socialist perspective – known as *collectivist* or, sometimes, *mutualist* as opposed to the state-oriented socialist or communist factions of the radical left.

Bakunin was raised as a member of the Russian nobility whose family had a long history of service for the tsarist regime in either the military or civil service. Bakunin’s father, Alexander, initially broke from family tradition by receiving his doctorate in natural history from the University of Padua before following his father’s career path in the Foreign Service.<sup>337</sup> Even though Alexander was a supporter of (and may have been

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<sup>336</sup> Peter Simon Pallas, “Mémoires sur la Variation des Animaux,” Part II, *Acta Academiae Scientiarum Imperialis Petropolitanae, Saint Petersburg, 1780*, p. 69; cited in Darwin, *Descent of Man*, pp. 192-3. “Of all the differences between the races of man, the colour of the skin is the most conspicuous and one of the best marked. It was formerly thought that differences of this kind could be accounted for by long exposure to different climates; but Pallas first shewed that this is not tenable, and he has since been followed by almost all anthropologists. This view has been rejected chiefly because the distribution of the variously coloured races, most of whom must have long inhabited their present homes, does not coincide with corresponding differences of climate.”

<sup>337</sup> Bakunin’s great-great-grandfather, also named Mikhail, served as a military officer under Peter the Great, his great-grandfather, Vassily, entered the civil service as a Foreign Affairs officer, his grandfather was a Collegiate Councillor in the court system under Catherine the Great. Alexander’s

present at) the French Revolution, by the time of Mikhail's birth in 1814 he ran the family estate at Priamukhino in the Tver region of Western Russia where he owned about five hundred adult male serfs, or "souls."<sup>338</sup> This background in natural history and an intimate awareness of state policy (with the concomitant benefits accrued by the aristocracy) would prove to be important influences in Bakunin's revolutionary thought.

After abandoning his military service, Bakunin relocated to Moscow to study philosophy where he rejected the idealist strain made popular by the Romantics and argued strongly for an integration of theory with empirical practice, or *praxis*. One of his earliest published articles entitled "О Философии" [On Philosophy] highlighted this commitment to a theoretical construct built on evidence from the bottom up rather than cherry-picking the evidence to support one's preconceived notions.<sup>339</sup> Bakunin argued that everyone is "under the direct influence of the society in which he is born," and that each nation, as well as the different social strata and cultural groups within each state, were ultimately biased because each "has its particular moral sphere, its popular beliefs, its prejudices, its particular limitations, depending in part on its individual character, on its historical development, and on its relationship to the history of all mankind."<sup>340</sup>

Consequently, pure theory would serve merely to reflect that bias of the social group from which the author was embedded. However, on the other side of the equation, empiricism without any grounding in theory was likewise useless since it became little

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dissertation was a three-volume treatise on worms and he remained interested in natural history throughout his life, implementing agricultural improvements on his vast estate. Mark Leier, *Bakunin* (New York: Thomas Dunne Books, 2006), p. 5-7

<sup>338</sup> Ibid.

<sup>339</sup> М.А. Вакунин, "О Философии" [On Philosophy], *Отечественные записки* IX, 1840, pp. 55-78.

<sup>340</sup> Ibid. "Всякий человек образуется под непосредственным влиянием того общества, в котором он родился; но каждая нация, каждое государство имеет свою особенную нравственную сферу, свои поверья, свои предрассудки, свою особенную ограниченность, зависящие отчасти от его индивидуального характера, от его исторического развития и от отношения его к истории целого человечества."

more than an assemblage of unconnected fragments, or fact collecting. “[T]he essence of any knowledge,” he insisted, “searches for the universal unity [in which] the arid collectors of facts prepare the materials for the theorists; the theorists elaborate and work them in all directions, elevate them to relative-universal thoughts, and hand over the great deed of human knowledge to philosophy, which crowns it, producing out of all these fractions a united, organic, and absolutely transparent whole.”<sup>341</sup> This inductive approach to knowledge had the important implication that the nature of the world was change and that there were no inherent truths that could be applied without first being grounded in the local context. In other words, both science and politics were emergent properties that should be built from the bottom up.

This commitment to the inductive method, and to empiricism as an organizing framework, would continue to be crucial to Bakunin’s perspective long after he had committed himself to the life of a revolutionary. For example, in December 1868, in an editorial written for the Geneva-based anarchist journal *l’Égalité*, Bakunin told his fellow radicals that there were “two inseparable conditions” (*deux conditions inséparable*) for the coming revolution. The first was the “real and practical solidarity of the workers in all countries” (*la solidarité réelle et pratique des travailleurs de tous les pays*) so that, throughout the world, exploited workers would unite toward a common goal: “All for everyone and everyone for all” (*Tous pour chacun et chacun pour tous*). But, equally important and intimately bound with the first, was the knowledge of science. This was not the science usually taught in universities, “metaphysical, legal, politico-economic,

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<sup>341</sup> Ibid. “Одним словом, сухие собиратели фактов готовят материалы для теоретиков; теоретики обрабатывают их во всех направлениях, возвышают их до относительно всеобщих мыслей и передают великое дело человеческого знания философии, которая венчает его, создавая из всех этих дробностей единое, органическое и совершенно прозрачное целое.”

pedantic and doctrinaire” – in other words, *bourgeois* – but “the true human science, founded on the positive knowledge of natural, historical and social facts, and accepting no other inspiration but reason.” Participating in these two essential conditions was everyone’s duty and the essential praxis required for creating another world. “Knowledge is power. Workers need *solidarity* and *science*.”<sup>342</sup> After all, as he wrote two years later, “[w]hat is the scientific method? It is the realist method *par excellence*.” He stated that this approach builds from the specific details to the larger whole so that conclusions are based on a solid empirical framework. The experimental nature of the method also ensured that conclusions were formed with an understanding of the “mutual causality that actually exists between things and the phenomena that result.” Furthermore, the coordination of ideas between multiple individuals and the “severe mutual criticism” that their results are subject to, make this bottom-up approach to knowledge creation an extension of the egalitarian political vision he strived for. “One can not imagine a more democratic basis than this one.”<sup>343</sup>

The science that Bakunin had in mind was deeply influenced by natural history, and Darwin’s theory of natural selection in particular, as this grounded human society in a scientific framework that epitomised the grassroots orientation of his political vision.

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<sup>342</sup> Michel Bakounine, “Lettre à la Commission du journal *l’Égalité* à Genève,” *l’Égalité*, December 19, 1868. In Michel Bakounine, *Oeuvres*, Vol. 5 (Paris: P.-V. Stock, 1911), pp. 13-18. “L’autre condition, inséparable de la première, c’est la *science*; non la science bourgeoise, falsifiée, métaphysique, juridique, politico-économique, pédantesque et doctrinaire, qu’on enseigne dans les universités; mais la vraie science humaine, fondée sur la connaissance positive des faits naturels, historiques et sociaux, et n’acceptant d’autre inspiration que la raison. Savoir, c’est pouvoir. Il faut donc aux travailleurs la *solidarité* et la *science*.”

<sup>343</sup> *Ibid.*, p. 314. “Quelle est la méthode scientifique? C’est la méthode réaliste par excellence. Elle va des détails à l’ensemble, et de la constatation, de l’étude des faits, à leur compréhension, aux idées; ses idées n’étant rien que le fidèle exposé des rapports de coordination, de succession et d’action ou de causalité mutuelle qui réellement existent entre les choses et les phénomènes réels; sa logique, rien que la logique des choses. . . De tout cela il résulte que la science, tout d’abord, est fondée sur la coordination d’une masse d’expériences personnelles contemporaines et passées, soumises constamment à une sévère critique mutuelle. On ne peut s’imaginer de base plus démocratique que celle-là.”

That human beings – “cousin of the gorilla” [*cousin du gorille*]<sup>344</sup> – had evolved in a material universe was a fact accepted by many on the radical left. However, unlike Marx, who believed that human evolution had come to an end and that economic factors were now the primary influence on human nature, Bakunin took the position that natural laws were constant and continued to shape human society.<sup>345</sup> After all, “it is only because of the constancy of processes in nature that the human mind has been able to document and acknowledge what we call the mechanical, physical, chemical and physiological laws.”<sup>346</sup> It is as a result of these standard processes that we see the common forms of plant and animal varieties that have developed. However, as he pointed out, this constancy and repetition in form is not absolute but manifests biological “anomalies” that, because of the way in which they appear, “merely prove that these general rules recognized by us are natural laws.”<sup>347</sup>

Moreover, as Darwin has so well demonstrated, these so-called anomalies, by combining more often with each other and thus establishing themselves at a greater rate, create, as it were, new standard processes, new ways of reproducing and being in nature, that is precisely the path by which organic life gives birth to new varieties and species. It is thus that, after having begun with a simple cell, barely organized, and made to pass through all the transformations of the vegetable organization first and, later, animal, it becomes man.<sup>348</sup>

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<sup>344</sup> Michel Bakounine, *Federalisme, Socialisme et Antitheologisme* (1867), in *Oeuvres*, Vol. 1 (Paris: P. – V. Stock, 1895), p. 191, n. 1.

<sup>345</sup> For a discussion of Marx’s views on biology see Ann Robertson, “The Philosophical Roots of the Marx-Bakunin Conflict,” *What’s Next*, December 2003.

<sup>346</sup> Michel Bakounine, *Federalisme, Socialisme et Antitheologisme* (1867), in *Oeuvres*, Vol. 1 (Paris: P. – V. Stock, 1895), p. 92. “[C]e n’est qu’à cause de cette constance de procédés dans la nature, que l’esprit humain a pu constater et reconnaître ce que nous appelons les lois mécaniques, physiques, chimiques et physiologiques.”

<sup>347</sup> Michel Bakounine, *Federalisme, Socialisme et Antitheologisme* (1867), in *Oeuvres*, Vol. 1 (Paris: P. – V. Stock, 1895), p. 92. “Cette constance et cette répétition ne sont point absolues. Elles laissent toujours un large champ à ce que nous appelons improprement les anomalies et les exceptions – manière de parler fort injuste, car les faits auxquels elle se rapporte prouvent seulement que ces règles générales recon nues par nous comme des lois naturelles.”

<sup>348</sup> Here Bakunin evokes Haeckel’s concept that “ontology recapitulates phylogeny,” or that an embryo’s development reveals the process of evolutionary history for that species. Michel Bakounine, *Federalisme, Socialisme et Antitheologisme* (1867), in *Oeuvres*, Vol. 1 (Paris: P. – V. Stock,

However, Bakunin's Darwinian influence would break from the naturalistic philosophy of Proudhon in that the "struggle for existence" should be taken literally and embraced for the coming revolution.

In a speech that Bakunin gave to the International Association of Workers in Le Locle on February 21, 1869, he explained that the history of the world had always been one of struggle.<sup>349</sup> "In the animal world, this struggle takes place without ideas or phrases [but] as long as the earth exists, the animal world will devour each other. It is the natural condition of life."<sup>350</sup> The same had always been the case for the human species as well; all wars between races, nations, and classes – regardless of their ideological or religious justification – had always had, at their root, the material interests of dominion in order to guarantee their own safety and pleasure. "Human history, considered from this point of view, is nothing but the continuation of this great struggle for existence, which Darwin considers to be the fundamental law of organic nature."<sup>351</sup> However, within the laws of nature there still existed hope for mankind. The power of human reasoning had evolved

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1895), p. 92. "D'ailleurs, comme l'a si bien démontré Darwin, ces prétendues anomalies en se combinant plus souvent entre elles et se fixant par là même davantage, créant, pour ainsi dire, de nouveaux procédés habituels, de nouvelles manières de se reproduire et d'être dans la nature, sont précisément la voie par laquelle la vie organique donne naissance à de nouvelles variétés et espèces. C'est ainsi, qu'après avoir commencé par une simple cellule à peine organisée et l'avoir fait passer par toutes les transformations de l'organisation végétale d'abord et plus tard animale, elle en a fait un homme."

<sup>349</sup> James Guillaume, *L'Internationale: Documents et Souvenirs*, Vol. 1 (Paris: Société nouvelle de librairie et d'édition, 1905), p. 136. The speech was later published in *Le Progrès*.

<sup>350</sup> Michel Bakounine, "Aux compagnons de l'Association Internationale des Travailleurs du Locle et de la Chaux-de-Fonds," Troisième Lettre, *Le Progrès* 8 (April 17, 1869), pp. 2-3. In *Oeuvres*, Vol. 1 (Paris: P. -V. Stock, 1895), p. 219.

<sup>351</sup> Michel Bakounine, "Aux compagnons de l'Association Internationale des Travailleurs du Locle et de la Chaux-de-Fonds," Troisième Lettre, *Le Progrès* 8 (April 17, 1869), pp. 2-3. In *Oeuvres*, Vol. 1 (Paris: P. -V. Stock, 1895), p. 219. "Dans le monde animal, ce combat se fait sans idées et sans phrases, il est aussi sans solution; tant que la terre existera, le monde animal s'entre-dévorera. C'est la condition naturelle de sa vie. . . L'histoire humaine, considérée à ce point de vue, n'est rien que la continuation de ce grand combat pour la vie, qui, d'après Darwin, constitue la loi fondamentale de la nature organique."

in such a way that it made *Homo sapiens* unique in the animal world. Bakunin argued that we must accept our lowly origins but understand that those same forces are what shaped us to achieve the potential that can only now be realized.

Man is matter, and cannot with impunity despise that matter. He is an animal, and can not destroy his animality; but he can and must transform it and humanize it by liberty, that is to say, by the combined action of justice and reason, which in turn have no hold over it, because they are its products and highest expression.<sup>352</sup>

Indeed, as Bakunin went on to explain, every attempt to disregard our animality has resulted in humans becoming a toy or slave under the power of priests and the political idealists that served the State. But how would learning to embrace our animal natures help humanity change this “struggle for existence” that had raged since our origin?

The clearest expression of Bakunin’s naturalistic vision of human society wouldn’t be articulated until the fall of 1870 with his unfinished manuscript entitled *l’Empire Knouto-Germanique et la Révolution Sociale*, written in the months just prior to the Paris Commune.<sup>353</sup> Bakunin predicted that there would be an uprising in France and had taken part in the failed insurrectionary movement in Lyon in September 1870. After escaping from his arrest by the French National Guard, Bakunin fled to Lacarno and began addressing those critics (most notably, Karl Marx) who rejected his and Proudhon’s brand of stateless socialism. Unlike Marx, who he criticized for being an idealist and not appreciating the importance of human nature, Bakunin was determined to

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<sup>352</sup> Michel Bakounine, “Aux compagnons de l’Association Internationale des Travailleurs du Locle et de la Chaux-de-Fonds,” Troisième Lettre, *Le Progrès* 8 (April 17, 1869), pp. 2-3. In *Oeuvres*, Vol. 1 (Paris: P. -V. Stock, 1895), pp. 220-1. “L’homme est matière, et ne peut pas impunément mépriser la matière. Il est un animal, et ne peut détruire son animalité; mais il peut et doit la transformer et l’humaniser par la liberté, c’est-à-dire par l’action combinée de la justice et de la raison, qui à leur tour n’ont de prise sur elle que parce qu’elles en sont les produits et la plus haute expression.”

<sup>353</sup> A portion of this manuscript would later be published posthumously as *Dieu et l’État* (God and the State) in 1882.

ground his philosophy on materialist and empirical principles rather than idealism.<sup>354</sup>

Because, as Proudhon had said previously, the ideal was “merely a flower whose material conditions of existence constituted the root,” it was therefore necessary to begin with the “fundamental and decisive truth” that humanity should be understood as nothing more than “the highest manifestation of animality.”<sup>355</sup> Because the human species had evolved following the same process as other animals, it was essential to acknowledge that humans only differed in degree from other non-humans.

[M]an is not the only intelligent animal on earth. Far from it. Comparative psychology shows us that there is no animal which is devoid of intelligence, and that the more closely a species, by its organization and especially by the development of its brain, is to the human species, the more its intelligence develops and rises.<sup>356</sup>

However, humans alone have evolved a brain that possessed what Bakunin referred to as “the faculty of thinking” [*la faculté de penser*], the complex cognitive abilities making possible “that power of abstraction which properly constitutes thought” and which

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<sup>354</sup> Bakunin positioned Marx and himself as representing the conflict between “idéalistes ou les matérialistes.” See Michel Bakounine, *l'Empire Knouto-Germanique et la Révolution Sociale* (1870), in *Oeuvres*, Vol. 2 (Paris: P. -V. Stock, 1895), pp. 12-18.

<sup>355</sup> Michel Bakounine, *l'Empire Knouto-Germanique et la Révolution Sociale* (1870), in *Oeuvres*, Vol. 2 (Paris: P. -V. Stock, 1895), pp. 18-9. “[O]ui, l'idéal, comme l'a dit Proudhon, n'est qu'une fleur dont les conditions matérielles d'existence constituent la racine. . . Toutes les branches de la science moderne, consciencieuse et sérieuse, convergent à proclamer cette grande, cette fondamentale et décisive vérité : oui, le monde social, le monde proprement humain, l'humanité en un mot, n'est autre chose que le développement dernier et suprême, — pour nous au moins et relativement à notre planète, — la manifestation la plus haute, de l'animalité.”

<sup>356</sup> Michel Bakounine, *l'Empire Knouto-Germanique et la Révolution Sociale. Appendice 2. L'Homme: Intelligence, Volonté.* (1870), in *Oeuvres*, Vol. 3 (Paris: P. -V. Stock, 1895), p. 238. The five appendices had originally been intended as the beginning of the work first titled *La Révolution Sociale ou la Dictature Militaire* [The Social Revolution or the Military Dictatorship]. See *Ibid.*, Vol. 2. *l'Empire Knouto-Germanique et la Révolution Sociale. Avant-Propos*, p. 277. “L'homme n'est pas le seul animal intelligent sur la terre. Bien loin de là; la psychologie comparée nous démontre qu'il n'existe point d'animal qui soit absolument dénué d'intelligence, et que plus une espèce, par son organisation et surtout par le développement de son cerveau, se rapproche de l'homme, plus son intelligence se développe et s'élève aussi. Mais dans l'homme seul elle arrive à ce qu'on appelle proprement la faculté de penser.”

Proudhon had earlier referred to as *la faculté de réalisation*.<sup>357</sup> The evolution of the human species had also resulted in one additional faculty that allowed humans to excel during the struggle for existence in our ancient past.

Yes, our first ancestors, our Adams and our Eves, were, if not gorillas, at least very near relatives of gorillas, omnivorous, intelligent and ferocious beasts, endowed to a higher degree than animals of all other species with two precious faculties: the power to think and the desire to rebel.<sup>358</sup>

Natural selection had brought our species to where we are today and, “the moment one accepts this animal origin of man, everything is explained” (*du moment qu'on accepte cette origine animale de l'homme, tout s'explique*).<sup>359</sup>

Considered from this point of view, the natural world presents us with the murderous and bloody picture of a fierce and perpetual struggle, *the struggle for existence*. . . The natural world can be regarded as a bloody hecatomb, as a mournful tragedy created by hunger. It is the constant theater for a struggle without mercy and without truce.<sup>360</sup>

Bakunin immediately went on to state that we need not ask why the natural world should be this way; it is enough to accept this reality for what it is. Human beings were not

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<sup>357</sup> Michel Bakounine, *l'Empire Knouto-Germanique et la Révolution Sociale* (1870), in *Oeuvres*, Vol. 2 (Paris: P. -V. Stock, 1895), p. 105 “Dans tous les animaux, sans excepter les espèces les plus inférieures, nous trouvons un certain degré d'intelligence, et nous voyons que, dans la série des espèces, l'intelligence animale se développe d'autant plus, que l'organisation d'une espèce se rapproche davantage de celle de l'homme; mais que dans l'homme seul, elle arrive à cette puissance d'abstraction qui constitue proprement la pensée.”

<sup>358</sup> Translation is from the published English edition of *God and the State*. “Oui, nos premiers ancêtres, nos Adams et nos Èves, furent sinon des gorilles, au moins des cousins très proches du gorille, des omnivores, des bêtes intelligentes et féroces, douées, à un degré infiniment plus grand que les animaux de toutes les autres espèces, de deux facultés précieuses: la faculté de penser et la faculté, le besoin de se révolter.”

<sup>359</sup> Michel Bakounine, *l'Empire Knouto-Germanique et la Révolution Sociale* (1870), in *Oeuvres*, Vol. 2 (Paris: P. -V. Stock, 1895), p. 37.

<sup>360</sup> In the second part of this quote, concerning the “bloody hecatomb,” Bakunin was quoting himself from an article he wrote for *Progrès* on August 21, 1869. The similarities between Bakunin’s vision of natural selection and T.H. Huxley’s are unmistakable and will be addressed in the Chapter 3. Michel Bakounine, *l'Empire Knouto-Germanique et la Révolution Sociale. Appendice 2. L'Homme: Intelligence, Volonté*. (1870), in *Oeuvres*, Vol. 3 (Paris: P. -V. Stock, 1895), p. 236. “[L]e monde naturel nous présente le tableau meurtrier et sanglant d’une lutte acharnée et perpétuelle, de la lutte pour la vie. . . le monde naturel peut être considéré comme une sanglante hécatombe, comme une tragédie lugubre créée par la faim. Il est le théâtre constant d’une lutte sans merci et sans trêve.”

responsible for the condition that led to our evolution any more than any other animal was, and it was through this “bloody hecatomb” that natural order was maintained. “Harmony is established by struggle: by the triumph of some, by the defeat and death of others, by the suffering of all.”<sup>361</sup> But now that this harmony had given rise to the human mind and its ability for abstract thought, it was time for our species to break with the past and imagine a future of human freedom.

This break would not be a complete rejection of natural laws in human society (as it would be for Marx or, even, Thomas Henry Huxley) but, rather, working within these laws and with human nature to create a better world. Bakunin concluded that there was a single “universal fact” that encapsulated the mechanical, chemical, geological, vegetable, animal, and human social aspects of life beyond which it was impossible to conceive anything else: “perpetual movement.”<sup>362</sup> This aspect alone was “the powerful motor that creates the animal and human world” (*le moteur puissant qui crée le monde animal et humain*) and represented that “universal solidarity” between things and beings.<sup>363</sup> In short, there was no perfect political system; there was only perpetual struggle to create a better world and organisms should create a temporary harmony through direct action. This was the guiding framework that Bakunin believed in for the International Working Men’s Association, that it would “accommodate itself to the natural instincts and ideals of the people.” In nature, just as in human society, “every creature exists on condition that he tries, as much as his individuality will permit, to influence the lives of others.”

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<sup>361</sup> Ibid.

<sup>362</sup> Ibid. “En un mot, ce n'est pas une idée, mais un fait universel, au delà duquel il nous est impossible de rien concevoir; et ce fait n'est point du tout un être immuable, mais, au contraire, c'est le mouvement perpétuel, se manifestant, se formant par une infinité d'actions et de réactions relatives : mécaniques, physiques, chimiques, géologiques, végétales, animales, et humainement sociales.”

<sup>363</sup> Michel Bakounine, *l'Empire Knouto-Germanique et la Révolution Sociale. Appendice 2. L'Homme: Intelligence, Volonté.* (1870), in *Oeuvres*, Vol. 3 (Paris: P. -V. Stock, 1895), p. 262.

Bakunin believed that the constant pressure, this perpetual movement of people and ideas, was the best way to ensure freedom for the individual.

Not from the top to the bottom, by imposing a seeming unity and order on human society, as the state attempts, without regards to the differences of interest arising from differences of occupation. On the contrary, the International organizes the masses from the bottom upwards, taking the social life of the masses, their real aspirations as a starting point, and encouraging them to unite in groups according to their real interests in society. The International evolves a unity of purpose and creates a real equilibrium of aim and well-being out of their natural difference in life and occupation.”<sup>364</sup>

Kropotkin would later make the same argument in that “Evolution does not take place in the sense of authoritarianism; it takes place in the sense of the most complete freedom of the individual, the producer and consumer group, the commune, the grouping, the free federation. Evolution takes place, not in the sense of individual propriety, but in the sense of production and consumption in common.”<sup>365</sup>

Despite Bakunin’s insistence that he was a “realist” where it came to natural laws, he frequently found himself rejecting the very animal basis for human society that he spent so much time establishing. This was especially telling where it came to his discussion of indigenous peoples. Bakunin differed from Proudhon’s assumption of innate inferiority and took the position that, whether there was a single “Adam-gorilla” origin for the human species or many separate origins, the evolution of human consciousness would have followed the same laws everywhere.

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<sup>364</sup> Michel Bakunin, “The Organisation of the International.” Written in 1869 and published by Guy Aldred (ed.) and Freda Cohen (trans.) as No. 5 of the SPUR Series (London: Bakunin Press, 1919).

<sup>365</sup> Peter Kropotkin, *Paroles d'un Révolté* (Paris: C. Marpon et E. Flammarion, 1885), p. 88.

“L'évolution ne se produit pas dans le sens de l'autoritarisme; elle se produit dans le sens de la liberté la plus complète de l'individu, du groupe producteur et consommateur, de la commune, du groupement, de la fédération libre. L'évolution se produit, non pas dans le sens de l'individualisme propriétaire, mais dans le sens de la production et de la consommation en commun.”

The faculty which properly constitutes and creates the humanity of all men: reflection, the power of abstraction, reason, thought, in a word, the faculty of forming ideas (as well as the laws which determine the manifestation of this faculty) remain at all times and in all places identical, and always the same – so that no human development can be done contrary to these laws.<sup>366</sup>

Nevertheless, Bakunin frequently evoked the biases of his age by referring to indigenous peoples – or, what he called “the savage man” (*l’homme sauvage*) – as a stage of human evolution closest to non-human animals.<sup>367</sup> “Primitive society had no conception of freedom,” he wrote in his *Revolutionary Catechism* (1866), “and as society evolved, before the full awakening of human rationality and freedom, it passed through a stage controlled by human and divine authority.”<sup>368</sup> Later, in the full expression of his ideas about the naturalistic basis for society in *l’Empire Knouto-Germanique*, he had not changed his position but held that “primitive peoples, emerging slowly from their animal innocence, created their gods.”<sup>369</sup> In fact, nothing better represented the “primitive stupidity of man” (*la stupidité primitive des hommes*) better than a belief in the supernatural and it was a concept that humanity had to evolve beyond.<sup>370</sup> In this way,

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<sup>366</sup> “Quelle que soit la provenance des différents groupes humains et de la séparation des races humaines sur le globe; que tous les hommes n’aient eu qu’un seul Adam-gorille ou cousin de gorille pour ancêtre, ou qu’ils soient issus de plusieurs, que la nature aurait formés sur différents points et à différentes époques, indépendamment les uns des autres, la faculté qui constitue proprement et qui crée l’humanité de tous les hommes: la réflexion, la puissance d’abstraction, la raison, la pensée, en un mot, la faculté de former des idées, restent, aussi bien que les lois qui déterminent la manifestation de cette faculté, en tous temps et en tous lieux identiques, partout et toujours les mêmes -- de sorte qu’aucun développement humain ne saurait se faire contrairement à ces lois.”

<sup>367</sup> Michel Bakounine, *Federalisme, Socialisme et Antitheologisme* (1867), in *Oeuvres*, Vol. 1 (Paris: P. – V. Stock, 1895), p. 100. Bakunin also refers to “the savage tribes” (*les peuplades sauvages*) refers to indigenous people as “savage” interchangeably with “primitive.” See *Ibid.* p. 102, 111, 113, 116, 120, 140.

<sup>368</sup> Mikhail Bakunin, “Revolutionary Catechism,” in Sam Dolgoff (ed.) *Bakunin on Anarchy* (New York: Vintage Books, 1971), pp. 76-7.

<sup>369</sup> Michel Bakounine, *l’Empire Knouto-Germanique et la Révolution Sociale* (1870), in *Oeuvres*, Vol. 3 (Paris: P. – V. Stock, 1895), p. 108. “C’est ainsi que les peuples primitifs, sortant lentement de leur innocence animale, ont créé leurs dieux.”

<sup>370</sup> Michel Bakounine, *l’Empire Knouto-Germanique et la Révolution Sociale* (1870), in *Oeuvres*, Vol. 3 (Paris: P. – V. Stock, 1895), p. 107, n. 1.

indigenous populations represented a transitional stage of humanity between animality and freedom just as their “primitive organization” of “patriarchal direction under a single chief” transitioned into the more complicated organization of the State (and, in the future, full emancipation).<sup>371</sup> The human species had never known freedom and, as the result of natural selection, it was something that was finally within our grasp.

Man, fierce beast, cousin of the gorilla, has set out from the profound darkness of animal instinct to arrive at the light of the mind, which explains in a natural way all of its past ramifications, and partly consoles us for its present errors. He started from animal slavery and, through divine slavery, a transitional stage between his animality and his humanity, he is today marching towards the conquest and realization of his human freedom.<sup>372</sup>

He further rejected the notion, popularized by Rousseau, that “primitive society was established by a free contract, formed by savages.”<sup>373</sup> Such a concept was an absurdity – a “fictitious fiction,” as he wrote in *Federalisme, Socialisme et Antitheologisme* – because, in Bakunin’s estimation, indigenous peoples were not free but represented “the absolute dependence of the gorilla man on a permanent obsession with the external world.”<sup>374</sup> In an unfinished manuscript entitled “Le Principe de l’État” (The Principle of

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<sup>371</sup> Michel Bakounine, *l'Empire Knouto-Germanique et la Révolution Sociale* (1870), in *Oeuvres*, Vol. 3 (Paris: P. –V. Stock, 1895), p. 143. “Mais à mesure que le nombre des familles libres augmentait dans une nation, les liens naturels qui les avaient tout d’abord groupées comme une seule famille, sous la direction patriarcale d’un chef unique, se relâchèrent, et cette organisation primitive dut être remplacée par une organisation plus savante et plus compliquée de l’État.”

<sup>372</sup> Michel Bakounine, *l'Empire Knouto-Germanique et la Révolution Sociale* (1870), in *Oeuvres*, Vol. 3 (Paris: P. –V. Stock, 1895), p. 37. “L’homme, bête féroce, cousin du gorille, est parti de la nuit profonde de l’instinct animal pour arriver à la lumière de l’esprit, ce qui explique d’une manière tout à fait naturelle toutes ses divagations passées, et nous console en partie de ses erreurs présentes. Il est parti de l’esclavage animal, et, traversant l’esclavage divin, terme transitoire entre son animalité et son humanité, il marche aujourd’hui à la conquête et à la réalisation de sa liberté humaine.”

<sup>373</sup> Michel Bakounine, *Federalisme, Socialisme et Antitheologisme* (1867), in *Oeuvres*, Vol. 1 (Paris: P. –V. Stock, 1895), p. 139. “Ce fut une grande erreur de la part de J.-J. Rousseau d’avoir pensé que la société primitive ait été établie par un contrat libre, formé par des sauvages.”

<sup>374</sup> Michel Bakounine, *Federalisme, Socialisme et Antitheologisme* (1867), in *Oeuvres*, Vol. 1 (Paris: P. –V. Stock, 1895), p. 140. “[N]’est rien que l’absolue dépendance de l’homme gorille vis-à-vis de l’obsession permanente du monde extérieur.”

the State), written soon after the Paris Commune in 1871 but not published until 1896, he made this connection even more explicit.

The primitive man, the savage, little different from the gorilla, undoubtedly shared for a very long time all the instinctive sensations and representations of the gorilla; it was only at length that he began to make an object of his reflections, at first necessarily childish, to give them a name, and thereby to fix them in his nascent mind.<sup>375</sup>

Ultimately, the human species was able to emerge out of this primitive stage as a result of “inevitable societal forces” and begin the journey toward human freedom. “The combination of intelligence and collective labor alone forced man to emerge from that savage and brutish state which constituted his original nature, or the starting point for his further development.”<sup>376</sup>

Despite Bakunin’s insistence that his philosophy was based in materialism and empiricism, in direct contrast to Marx, the cooperative society that he imagined was still little more than an ideal. Bakunin’s focus remained almost exclusively on a critique of the State with his conception of human freedom arriving after “the masses” voluntarily organized themselves into cooperative societies. However, there were passing references to an innate conception of morality that could form the basis for the shift he imagined in human society. For example, Bakunin noted that, because of the tender paternal punishment observed for disobedience in the young, it suggested, “there is the beginning

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<sup>375</sup> The object Bakunin refers to is the conception of nature as a single entity, rather than as a multitude of forces acted upon by gods or spirits. Michel Bakounine, “Le Principe de l’État,” *La Société Nouvelle* 12:2, 1896, p. 587. “L’homme primitif, le sauvage, peu différent du gorille, partagea sans doute très longtemps toutes les sensations et les représentations instinctives du gorille; ce ne fut que très à la longue qu’il commença à en faire l’objet de ses réflexions, d’abord nécessairement enfantines, à leur donner un nom, et par là même à les fixer dans son esprit naissant.”

<sup>376</sup> Michel Bakounine, *Preamble pour la seconde livraison de l’Empire Knouto-Germanique* (June, 1871), in *Oeuvres*, Vol. 4 (Paris: P. –V. Stock, 1895), p. 267. “Le concours de l’intelligence et du travail collectif a seul pu forcer l’homme à sortir de l’état de sauvage et de brute qui constituait sa nature première ou bien son point initial de développement ultérieur.”

of moral responsibility in animals.<sup>377</sup> He further argued that these innate feelings existed in all humans and could be nurtured in the same way that muscles were strengthened through gymnastics.<sup>378</sup> There were also hints that Bakunin was interested in pursuing a theory of morality as being an innate feature of the human species. Following a lengthy discussion of morality in a footnote in Appendix 2 of *l'Empire Knouto-Germanique* he concluded with a conjecture. “Does this general law of human morality actually exist? Probably yes, it exists. It is founded on the very nature of man not as an exclusively individual being, but as a social being. It is properly constituted in nature and, consequently, is also the true aim of all developments in human society.”<sup>379</sup> Bakunin wrote that he would explore this possibility at more length in his analysis of society, but the closest he ever got was a few pages in “Le Principe de l’État” that remained largely ambiguous and incomplete. There he noted that any absolute morality which might exist “is a very relative absolute and especially relative exclusively to the human species.”<sup>380</sup> This morality was not eternal but was born on earth and would likely die with it.

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<sup>377</sup> Michel Bakounine, *l'Empire Knouto-Germanique et la Révolution Sociale. Appendice 2. L'Homme: Intelligence, Volonté*. (1870), in *Oeuvres*, Vol. 3 (Paris: P. -V. Stock, 1895), p. 249. “[E]lles punissent même avec une tendresse paternelle la désobéissance de leurs petits. Donc il y a chez les animaux mêmes un commencement de responsabilité morale.”

<sup>378</sup> This is the same line of thought that Darwin would follow in *Expression of the Emotions in Man and Animals* in 1872 through his discussion of “habit.” See Chapter 3.

<sup>379</sup> Michel Bakounine, *l'Empire Knouto-Germanique et la Révolution Sociale. Appendice 2. L'Homme: Intelligence, Volonté*. (1870), in *Oeuvres*, Vol. 3 (Paris: P. -V. Stock, 1895), p. 259. “Cette loi générale de la morale humaine existe-t-elle en réalité? Oui, sans doute, elle existe. Elle est fondée sur la nature même de l'homme non en tant qu'être exclusivement individuel, mais en tant qu'être social; elle constitue proprement la nature et par conséquent aussi le vrai but de tous les développements de l'humaine société.”

<sup>380</sup> Michel Bakounine, “Le Principe de l’État,” *La Société Nouvelle* 12:2, 1896, p. 579. “L'absolu que nous entendons est un absolu très relatif et notamment relatif exclusivement à l'espèce humaine.”

However, in the interim, it would be subject to natural selection, “making way, following Darwin’s system, towards a more powerful, more complete, more perfect species.”<sup>381</sup>

Ultimately, according to Bakunin, the human species were mere organisms thrust into the maelstrom of progressive evolutionary forces.

When we study the history of mankind in the light of the natural sciences, let us analyze with serious criticism the complex phenomena which are called revolutions, and attempt to give an exact account of causes and effects, we see that the individual will plays a very small part in the great shocks which change the fate of peoples, and we learn to discern the true causes, that is, the influence of the environments.”<sup>382</sup>

Much like Herbert Spencer, the progressive thrust of evolution was the inevitable outcome of continuous movement. However, by harnessing the instinct of solidarity, the human species could accelerate the tempo of evolutionary change and embrace our revolutionary potential.

### **Evolution, Revolution, and the Paris Commune**

These discussions on the natural basis of progressive social change extended to the annual IWMA congresses and the assumption of social evolution as a stadial process led to disagreements about the speed by which the movement should advance. For example, at the Lausanne Congress on September 8, 1867 it was taken for granted that through “the evolution of the organic world in the slow and progressive production of the

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<sup>381</sup> Michel Bakounine, “Le Principe de l’État,” *La Société Nouvelle* 12:2, 1896, p. 579. “Cette dernière est loin d’être éternelle : née sur la terre, elle mourra avec elle, peut-être même avant elle, faisant place, selon le système de Darwin, à une espèce plus puissante, plus complète, plus parfaite.”

<sup>382</sup> Michel Bakounine, *Le Progrès* 7, April 3, 1869. “Quand on étudie l’histoire du genre humain à la lumière des sciences naturelles, qu’on analyse avec une critique sérieuse les phénomènes complexes qui s’appellent révolutions, et qu’on cherche à se rendre un compte exact des causes et des effets, on s’aperçoit que la volonté individuelle joue un très petit rôle dans les grandes secousses qui changent le sort des peuples, et on apprend à discerner les véritables causes, c’est-à-dire l’influence des milieux.”

various types of each species; man was a microcosm, a small universe.”<sup>383</sup> In the Brussels Congress the following year, the Marxist faction won out in their commitment that society “would become collectivist, not by revolution but by evolution.”<sup>384</sup> César De Paepe, a Belgian physician and prominent syndicalist, derided the communist faction of the International in a rejoinder that called out Karl Marx directly. “[Y]ou disregard the facts and believe that natural evolution is diametrically opposed to what it is in reality; and this idea firmly anchored in your brain, that natural evolution conforms to your desires, you go so far as to reject the idea of revolution which is the reflexive and intelligent intervention of men to hasten the *dénouement* of a natural evolution.”<sup>385</sup> However, during the Basle Congress in August 1869, De Paepe was selected to read the report from the Brussels Section that had decided on more radical action.

We see, in this report, a slow, gradual and successive transformation resulting from the natural course of economic phenomena. But it must be admitted that this slow and gradual evolution, which is the point of view to which the economist is placed, is not the only one to which any man who knows that economic laws are far from being absolute and inflexible and that human intervention can modify them. In fact, history tells us that the people have intervened on a number of occasions, either to hasten the results of a natural evolution, or to stop them suddenly, by transforming the institutions which were the starting point or the object of this natural evolution. It is to this collective intervention that we have given the name of Revolution.<sup>386</sup>

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<sup>383</sup> A. Vandenhoueten, L. Fontaine, C. De Paepe, *Procès—Verbaux Congrès L'Association Internationale des Beunis à Lausanne du 2 August au 8 Septembre 1867* (Chaux-de-Fonds: Imprimerie de la Voix de l'Avenir, 1867), p. 106. “[L]’évolution même du monde organique dans la production lente et progressive des divers types de chaque espèce; on a dit que l’homme était un microcosme, un petit univers.”

<sup>384</sup> Emile De Laveleye, *Le Socialisme Contemporain* (Paris: Alcan, 1888), pp. 187-88.

<sup>385</sup> César De Paepe, “Polemique Collectiviste,” in *Les Services Publics*, Vol. 1 (Brussels, 1895), pp. 107-8. “Vous voulez le contraire, et voilà pourquoi prenant votre vouloir pour une tendance positive de la société vous méconnaissiez jusqu’aux faits et croyez que l’évolution naturelle est diamétralement l’opposé de ce qu’elle est en réalité; et cette idée bien ancrée dans votre cerveau, que l’évolution naturelle est conforme à vos désirs, vous allez jusqu’à repousser l’idée de révolution qui est l’intervention réfléchie et intelligente des hommes pour hâter la dénouement d’une évolution naturelle.”

<sup>386</sup> Benoît Malon, *L’Internationale: Son Histoire et ses Principes* (1872), pp. 39-41. “Mais il faut bien le reconnaître, cette évolution lente et graduelle, qui est le point de vue auquel se place l’économiste,

To this, the Bakunin supporter Benoît Malon added, “It is therefore of the highest probability that the transformation of property will be effected not by the blind and fatal course of things, but by the intelligent and reflective intervention of men; Not by evolution, but by revolution.”<sup>387</sup> After the Paris Commune broke out, this notion of revolution as a speeding up of the natural evolutionary process was likewise on display, with one brochure distributed in April 1871 announcing this struggle for existence.

Verily, verily, I say unto you, he that is not with me is against me. Citizen Xuorced [sic] invites the people not to be indifferent to the struggle between Paris and Versailles; nature, he says, has its cataclysms, humanity has its social turmoils which are called revolutions: every revolution is a progress. Glory be to the Revolution!”<sup>388</sup>

The “Red Virgin” Louise Michel (who asked Paul Lafargue for a copy of Darwin’s 1871 *Descent of Man* from her jail cell) added to this perspective when she wrote about the Commune by stating that “evolution is ended and now revolution is necessary or the butterfly will die in its cocoon.”<sup>389</sup> Likewise, the Communard Paschal Grousset understood his participation in the Commune as being part of a progressive evolutionary

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n'est pas le seul auquel doive se placer tout homme qui sait que les lois économiques sont loin d'être absolues et inflexibles et que l'intervention humaine peut les modifier. En effet, l'histoire nous apprend que maintes fois le peuple est intervenu collectivement, soit pour hâter les résultats d'une évolution naturelle, soit pour les arrêter subitement, en transformant de fond en comble les institutions qui faisaient le point de départ ou l'objet de cette évolution naturelle. C'est à cette intervention collective que l'on a donné le nom de Révolution.”

<sup>387</sup> Benoît Malon, *L'Internationale: Son Histoire et ses Principes* (Paris, 1872), p. 42. “Il est donc de la plus haute probabilité que la transformation de la propriété se fera non par le cours aveugle et fatal des choses, mais par l'intervention intelligente et réfléchie des hommes; non par évolution, mais par révolution.”

<sup>388</sup> Firmin Maillard, *Les Publications de la Rue Pendant le Siège et la Commune* (Paris: Auguste Aubry, 1874), p. 19. “En vérité, en vérité, je vous le dis, celui qui n'est pas avec moi est contre moi. — Le citoyen Xuorced (sic) invite le peuple à ne pas être indifférent à la lutte entre Paris et Versailles; la nature, dit-il, a ses cataclysmes, l'humanité a ses tourmentes sociales qui se nomment révolutions: toute révolution est un progrès. Gloire soit à la Révolution!”

<sup>389</sup> Paul Lafargue, “Une visite à Louise Michel,” *Le Socialiste*, Sept. 26, 1885. “N'oubliez pas de m'apporter vos livres d'anthropologie et le *Descent of man* de Darwin, sa lecture fortifiera mon anglais.” [Don't forget to bring me your anthropology books and Darwin's *The Descent of Man*; reading it will fortify my English.] Louise Michel, *The Red Virgin: Memoirs of Louise Michel* (trans.) Bullitt Lowry and Elizabeth Ellington Gunter (Tuscaloosa: University of Alabama Press, 1981), p. 59.

struggle such that a “provisional organism that is born at moments of crisis to take social evolution in hand and to lead it to its goal.”<sup>390</sup> According to many of the advocates and participants involved, the Commune was perceived as the natural outcome of an evolutionary process. As Grousset described it, the Commune was a culmination of the “laborious evolution pursued by continental Europe . . . associated with the progress of the foregoing Revolution.”

[A]n adventitious organ called into existence by the function would be the true Darwinian definition. If the laws of social science were as precise and as well ascertained as the laws of Kepler, it would indeed be possible to determine at what future date analogous causes are sure to bring back again similar effects. Thus, and through the same natural process, it came to pass that, the Republic and the Revolution alike being threatened in March 1871, the Commune was anew called to the front.<sup>391</sup>

These “two hypotheses,” as De Paepe called them, of “the evolutionary method and the revolutionary method” would continue to be debated during IWMA Congresses in the years after the Paris Commune.<sup>392</sup> Both approaches reveal an underlying assumption that social change would occur in a progressive fashion and that history, like the organic world, followed fixed natural laws.

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<sup>390</sup> Paschal Grousset in Mithell Abidor, *Voices of the Paris Commune* (Oakland: PM Press, 2015).

<sup>391</sup> Paschal Grousset, “How the Paris Commune Made the Republic” in Edmund Yates (ed.) *Time: A Monthly Miscellany of Interesting & Amusing Literature*, Vol. 1 (London: Robson and Sons, 1879), p. 876.

<sup>392</sup> For example, at the sixth congress held in Brussels in September 1874. César De Paepe, “De L’Organisation des Services Publics,” in *Les Services Publics*, Vol. 2 (Brussels, 1895), p. 7. “Ailleurs, nous nous placerons dans une autre hypothèse: celle d’une transformation lente de l’état actuel par des réformes successives et progressives; car, suivant les temps et les milieux, ces deux hypothèses sont également acceptables et correspondent à deux méthodes — la méthode évolutionniste et la méthode révolutionnaire qui toutes deux ont joué leur rôle dans l’histoire et, loin de se contrarier, souvent se complètent ou se suppléent.”

## **Conclusion: The Law of Human Progress**

It was this naturalistic and progressive theory of history that Kropotkin embraced following his visit to the Jura Mountains. His geographical research had prepared him for a conception of historical change punctuated by revolutionary upheaval followed by harmonic equilibrium. His close familiarity with the works of Darwin, Spencer, Buckle, and Mikhailovsky had impressed upon him the concept of universal laws that promoted progress in both natural and social evolution. Ultimately, Kropotkin opted to abandon his scientific career that sought an understanding of the ancient past in order to help bring about the next phase of human evolution through the progressive leap of social revolution. It was the evolution that had occurred in the decades prior to the Paris Commune that “prepared . . . the way for showing the necessity and possibility of a higher form of social organization.” By analyzing the Commune, it offered “an indication showing that in the future human agglomerations which are more advanced in their social development will try to start an independent life.”<sup>393</sup> The interplay of evolution and revolution would be one that Kropotkin regularly came back to throughout the next three decades and eventually forming in his mind a “law of human progress.” As Kropotkin articulated this view in his two-volume historical work, *The Great French Revolution*, the law could be expressed graphically. “If we represent the slow progress of a period of evolution by a line drawn on paper, we shall see this line gradually though slowly rising. Then there comes a Revolution, and the line makes a sudden leap upwards.” This could refer to the Puritan Republic of Cromwell, the *Sans-culotte* of 1793, or even the dispersal of organisms after evolving a novel adaptation. However, after the initial spike of

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<sup>393</sup> Kropotkin, “The Scientific Bases of Anarchy,” *The Nineteenth Century*, Feb. 1887, pp. 241-2.

revolution, the line drops. Reaction follows and there is a temporary equilibrium of social forces.

After that, evolution is resumed: our line again begins to rise slowly: but, besides taking place on a very much higher level, the rising of the line will in nearly every case be also much more rapid than before the period of disturbance.

This is a law of human progress, and also a law of individual progress. The more recent history of France confirms this very law by showing how it was necessary to pass through the Commune to arrive at the Third Republic.<sup>394</sup>

The law also represented Kropotkin's own progress, as someone who gradually evolved amidst his struggle for existence in the Russian Far East, underwent a revolutionary break with his past after the Paris Commune, and was now poised to continue toward a higher stage of life as he embraced the solidarity he now felt for his fellow man.

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<sup>394</sup> Peter Kropotkin, *The Great French Revolution*, (trans.) N. F. Dryhurst (London: William Heinemann, 1909), p. 576.

## Chapter 3

### Social Darwinism Versus Socialist Darwinism, 1871-1890

“If the Socialists would think clearly, they would do everything they could to conceal the theory of descent, for it demonstrates quite plainly that the socialist doctrines are unworkable.”<sup>395</sup>

At the fiftieth conference of the *Gesellschaft der Naturforscher und Ärzte* held in Munich on Sept. 22, 1877, the prominent physician, naturalist, and liberal politician Rudolf Virchow addressed his colleagues on the danger that exposing the general public to certain ideas could have on the future of their nation. “I am of the opinion that we are, in fact, in danger of jeopardizing the future by too much use of the freedom which present conditions provide us.”<sup>396</sup> The spirit of *Kulturkampf*, or cultural struggle, was at its zenith in the recently unified Germany and public education was a hotly contested landscape for how to shape the public mind.<sup>397</sup> Earlier that same day, Ernst Haeckel had argued passionately that Darwinian theory (or, at least, Haeckel’s interpretation of it) was incontrovertible and should be introduced into public schools as a centerpiece of the curriculum representing a unity of nature and all human knowledge.<sup>398</sup> Virchow, however, referring specifically to Haeckel, warned against the “arbitrary and personal

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<sup>395</sup> Oscar Schmidt, “Eine Antwort für Hr. Virchow” [An Answer for Mr. Virchow], *Das Ausland* 48, November 26, 1877, p. 943. “Wenn die Socialisten klar denken würden, so müssten sie alles thun, um die Descendenzlehre zu verheimlichen, denn sie predigt überaus deutlich, dass die socialistischen Lehren unausführbar sind.”

<sup>396</sup> Rudolf Virchow, “Die Freiheit der Wissenschaft im modernen Staat,” In *Amtlicher Bericht der 50. Versammlung deutscher Naturforscher und Aerzte in München vom 17. Bis 22. September 1877* (Munich 1877), p. 65. “Ich bin der Meinung, wir sind in der That in Gefahr, durch zu weite Benutzung der Freiheit, welche uns die jetzigen Zustände darbieten, die Zukunft zu gefährden, und ich möchte warnen, dass man nicht in der Willkür beliebiger persönlicher Speculation fortfahren möge, Welche sich jetzt auf vielen Gebieten der Naturwissenschaft breit macht.”

<sup>397</sup> See Alon Confino, *The Nation as a Local Metaphor: Württemberg, Imperial Germany, and National Memory, 1871-1918* (Chapel Hill: UNC Press 2000).

<sup>398</sup> Haeckel’s theory of natural selection differed substantially from Darwin’s primarily in his theory that ontogeny recapitulated phylogeny. See Robert Richards, *The Tragic Sense of Life: Ernst Haeckel and the Struggle over Evolutionary Thought* (Chicago: University of Chicago Press, 2008).

speculation” now spreading in many fields of natural science and raised the specter of political revolution should freedom of thought be taken too far. “Just imagine how the theory of evolution already looks in the mind of a socialist!” In response to laughter from the audience, Virchow assured his listeners that this was not something to be taken lightly. “Yes, gentlemen, that may appear ridiculous to some, but it is very serious, and I hope that the theory of evolution will not bring to us all the horrors which similar theories have actually aroused in a neighboring country.”<sup>399</sup> The occupation of Paris by leftist radicals had taken place six years earlier, but remained a potent reminder of the appeal that socialist ideas had throughout Europe. Virchow, an agnostic, born to a working-class family, and who had even participated in the Revolution of 1848, was nevertheless a strong opponent of Darwin’s theory and knew that connecting natural selection with radical agitators would earn him rhetorical points. “After all, if pursued logically, this theory has an unusually disturbing side; and I hope it hasn’t escaped you that socialism is in close connection with it.”<sup>400</sup> Virchow structured his attack effectively and it was a frequent topic in German newspapers, from both a scientific and political perspective.<sup>401</sup>

In Haeckel’s response, published the following year in *Freie Wissenschaft und Freie Lehre*, he reacted angrily to that fact that, “Virchow, as a Social Democrat, would place me in the pillory and blame evolutionary theory for the atrocities committed by the

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<sup>399</sup> Rudolf Virchow, “Die Freiheit der Wissenschaft im modernen Staat,” p. 68-9. “Nun stellen sie sich einmal vor, wie sich die Descendenztheorie heute schon im Kopfe eines Sozialisten darstellt! Ja, meine Herren, das mag Manchem lächerlich erscheinen, aber es ist sehr ernst, und ich will hoffen, dass die Descendenztheorie für uns nicht alle die Schrecken bringen möge, die ähnliche Theorien wirklich im Nachbarlande angerichtet haben.”

<sup>400</sup> Ibid., p. 69. “Immerhin hat auch diese Theorie, wenn sie consequent durchgeführt wird, eine ungemein bedenkliche Seite, und dass der Sozialismus mit ihr Fühlung gewonnen hat, wird Ihnen hoffentlich nicht entgangen sein.”

<sup>401</sup> B. Blumberg (1977) “Haeckel und Virchow zur Entwicklungslehre in der Schule.” *Praxis der Naturwissenschaften - Biologie in der Schule* 26(12): 538-542.

Paris Commune.”<sup>402</sup> As Haeckel proceeded to describe at length, the “struggle for existence” [*Kampf ums Dasein*] at the hands of natural selection among plants and animals led to a chosen few reproducing while the vast majority would dwindle and expire.<sup>403</sup> “Darwinism is anything but socialist! If one wishes to attribute a specific political tendency to this English theory – which is certainly possible – this tendency can only be aristocratic, not democratic, and least of all socialist!”<sup>404</sup> Socialism, he argued, demands equal rights and equal possessions for every citizen alike, a “pure impossibility” that natural selection provides firm evidence for. “[Evolution] is aristocratic in the strictest sense of the word. . . How modern socialism could attempt to find sympathy with it, and how the horrors of the Paris Commune are a result of this, frankly, I find absolutely incomprehensible!”<sup>405</sup>

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<sup>402</sup> Ernst Haeckel, *Freie Wissenschaft und Freie Lehre: Eine Entgegnung auf Rudolf Virchow's Münchener Rede über "Die Freiheit der Wissenschaft im modernen Staat"* (Leipzig: Alfred Kröner, 1908), p. 6. “Weniger als diesen Spott dürfte ich wohl die Denunciation ignorieren, mit welcher mich Virchow als Bundesgenossen der Social-Democratie an den Pranger stellt und die Descendenz-Theorie für die Gräueltaten der Pariser Commune verantwortlich macht.”

<sup>403</sup> This translation is literally “fight for existence” which has led some historians to argue that German and Russian readers (Darwin's work first entered Russia in German translation) received a flawed interpretation of his metaphor. See Alfred Kelly, *The Descent of Darwin: The Popularization of Darwinism in Germany, 1860-1914* (Chapel Hill: UNC Press Books, 1981).

<sup>404</sup> *Ibid.*, p. 73. “Der Darwinismus ist alles Andere eher als socialistisch! Will man dieser englischen Theorie eine bestimmte politische Tendenz beimessen, — was allerdings möglich ist —, so kann diese Tendenz nur eine aristokratische sein, durchaus keine demokratische, und am wenigsten eine socialistische!”

<sup>405</sup> *Ibid.*, p. 74. “Wie aber der heutige Socialismus an diesen Bestrebungen seine Freude haben soll, und wie die Schrecken der Pariser Commune darauf zurückzuführen sind, dass ist mir, offen gestanden, absolut unbegreiflich!”

## Fear of Socialist Revolution and the Struggle for Darwinism in Public Discourse

While historians of science have interpreted this exchange between Virchow and Haeckel as merely incendiary rhetoric,<sup>406</sup> the comparison between Darwin's theory of natural selection and the socialist occupation of the Paris Commune was a common one in the calamitous 1870s. The concern among German naturalists that socialists might find validation in Darwin's work was also made clear in England as the result of a coincidence in timing. Darwin's second book on his theory of natural selection, *The Descent of Man*, was published in England on February 24, 1871 – just three weeks prior to the outbreak of the Paris Commune. This coincidence led to a significant number of publications referencing Darwin's revolutionary theory alongside the revolutionary actions in France. This comparison was subsequently justified in many cases by the revolutionaries who had themselves referenced Darwinian theory, or evolution more generally, as either a rhetorical device or as a lens through which to understand their political struggle in the broader struggle for existence.<sup>407</sup> The popularity of Darwinism among radicals and reformers subsequently triggered concern about the social legitimacy of the scientific theory and resulted in a contested rhetorical battleground. Those who had made evolution a central part of their scientific work and reputation – particularly Thomas Henry Huxley, Herbert Spencer, and Ernst Haeckel – saw this connection as a threat to their own respectability, prompting them to engage in a rhetorical effort to

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<sup>406</sup> Alfred Kelly, *The Descent of Darwin: The Popularization of Darwinism in Germany, 1860-1914* (Chapel Hill: UNC Press), p. 58. However, as will be shown, Virchow likely had specific reasons for making his suggestion.

<sup>407</sup> See Chapter 2. In many cases, these English commentators were unlikely to have been aware of the specific uses of Darwin's theory among the French socialist movement. However, the association of evolutionary ideas and revolutionary activity in eighteenth-century France was common knowledge. See Adrian Desmond, *The Politics of Evolution: Morphology, Medicine, and Reform in Radical London* (Chicago: University of Chicago Press, 1989).

marginalize the socialist interpretation and establish Darwinian theory as something more palatable to the status quo. The Paris Commune, and the radical socialist movement that followed, ultimately triggered a crisis in how Darwin's ideas should best be understood in relationship to human society. It was this discursive context (much of which has never been discussed previously) that led to the invention of Social Darwinism as an ideological category opposing Socialist Darwinism.

The Paris Commune of 1871 was the most politically calamitous event, from the perspective of the establishment, since the European revolutions of 1848. It represented the breakdown of political order and sparked fears about the eruption of populist uprisings in the overcrowded urban landscape. The anarchist and socialist occupation of the capital city – though only lasting two months, from March 18 to May 28 – made it clear that the threat of revolution lay just beneath the surface and was a dangerous powder keg that could explode at any moment. For English commentators, the Commune had added significance since the Second Reform Bill of 1867 had expanded English voting rights to urban laborers (while the Third Reform Bill would do the same for miners and farm laborers in 1884).<sup>408</sup> The Trade Union Act was also being debated in Parliament between February and March of 1871 and would make labor unions legal throughout Britain.<sup>409</sup> Of the over 800,000 union members in England at the time, about 50,000 were members of the International Workingmen's Association that demanded the

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<sup>408</sup> James Paradis, "Evolution and Ethics in Its Victorian Context," in James Paradis and George Christopher Williams (eds.), *Evolution and Ethics: T.H. Huxley's Evolution and Ethics with New Essays on Its Victorian and Sociobiological Context* (Princeton: Princeton University Press, 2014), p. 4.

<sup>409</sup> *The Trade Union Act* was introduced by the Home Secretary Henry Bruce on February 14 and the second reading by the Conservative MP Stephen Cave on March 14. It went into effect on June 29, 1871. See *Hansard's Parliamentary Debates*, Third Series, Vol. 204 (London: Cornelius Buck, 1871), pp. 257-273 & 2032-2045; Mark Curthoys, *Governments, Labour, and the Law in Mid-Victorian Britain: The Trade Union Legislation of the 1870s* (Oxford: Oxford University Press, 2004), pp. 129-141.

immediate “emancipation of the working classes . . . and the abolition of all class rule.”<sup>410</sup>

For those who advocated order and stability within the existing system, the Paris Commune was a warning about the fragility of the status quo and, in fact, the very existence of civilization itself. Darwin’s theory of human evolution was frequently perceived as offering support to these socialist goals by deligitimizing what was assumed to be a natural hierarchical order and demonstrating that the human species had evolved from primitive origins.<sup>411</sup> The perceived connections highlighted between Darwinism and the socialist uprising of the Paris Commune focused primarily on the inversion of the natural inequality on which society was based and the perceived rejection of moral order that would ultimately occur in the resulting struggle for existence.

The *Times* of London made this connection clear in its review of *The Descent of Man* that appeared on April 8, 1871. The reviewer feared that Darwin’s “reckless” and “disintegrating speculations” about human evolution “might exert a very mischievous influence.” Because men act, not only out of their ultimate social interests, but out of what their *ideas* concerning those interests are, if they come to believe that right and wrong have no deeper meaning, “[c]onscience would cease to be a check upon the wildest [and] the most murderous revolutions.” The reviewer suggested putting aside the religious implications of Darwin’s theory and instead emphasized the fear of political disorder should the existing hierarchy be challenged.

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<sup>410</sup> For English IWMA membership see Leslie Derfler, *Paul Lafargue and the Founding of French Marxism, 1842-1882* (Cambridge: Harvard University Press, 1991), p. 84; The IWMA General Rules, written between October 21 and 27, 1864 was first published in *The Bee-Hive Newspaper*, November 12, 1864 and the pamphlet *Address and Provisional Rules of the Working Men’s International Association* (London, 1864). The First International would enter a period of crisis in 1872 and eventually cease to exist in 1876, being replaced by the Second International that would continue until the First World War.

<sup>411</sup> The discussion of degeneration, or evolutionary atavism, was widespread in the decades following the publication of *On the Origin of Species* and fed directly into the discourse surrounding eugenics at the turn of the century.

At a moment when every artificial principle of authority seems undermined, we have no other guarantee for the order and peace of life except in the eternal authority of those elementary principles of duty which are independent of all times and all circumstances. There is much reason to fear that loose philosophy, stimulated by an irrational religion, has done not a little to weaken the force of these principles in France, and that this is, at all events, one potent element in the disorganization of French society.<sup>412</sup>

The meaning was perfectly clear, as the liberal statesman John Morley, Viscount of Blackburn later recalled.

Well might one ask whether absurdity could go further than when the most important of newspapers criticised Darwin's speculations on the descent of man, from the point of view of property and a stake in the country, and severely censured him for revealing his zoological conclusions to the general public at a moment when the sky of Paris was red with the incendiary flames of the Commune.<sup>413</sup>

Darwin was uncharacteristically incensed about this review in the *Times*, writing to his publisher that the author seemed to have "no knowledge of science, & seems to me a windbag full of metaphysics & classics," but was nevertheless concerned that it would hurt the book's sales.<sup>414</sup>

However, the *Times* was hardly the only periodical to make a direct connection between Darwin's theory and the Paris Commune. The London *Examiner* followed the concern of their competitor and expressed alarm that, even though the Commune had occurred abroad, at home there were socialist gatherings in Trafalgar Square and organizations such as the Land Tenure Reform Association that proposed to do away with the tradition of primogeniture. The paper offered regret that "in an age so unsettled as the present, Mr. Darwin should hold heretical views as to the nature of the moral

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<sup>412</sup> "Mr. Darwin On The Descent Of Man." *The Times*, Saturday, April 8, 1871, pg. 5, Issue 27032.

<sup>413</sup> John Viscount Morley, *Recollections, Vol. 1* (New York: The MacMillan Company 1917), p. 101

<sup>414</sup> Letter to John Murray, April 13, 1871, Darwin Correspondence Project, Cambridge University, Letter no. 7680.

sense.”<sup>415</sup> The same paper followed up on this connection between Darwin’s theory and political upheaval with a causal relationship the following month.

The shudder with which some pious folks received Mr. Darwin’s proof of their relationship to the quadrumana is nothing compared to the horror which we may expect to seize on Sir Massey Lopes and the highly respectable country gentlemen who have followed his lead when they find out that the issue they have unintentionally raised is first-cousin to the hated Commune.<sup>416</sup>

Certainly religion played an important part in the critique, as Catholic naturalist St. George Mivart made clear in his attempts to reconcile his faith with the evidence of natural selection (and later rejected the evidence entirely). That same month Mivart wrote in *The Quarterly Review* about how he planned to reveal that “the entire and naked truth as the logical consequences of Darwinism [is] the injurious effects which his work is likely to produce on too many of our half-educated classes.”<sup>417</sup> When he wrote a lengthy follow-up of Darwin’s *Descent* for *The Contemporary Review*, in which he warned that the theory could lead to “the evolution of horrors worse than those of the Parisian Commune,” he was clear to separate this from his religious concerns.<sup>418</sup> These critiques clearly weighed on Darwin, as he relayed in a letter to Joseph Hooker where he said that Mivart “makes me the most arrogant, odious beast that ever lived. I cannot understand him; I suppose that accursed religious bigotry is at the root of it... It has mortified me a good deal.”<sup>419</sup> However, these critiques connecting Darwin’s science and political revolution in France would prove to be a common one in the British press, and, while

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<sup>415</sup> “The Struggle in France,” *The Examiner*, April 22, 1871, Issue 3299.

<sup>416</sup> “Political and Social,” *The Examiner*, May 10, 1873, Issue 3406.

<sup>417</sup> St. George Mivart, “The Descent of Man, and Selection in Relation to Sex,” *The Quarterly Review* 131, pp. 47-8.

<sup>418</sup> St. George Mivart, “Evolution and its Consequences: A Reply to Professor Huxley,” *Contemporary Review* 19 (1872), p. 196.

<sup>419</sup> Letter to Joseph Hooker, September 16, 1871, Darwin Correspondence Project, Cambridge University, Letter No. 7949.

some based their concerns on the way that Darwin's work might undermine the basis for religion, many more emphasized that it was the established hierarchy justifying the status quo which was threatened.

The fear of upheaval to the social and moral order would be a regular critique both immediately after and in the years following the publication of *The Descent of Man*. For example, *The Family Herald* wrote ominously that, “[s]ociety must fall to pieces if Darwinism be true.”<sup>420</sup> The Saint Peter Port *Star* in Guernsey, after bemoaning the Communards as “beasts” who had “no other motive than that of attesting their power, their fierceness, and the fixed resolution of their savagery,” concluded with the pessimistic appraisal that humanity would forever be locked in a violent revolt against the forces of stability.

The perfectibility of mankind is either a delusion altogether, or its distance from our present position is absolutely incalculable. We have made no progress. Those very remote ancestors which modern science assigns to our race must tell for more in our natural nature than we are pleased to imagine. . . It is not French nature, but human nature, which has thus suddenly revealed itself as if in evidence of its type. Scratch a ‘citizen,’ and you will find a crocodile underneath, or whatever creature Mr. Darwin may choose to name.<sup>421</sup>

The *Derby Mercury* decried the “wolves of the Commune” and their “lust for destruction,” a crime which indicated that “the very nature of mankind seems to have been changed, and all the better instincts of human nature obliterated.” The author later mixed their metaphor with an allusion to another “primitive” stage in natural history. “This culminating crime cannot fail to arouse the righteous indignation of the whole civilised world against the savages who have perpetrated it.”<sup>422</sup>

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<sup>420</sup> “To Correspondents,” *Family Herald* 29, p. 44.

<sup>421</sup> “The Atrocities of the Commune,” *The Star*, 10, 1871, Issue 151.

<sup>422</sup> “The Destructive Forces of Democracy,” *The Derby Mercury*, May 31, 1871, Issue 8189.

Other commentators came to the same conclusion, though by way of Darwin's argument for evolutionary atavism. A popular column that was reprinted in the London-based *Saturday Review* and *Pall Mall Gazette* and, later, in the *Belfast News-Letter* claimed, "As Mr. Darwin tells us, animals at times resort to the type of some remote ancestor, and we must thus account for a certain strain of ferocity which at intervals makes itself manifest in the French character."<sup>423</sup> While the author made clear that, ordinarily, the French people were especially kind and civil, "the blood of some ancestral savage is still flowing in their veins" and when conditions were opportune they could resort to actions "utterly unworthy of reasoning animals." The reader was assured that the British were largely immune from such ancestral displays of violence, "unless there is amongst them a strong Irish admixture," but it was best to be prepared for further calamities ahead given that "there is a good deal of human nature everywhere, and we have no want of people who would be glad enough to ape the leaders of the French Revolution." The British "rough," in particular, "shows no signs of being stamped out in the struggle for existence."<sup>424</sup> Other papers followed a similar theme, finding that the French Communards, who were nothing but "animals in the form of men," caused one to "despair of the progress or perfectibility of human nature."<sup>425</sup>

Racist allusions to indigenous people were commonplace in describing the actions of the Commune, with particular attention paid to humanity returning to a "lower" stage of evolution. *The Cheltenham Chronicle and Parish Register* claimed to speak for all of England when their editorial declared, "we stand agast [sic] to think that human nature

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<sup>423</sup> "The Tiger Monkeys," *Saturday Review of Politics, Literature, Science and Art*, March 25, 1871, pp. 365-366; "Opinion in the Weekly Reviews," *The Pall Mall Gazette*, March 25, 1871, Issue 1908; "The Opening of the Reichsrath," *The Belfast News-Letter*, March 29, 1871, Issue 54983.

<sup>424</sup> *Ibid.*

<sup>425</sup> "Domestic," *The Sheffield Daily Telegraph*, May 30, 1871, pg. 2; Issue 4985.

can, in Europe, in the 19<sup>th</sup> century, sink so low. The Parisian Communists are below the level of the savages, and almost on a par with the beasts.”<sup>426</sup> When Communards pulled down the Vendôme Column – a massive statue of Napoleon wearing a pseudo-Roman laurel wreath and toga – as an act of defiance toward the French state, the London *Standard* was appalled at the “stupid and malicious spite you will have heard was accomplished with greater skill than the Mohawks of the Hôtel de Ville were supposed to possess.”<sup>427</sup> In this the author was both comparing the radicals to a band of supposed primitives while simultaneously claiming they possessed even more rudimentary abilities. In order to be clear that this was precisely the author’s intent, readers were reminded that “it need, however, hardly surprise us; the ape tribe have ever been famous for their powers of destruction, if for nothing else.”<sup>428</sup> And yet, for the London *Standard*, it was this very atavistic primitiveness that allowed the Commune to succeed for as long as it did.

We know from physiologists that the lower orders of existence thrive well enough though devoid of any very distinct organisation, and this may account for the Commune subsisting chaotically where a higher form of government would inevitably fall to pieces. . . It is a way Communes have; it is their process of natural selection.<sup>429</sup>

The Commune ultimately represented the dangerous degeneration of civilization. “If the Darwinian theory developes [sic] the monkey into the man, the practical working of modern civilization has an undoubted tendency to make man degenerate into the

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<sup>426</sup> “The Lesson of the Destruction of Paris,” *The Cheltenham Chronicle and Parish Register and General Advertiser for Gloucester*, May 30, 1871, pg. 4, Issue 5003.

<sup>427</sup> The dismantling of the column was recommended by the artist and anarchist Gustave Courbet who petitioned “Citizen Courbet expresses the wish that the National Defense government will authorize him to disassemble this column.” Courbet was later held responsible for its destruction and sentenced to six months in prison and a fine of 500 francs. After finishing his sentence, it was demanded that Courbet pay the cost of rebuilding the Column at a price of 323,000 francs.

<sup>428</sup> “Multiple News Items,” *The Standard*, May 19, 1871, pg. 5, Issue 14601.

<sup>429</sup> “Multiple News Items,” *The Standard*, May 12, 1871, Issue 14595.

monkey.”<sup>430</sup> The radicals involved in the Paris Commune represented a group who were “swiftest in their return to the moral and intellectual status of the archetypal ape of Darwin.”<sup>431</sup> Ultimately, as expressed in poetic form by one “Alarmed Member of the Party of Order,” the threat of Darwinism was that it could undermine the status quo by revealing that the social hierarchy had no legitimate basis for its existence, leading to a radical overthrow of society.

“Devised by Darwin and such imps of Babel,  
To rob the world of creeds comfortable,  
And all that's fixed and stable.  
There never was such aid to Revolution  
As this pert theory of "Evolution;" [...]   
It's all their artful way of muddling things.  
Creeds, Constitutions, Classes, Ranks, and Races;  
Till none can fix their principles, or places:  
A Radical conspiracy that flings  
Doubts on our lineage, and throws dubious lights  
On privileges and on social rights. [...]   
A Radical's a Radical, and a rat  
Is not, and never will be, dog or cat.  
Things were made so or so for weighty reasons,  
And may they ne'er get muddled like our Seasons!  
Hard and fast lines are comfort and salvation  
In Nature and the nation.”<sup>432</sup>

This fear in the popular press over what Darwinism could represent for the existing hierarchical institutions of social order and the fragile moral basis of society was likewise reflected in scholarly critiques. In September 1871 the jurist William Lyon published *Homo versus Darwin* in which he wrote that the dangerous ideas of evolution could “cause such an outburst of selfishness and impiety as would overturn our social

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<sup>430</sup> “Dublin,” *Freeman's Journal and Daily Commercial Advertiser*, May 20, 1871.

<sup>431</sup> Ibid. For the London-based humor magazine *Fun*, the atavistic degeneration “must go very much lower down in the scale of Nature. The Commune is tenacious of life to a degree, which is attained only by the very lowest of organisms – such for example as the Assi-dians, [sic] mentioned by Dr. Darwin.” “Comparative Anatomy,” *Fun*, Issue 13, April 22, 1871, p. 167.

<sup>432</sup> “Mumbo-Jumbo’s Latest Mufti,” *Punch, or The London Charivari*, December 16, 1876, p. 259.

institutions from their lowest foundations, and introduce moral disorder and anarchy which might be long in passing away. Such a change has been brought about in France . . . and what has occurred in France is possible in England.”<sup>433</sup> A few months later, in January 1872, Charles Bree published his own critique *An Exposition of the Fallacies in the Hypothesis of Mr. Darwin* in which he likewise feared the political implications of natural selection. “We every day see bodies of men who, having opportunities of exercising the ‘social instincts’ to their utmost limits, display the total absence of a moral sense by committing unbounded acts of cruelty, like the African Dahomey or the Parisian Commune.”<sup>434</sup>

French scholars likewise highlighted connections between Darwin’s ideas and the Commune, despite the fact that *The Descent of Man* would not appear in translation until after the communards had been crushed. In 1872, the *docteur en sciences naturelles* and section president of the Société Scientifique de Bruxelles, Alphonse Joseph Lecomte, published his critique of Darwin’s theory in which he held that “Darwinist morality is therefore ultimately the ruin of all practical morality; and it is with good reason that St-G. Mivart proclaims the disastrous consequences to society with the popularization of such ideas.”<sup>435</sup> In Paris, the writer and politician Maxime Du Camp wrote in his history of the Commune, *Les Convulsions de Paris*, that through “the theory of Darwin, of which they [the Communards] have retained only the dangerous aspects, we arrive inevitably at the struggle for existence, which is permanent insurrection, and to selection, which leads

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<sup>433</sup> William Lyon, *Homo versus Darwin: A Judicial Examination of Statements Recently Published By Mr. Darwin Regarding “The Descent of Man”* (London: Hamilton, Adams, and Co., 1871), p. 151.

<sup>434</sup> Charles Bree, *An Exposition of the Fallacies in the Hypothesis of Mr. Darwin* (London: Spottiswood and Co., 1872), p. 140.

<sup>435</sup> Alphonse Joseph Lecomte, *Le Darwinisme et l’Origine de l’Homme* (Paris: Victor Palme, 1872), p. 172. “La morale darwiniste est donc, en définitive, la ruine de toute morale pratique; et c’est avec raison que St-G. Mivart proclame désastreuses les conséquences qu’aurait pour la société la vulgarisation de telles idées.”

straight to despotism.”<sup>436</sup> According to du Camp, the Commune sought to achieve its ideal of society according to these Darwinian principles, which would have resulted in a “return to primitive barbarism” (*retour à la barbarie primitive*).<sup>437</sup> Likewise, graduate of the École Polytechnique and political author, Ernest Bottard, wrote in his *Guerre Aux Barbares* [War of the Barbarians] that because of the rage and despair following the “saturnalia” imposed by these communard “descendants of chimpanzees” [*descendants des chimpanzés*], one was “tempted to admit the doctrine of Darwin or at least to apply it to certain representatives of the human species.”<sup>438</sup>

In both the scholarly and public discourses across England and Europe, the Paris Commune and the socialist movement that gave rise to it was widely associated with a return to an imagined primitive state of nature represented by the inversion of an assumedly natural hierarchical order and a lack of moral sentiment that Darwin’s theory was believed to epitomize. For some commentators, the disruption to the social order that Darwin’s theory implied and that socialists demanded was made without a direct causal relationship between the two. For others, the recognition that many revolutionary actors found justification in Darwin’s revolutionary ideas – even if only tangentially – was sufficient to highlight what they perceived as a dangerous overlap between theory and action. However, regardless of the reasons for this connection between socialism and

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<sup>436</sup> Maxime du Camp, *Les Convulsions de Paris*, Vol. 4 (Paris: Librairie Hachette et Cie, 1881), p. 180. “[L]a théorie de Darwin, dont ils n’ont retenu que les côtés dangereux, on arrive fatalement au combat pour l’existence, qui est l’insurrection permanente, et à la sélection, qui aboutit tout droit au despotisme.”

<sup>437</sup> Ibid.

<sup>438</sup> Ernest Bottard, *Guerre Aux Barbares* (Chateauroux: A. Majesté, 1886), pp. 5-6. “[L]’on est tenté d’admettre la doctrine de Darwin ou du moins de l’appliquer à certains représentants de l’espèce humaine.” Bottard had previously written other books critiquing the socialist movement in France, including *L’Internationale et les Socialistes* (Chateauroux: de Nuret, 1873) and *Des Différents Partis qui Divisent la France, de Leur Influence, Quelle Serait la Solution la Plus Avantageuse Pour le Pays* (Chateauroux: de Nuret, 1873).

Darwinism, the very fact that this connection was so widespread resulted in a conflict over the political meaning of Darwinism. For many socialists, this context provided an opportunity to base their political aspirations on a scientific foundation while, for many naturalists, it constituted a threat that their scientific work and reputation could become associated with a political ideology that was retrograde to their position and social standing. In the highly politicized and increasingly polarized environment following the Paris Commune, a rhetorical struggle over the political philosophy that was most consonant with Darwinian natural history set the framework for a conflict between two competing interpretations with incompatible social meanings. In the ensuing years, this conflict would continue to be fought over the same two criteria that were provoked by the Paris Commune: the natural foundation for inequality and the basis of the moral sense or “social instinct.”

### **Social Darwinism Responds to Socialist Darwinism**

While the Paris Commune inspired many commentators to associate revolutionary political meaning with a scientific idea it also inspired prominent naturalists to connect their science to a political philosophy of social order. Thomas Henry Huxley launched his political career with a lecture (and subsequent publication) entitled “Administrative Nihilism” before the Midland Institute in Birmingham on October 9, 1871. This lecture was Huxley’s first public work to focus exclusively on social questions and, in so doing, represented the earliest articulation of his political philosophy.<sup>439</sup> It was in this lecture

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<sup>439</sup> The only titles in his bibliography not specifically on a scientific question prior to this focused on science education policy. See, e.g., T.H. Huxley, *Collected Essays*, Vol. 3 (New York: D. Appleton and Co., 1897), “A Liberal Education and Where to Find It,” An Address to the South London Working Men’s College, 1868, p. 76; “Scientific Education: Notes of an After-Dinner Speech,” An Address to the

that Huxley first adopted the Hobbesian worldview that would later form the basis for his 1888 essay “The Struggle for Existence in Human Society.” The Paris Commune had fallen just four months earlier and, after first warning his listeners about “the socialistic movement which is now stirring European society to its depths,” Huxley considered what the proper role of government ought to be. His conclusion was that the role of the State should, firstly, be that of a “police government” in order to maintain peace within the existing hierarchy and to honor contracts (the only role that Herbert Spencer would accept). Secondly, the State should promote intellectual and moral development “by sifting out from the masses of ordinary or inferior capacities, those who are competent to increase the general welfare by occupying higher positions.” However, economically, the government should have no role since “science (in the shape of Political Economy) has readily demonstrated that self-interest may be safely left to find the best way of attaining its ends.” Therefore, the natural state of society was a laissez-faire ethos existing alongside a hierarchical social structure whose intellectual and moral progress was rigidly enforced by those whom nature had favored in their rise to the top.

In contrast to Herbert Spencer’s metaphor of society as an organism with men representing various organs operating toward the health and improvement of the unified whole, Huxley presented his own naturalistic vision that saw society as a complex molecule of which men represented the atoms that composed it. The “multifarious attractions and repulsions” of each atom in this “social molecule” represented the

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Liverpool Philomathic Society, 1869, p. 111; “On Medical Education,” An Address to the students of the Faculty of Medicine in University College, London, 1870, p. 303; “The School Boards: What They Can Do, and What They May Do,” originally published in *The Contemporary Review* 16, 1870, p. 374. However, many listeners and readers understood that when such a notable man of science took a position on social questions he was lending his considerable scientific perspective to bear.

individual desires for freedom that were held together in a delicate balance and which, if not held in check by countervailing forces, could destabilize the entire structure.

It is decomposed, when the attraction of desire leads to the resumption of that freedom the suppression of which is essential to the existence of the social molecule. And the great problem of that social chemistry we call politics is to discover what desires of mankind may be gratified, and what must be suppressed, if the highly-complex compound, society, is to avoid decomposition.

Ultimately, Huxley concluded, the freedom of some must be sacrificed in the interests of social order while that of others should be permitted, or even enhanced, when it was determined to be essential for progress. It was, therefore, “the business of the sovereign authority” to be the final arbiter of this decision; to both enforce the suppression of those who possessed anti-social desires and to promote the privileges of others that were most conducive to progress. Huxley made clear who it was that should be promoted in this analogy, citing the celebrated French microbiologist Louis Pasteur who “has no doubt that the cause of the astounding collapse of his countrymen is to be sought in the miserable neglect of the higher branches of culture.” In effect, a similar failure in England to suppress the socialist movement and promote the refined classes could lead to decomposition of the social molecule and a descent into anarchy. “Thus the supra-national society is continually in danger of returning to the state of nature, in which contracts are void; and the possibility of this contingency justifies a government in restricting the liberty of its subjects in many ways that would otherwise be unjustifiable.” The Paris Commune, for Huxley, represented that Hobbesian state of nature from which humanity had evolved and that society was now precariously balanced between the forces of order and chaos. According to Huxley’s political philosophy, evolution had resulted in a State that was naturally unequal, “made up of a considerable number of the ignorant

and foolish, a small proportion of genuine knaves, and a sprinkling of capable and honest men, by whose efforts the former are kept in a reasonable state of guidance, and the latter of repression.” Huxley does not offer a perspective on the role of evolution in the formation of morals or a “social instinct.”<sup>440</sup> However, he does note that the “struggle for existence” extended to politics means that “the evolution of society has resulted from the constant attempt of individuals to strain its bonds.” Consequently, it was necessary for moral progress that the government “promotes morality and refinement, by teaching men to discipline themselves.” Therefore, it was only through the benign control of those capable and honest men who ruled the State that the hierarchical social order and moral progress could be maintained.

However, those who objected to having their freedom suppressed in favor of those – such as Huxley himself, presumably – that represented the Victorian ideal of hierarchical order and moral progress were not enthusiastic about his distillation of “social chemistry.” The month after “Administrative Nihilism” appeared in *The Fortnightly Review*, the feminist writer Helen Taylor mocked Huxley’s blithe acceptance of a government based on the self-interest of elite men by writing that “[t]he convolutions of a monkey's brain are somewhat simpler than the intricacies of national welfare.”<sup>441</sup> For Taylor, Huxley’s political philosophy was nothing less than an attack on tolerance in social life and ignored the potential for multiple, complementary approaches to social and

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<sup>440</sup> Huxley would not offer a public opinion on this topic until 1888 with his essay “The Struggle for Existence in Human Society.” However, in a letter to Darwin on December 28, 1880 Huxley noted that, in contradiction to theological dogmas, there was nothing “more contradictory to our moral sense, than is to be found in the facts of Nature.” T.H. Huxley, *Life and Letters of Thomas Henry Huxley*, Vol. 2, p. 16.

<sup>441</sup> Helen Taylor, “The New Attack on Toleration,” *Fortnightly Review* 10, December 1871, p. 719. In a letter to Darwin, German embryologist Anton Dohrn mocked Taylor by stating that he hoped Huxley would save his energy to fight opponents of Darwinism as “he may easily meet stronger opponents than Miss Helen Taylor.” Letter from Anton Dohrn to Charles Darwin, February 15, 1872. Letter No. 8214.

moral progress. This principle of tolerance, Taylor argued, had a physiological basis in the feeling of sympathy, an “instinctive or calculated caution in arousing enmity” and, when carried into politics, would temper those revolutionary feelings that Huxley’s more repressive political philosophy would likely enflame. Likewise, writing in the *Radical Review*, the anarchist M.E. Lazarus found Huxley’s justification for imposing social inequality through the suppression of the workers solidarity movement at odds with those moral instincts that had evolved from our animal ancestors.

He [Huxley] has not a word to say of the protective union stores, of co-operative labor, and other social remedies, but finds all running smooth in the grooves of evolution. The ancestral ape would however disown his anthropoid posterity if he could see them in the slums of English cities. He would be ashamed of them, for they dishonor animality; they are moral and physical monstrosities, the fruits of that paternal Anglo-Norman government, whose mediation in behalf of their intelligence Huxley invokes.<sup>442</sup>

Equality and morality ultimately had their roots in human nature and by allowing their free expression to manifest it would result in the evolution of a more stable and harmonious society.

The conflict over the political meaning of Darwinism continued when Ernst Haeckel published his response to Virchow in English translation as *Freedom in Science and Teaching*, to which Huxley offered to write a prefatory note to support his colleague in the defense of Darwinism. While praising Virchow’s high and well-earned scientific reputation in Germany, Huxley felt compelled to condemn the German naturalist’s insertion of “unscrupulous political warfare into scientific controversy” by connecting Darwin’s theory with “a political party which is, at present, the object of hatred and

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<sup>442</sup> M.E. Lazarus, “Administrative Nihilism,” *Radical Review* 2 (13), May 10, 1884, pp. 4-6.

persecution in his native land.”<sup>443</sup> Huxley found himself unable to follow Virchow’s entreaty to imagine how the theory of descent would look in the head of a socialist, “I suppose because I do not sufficiently sympathise with Socialists.” Nor could Huxley imagine “the links of the hidden bonds which unite evolution with revolution, and bind together the community of descent with the community of goods” and he found Virchow’s distasteful rhetoric “the attempt to frighten sober people by the suggestion that evolutionary speculations generate revolutionary schemes in Socialist brains.”<sup>444</sup> Subsequently, Darwin wrote to Huxley to congratulate him for the “tremendous rap on the knuckles” that he had given Virchow for making such an unsavory comparison.

### **Socialist Darwinism and the German Diaspora**

In contrast to Huxley and Haeckel’s view that the comparison Virchow made between Darwinism and socialism was mere rhetoric, Virchow’s concern was more likely based on the fact that, in Prussia (and, after 1871, unified Germany), socialists were the first to consistently apply natural selection to social questions. These advocates of Socialist Darwinism utilized Darwin’s theory to argue against inequality and for the evolution of society having its basis in the social instinct.<sup>445</sup> Beginning with sociologist Albert Lange’s 1865 *Ueber die Arbeiterfrage* [On the Labor Question] as well as the physiologist Ludwig Büchner’s 1868 *Sechs Vorlesungen über die Darwin'sche Theorie* [Six Lecture’s on Darwin’s Theory] and 1869 *Die Stellung des Menschen in der Natur in*

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<sup>443</sup> T.H. Huxley, “Prefatory Note,” in Ernst Haeckel, *Freedom in Science and Teaching* (London: C. Kegan Paul & Co., 1879), p. xviii.

<sup>444</sup> *Ibid.*, pp. xix-xx.

<sup>445</sup> For a review see Leo Hintermayr, *Sozialismus und Darwinismus: eine Untersuchung über den Einfluss der Deszendenztheorie auf die Lehren des wissenschaftlichen Sozialismus der Neuzeit* (Landesstrafanstalten, 1931).

*Vergangenheit, Gegenwart und Zukunft* [The Position of Man in Nature in the Past, Present, and Future], socialist theorists had utilized Darwin's ideas for sociology to a greater extent than even Herbert Spencer had to date.<sup>446</sup> Neither Lange nor Büchner were opposed to Darwin's Malthusian basis for natural selection, but merely held that it was attenuated in humans by the social instinct.<sup>447</sup>

This natural law is present and will strive in every stage of human development and under all circumstances to exert itself, only its effects will be partially modified, partially abolished and through opposing effects suppressed by virtue of another natural law, which from the sympathetic living together of humans causes the ideas of equality and solidarity in progress to grow.<sup>448</sup>

Büchner agreed with Lange on the importance of the Darwinian struggle for existence in human society and on the mediated role that Malthusianism had for our species.

However, while Büchner sought a more equitable society, he held that this should be one based on the equality of opportunity, not necessarily the equality of outcome. The struggle for existence was what had allowed species to benefit from the survival and propagation of the best-adapted individuals and the same should take place in human society. Consequently, making sure that there were no undue biases for or against any one class would help ensure that the most talented and exceptional individuals would thrive and benefit society as a whole.<sup>449</sup> The extent to which these theorists were successful in making their argument could be seen in the frontpage editorial of the April

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<sup>446</sup> Spencer had, by 1869, published *First Principles* (1862) and *Principles of Biology* (1864; 1867) but the full articulation of his social evolution (and much of what would later be identified as Social Darwinism) would not be formulated until the 1870s. See Jay Rumney, *Herbert Spencer's Sociology* (New York: Routledge, 2017).

<sup>447</sup> Thomas Teo, "Friedrich Albert Lange on neo-Kantianism, Socialist Darwinism, and a Psychology Without a Soul," *The History of the Behavioral Sciences* 38 (3), 2002, pp. 285-301.

<sup>448</sup> Albert Lange, *Die Arbeiterfrage in ihrer Bedeutung für Gegenwart und Zukunft* (Duisburg: W. Falk & Volmer, 1865), pp. 68-9.

<sup>449</sup> Büchner also argued that evolution proceeded at different speeds depending on environmental conditions.

16, 1873 edition of *Der Volkstaat*, the official organ of the *Sozialdemokratische Arbeiterpartei Deutschlands* [German Social Democratic Workers Party], which announced that science had delivered a profound blow to the bourgeoisie.

The Darwinian theory is an important support for socialism!  
. . . For, after all, what is the principal result or the practical significance of the Darwinian theory? Other than the profound insight into the workings of organic nature, it is certainly the explicit recognition of the principle of equality between all men.<sup>450</sup>

Further support for Socialist Darwinism would be found outside Prussia in the radical German-speaking diaspora. The Darwinian zoologist and socialist Karl Vogt, who fled Prussia for Paris after the Revolution of 1848 (and was wanted by authorities for assisting a fellow student escape from the police), wrote passionately against the Prussian invasion of France and formed close associations with the Russian anarchist Mikhail Bakunin during his exile.<sup>451</sup> Vogt and Büchner, along with the Dutch physiologist Jacob Moleschott, became prominent voices of scientific materialism that championed Darwin's work as a refutation of religious cosmogony.<sup>452</sup> Their writings on this topic

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<sup>450</sup> J.K. in Munchen, "Die Darwinsche Theorie und ihre Beziehungen zum Sozialismus" [The Darwinian Theory and its Relationship to Socialism] *Der Volkstaat* 31, April 16, 1873, p. 1. "Die Darwinsche Theorie ist eine wichtige Stütze für den Socialismus! . . . [D]enn was ist wohl schließlich die Haupterrungenschaft oder die practische Bedeutung der Darwinschen Lehre: neben dem tiefgeistigen Einblick in das Wirken der organischen Natur überhaupt doch gewiß nur die stricte Anerkennung des Satzes von der Gleichheit aller Menschen."

<sup>451</sup> Vogt's *Lettres Politiques* was originally published in the Swiss newspaper *La Courrier du Commerce* in 1870 before being translated into French by Alfred Marchand for *Les Temps* in 1871. Vogt, *Lettres Politiques de Charles Vogt* (Paris: Librairie de Joel Cherbuliez, 1871); For Vogt helping a student to escape the police see Richard Olson, *Science and Scientism in Nineteenth-Century Europe* (Champaign: University of Illinois Press, 2008), p. 133. Herzen noted that Vogt would regularly interact with both Proudhon and Bakunin since all lived in the Rue de Bourgogne and would participate in "all-night vigils" at Madame Yelagin's parlor. See Alexander Herzen and Constance Garnett (trans.), *My Past and Thoughts: The Memoirs of Alexander Herzen* (London: Chatto and Windus, 1974), p. 422. Vogt would also engage in a lengthy rhetorical conflict with Marx in 1859-60 during which the latter branded Vogt with being a French agent bribed by Bonaparte. See Christine Lattek, *Revolutionary Refugees: German Socialism in Britain, 1840-1860* (New York: Routledge, 2009), pp. 209-14.

<sup>452</sup> Eric Paul Jacobsen, *From Cosmology to Ecology: The Monist World-View in Germany from 1770 to 1930* (Bern: Peter Lang, 2005), pp. 69-75. Moleschott had taught at University of Heidelberg before controversial lectures forced him to relocate to Zurich in 1856. See Laura Meneghello, *Jacob*

were widely translated into French, English, and Russian where they gained a prominent following in socialist circles.<sup>453</sup> The Dutch socialist and physician, Frederik Anthony Hartsen, made the Darwinian argument against competition and in favor of cooperation in his 1870 essay “Darwinism and Morals” before singling out interindividual struggle as a primary “fallacy from Darwinism.”<sup>454</sup>

These authors constantly put forward struggle as the moving principle of nature; but, to our mind, they do not pay sufficient attention to another principle not less important—I mean protection. Struggle is of course, the moving principle; but struggle is not necessarily struggle among individuals—that is, a selfish struggle. . . . So the time will come when there will be no other struggle but that of the whole human race, fraternally united, against the brutal forces of heartless inorganic matter! This view is not condemned by Darwinism, but rather supported by it. Darwinism is no apology for war, no excuse for selfishness.”<sup>455</sup>

Extending this to a critique of Prussian militarism, Hartsen wrote that evolutionary theory predicted a dysgenic effect for the nation, as many of “the most vigorous men are slaughtered, whilst the cripples take upon themselves the task of procreating a wretched posterity.”<sup>456</sup> Ironically, Hartsen cited a passage from Haeckel’s 1868 *Natürliche*

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*Moleschott, A Transnational Biography: Science, Politics, and Popularization in Nineteenth-Century Europe*. Dissertation, Justus-Liebig-Universität, Giessen, 2018, pp. 147-53.

<sup>453</sup> Robert Fox, *The Savant and the State: Science and Cultural Politics in Nineteenth-Century France* (Baltimore: Johns Hopkins University Press, 2012), pp. 6-8; Woodford McClellan, *Svetozar Markovic and the Origins of Balkan Socialism* (New Haven: Princeton University Press, 2015), p. 79; James Allen Rogers, “Darwinism, Scientism and Nihilism,” *The Russian Review* 19 (1), pp. 10-23.

<sup>454</sup> Frederik Anthony Hartsen, “Darwinism and Morals,” *Medical Times and Gazette*, Nov. 12, 1870, pp. 569-70. Hartsen wrote in his autobiographical *Nederlandsche Toestanden: Uit Het Leven Van Een Lijder* [Conditions in the Netherlands: From the Life of a Sufferer] “It is almost impossible to advance by pure merit in the world. . . . It is possible that socialism is a suitable drug for this ailment.” [Het is bijna onmogelijk door zuivere verdienste in de wereld vooruit te komen. . . . Het is mogelijk dat het socialisme tegen die kwalen een geschikt geneesmiddel is.] However, Hartsen emphasized that he was “completely anti-revolutionary” (*volkomen antirevolutionair*). Frederik Anthony Hartsen, *Nederlandsche Toestanden: Uit Het Leven Van Een Lijder* (Gorinchem: G.C. Van der Mast, 1870), p. 115.

<sup>455</sup> Frederik Anthony Hartsen, “Darwinism and Morals,” *Medical Times and Gazette*, Nov. 12, 1870, p. 570.

<sup>456</sup> *Ibid.*, p. 569.

*Schöpfungsgeschichte* [Natural History of Creation] in support of his argument.<sup>457</sup> This interest in Darwinian applications even extended to the socialist politician August Bebel, founder of the German Social Democratic Workers' Party, who published a pamphlet during the election campaign for the Reichstag in 1877 arguing that the “struggle for existence” [*Kampf ums Dasein*] did not need to be exclusively about conflict between individuals and likewise cited Haeckel’s argument for the dysgenic effects of war as evidence.<sup>458</sup> The following year, in a speech given on September 16, Bebel stated that “Darwinism is necessarily conducive to socialism, and conversely, socialism must be in harmony with Darwinism if its goals are to be correct.”<sup>459</sup> The German Social Democratic leader cited Rudolf Virchow as an authority on this question.

This utilization of Darwin’s theory to justify socialism did not go unnoticed by other scientific defenders of the status quo. A month after Virchow’s speech, comparative anatomist Oscar Schmidt critiqued the socialist fascination with Darwin in an essay for *Das Ausland*. “If the Socialists would think clearly, they would do everything they could to conceal the theory of descent, for it demonstrates quite plainly that the socialist doctrines are unworkable.”<sup>460</sup> Schmidt followed this up the following year with an

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<sup>457</sup> Haeckel removed his argument that war was dysgenic in subsequent editions of his book, however this was one of the chief reasons cited by Günther Hecht, official representative of the Rassenpolitischen Amt der NSDAP [National Socialist Party’s Department of Race-Politics], for banning Haeckel’s science within the Nazi Party. See Robert Richards, “Ernst Haeckel’s Alleged Anti-Semitism and Contributions to Nazi Biology,” *Biological Theory*, 2 (1), 2007, pp. 97-103.

<sup>458</sup> Peter Weingart, “Struggle for Existence: Selection, Retention and Extinction of a Metaphor,” in Aldo Fasolo (ed.) *The Theory of Evolution and Its Impact* (New York: Springer, 2011), pp. 74-5.

<sup>459</sup> August Bebel in a Reichstag speech given on September 16, 1878. *Verhandlungen des Deutschen Reichstages*, 4<sup>th</sup> Legislative Period, Stenographic Reports, p. 48. “Darwinismus nothwendig dem Socialismus förderlich ist, und umgekehrt der Socialismus mit dem Darwinismus im Einklang sein muß, wenn seine Ziele richtig sein sollen.”

<sup>460</sup> Oscar Schmidt, “Eine Antwort für Hr. Virchow” [An Answer for Mr. Virchow], *Das Ausland* 48, November 26, 1877, p. 943. “Wenn die Socialisten klar denken würden, so müssten sie alles thun, um die Descendenzlehre zu verheimlichen, denn sie predigt überaus deutlich, dass die socialistischen Lehren unausführbar sind.” This passage has been transcribed incorrectly in the German edition of Enrico Ferri’s *Socialism and Modern Science*, probably translated back from Italian: “Wenn die

extended critique of Lange, Büchner, Bebel, as well as Marx and Engels in his address to the 51<sup>st</sup> *Versammlung deutscher Naturforscher und Aerzte*, this time in Kassel, and later published as *Darwinismus und Socialdemocratie* [Darwinism and Social Democracy].<sup>461</sup> Schmidt countered the claims of the socialists by insisting that the cooperation required for their political system could not be justified in nature. “Most animals labor individually. Their implements of labor (private capital) are represented by their members and their weapons.”<sup>462</sup> It was only in the “higher classes” (*höheren Classen*) that animals formed associations in which parents cared for their offspring. The more complex, and seemingly voluntary, cooperative behavior observed among the higher animals – such as wolves on the hunt, animals that grazed in herds, or beavers that built collective dams – may have given the appearance of “socialistic improvements” (*socialistische Vervollkommnungen*) but this was merely a “deceptive illusion” (*trügerische Schein*).<sup>463</sup> This illusion was exposed among the “inferior animals” such as polyps or jellyfish that propagated by budding, such that the single individual of a colony was understood to be “cooperating” only out of self-interest. “I call attention to these familiar facts in order to show that in the animal kingdom communism and socialism are all the more pronounced the lower the organization of the groups among which they appear.”<sup>464</sup> Having countered

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Socialisten klug wären, würden sie alles aufbieten, um die Descendenztheorie totzuschweigen, denn diese Lehre verkünde laut die Haltlosigkeit der socialistischen Ideen.” Ferri and Hans Kurella (trans), *Socialismus und Moderene Wissenschaft: Darwin-Spencer-Marx* (Leipzig: Georg H. Wigand, 1895), p. 2.

<sup>461</sup> Oscar Schmidt, *Darwinismus und Socialdemocratie* (Bonn: Emil Strauss, 1878). Otto Ammon would later write an extended commentary on the same topic in a series of articles for the newspaper he owned in Konstanz, *Konstanzer Zeitung*, and later published as *Der Darwinismus Gegen die Sozialdemokratie: Anthropologische Plaudereien* [Darwinism Against Social Democracy: Anthropological Talks] (Hamburg: Berlagsanstalt und Druckerei A.-G., 1891).

<sup>462</sup> *Ibid.*, p. 5. “Die meisten Thiere arbeiten einzeln für sich. Ihre Arbeitsmittel (Privatcapital) werden durch ihre Gliedmaßen und Waffen repräsentirt.”

<sup>463</sup> *Ibid.*, p. 6.

<sup>464</sup> *Ibid.*, p. 6-7. “Ich erinnere an diese allbekannten Dinge, um als Resultat zusammenzufassen, daß in der Thierwelt Communismus und Socialismus um so ausgeprägter ist, je niedriger die Gruppen stehn, bei denen er eingeführt ist.”

the claim that there exist social instincts that extend from non-human animals to humans, Schmidt concluded his essay by challenging the assumption that Darwin's theory promoted equality in human society. On the contrary, Schmidt insisted, "Darwinism is the scientific basis of inequality" [*Der Darwinismus ist die wissenschaftliche Begründung der Ungleichheit*] and should be self-evident for those who understood the theory correctly.<sup>465</sup>

Consequently, when Virchow asked his colleagues to consider how Darwin's theory might look in the mind of a socialist in 1877, he did not need to imagine; that perspective had already manifested in the newly unified nation. Two years later, after the publication by philosopher Karl Kautsky of his essay "Darwinismus und Sozialismus" [Darwinism and Socialism], Darwin himself expressed alarm over the popularity that his theory had for the German left.<sup>466</sup> As he wrote in a letter to the Viennese explorer and naturalist Karl von Scherzer on December 26, 1879, "What a foolish idea seems to prevail in Germany on the connection between Socialism and Evolution through Natural Selection."<sup>467</sup>

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<sup>465</sup> Oscar Schmidt, "Darwinismus und Socialdemokratie," *Deutsche Rundschau* 17, Oct.-Dec. 1878, p. 289. "Der Darwinismus ist die wissenschaftliche Begründung der Ungleichheit, und darum braucht die Behauptung, daß die darwinistische Lehre ihre Haupterrungenschaft in der stritten Anerkennung des Satzes von der Gleichheit aller Menschen habe, von unserer Seite nicht besonders widerlegt zu werden."

<sup>466</sup> Karl Kautsky, "Darwinismus und Sozialismus," *Der Sozialist* 34, April 24, 1879. Not to be confused with Büchner's 1894 book of the same title. Ludwig Büchner, *Darwinismus und Sozialismus; oder, Der Kampf um das Dasein und die Moderne Gesellschaft* (Leipzig: Ernst Günther, 1894). Kautsky had joined the Social Democratic Party of Austria in 1875, but under the influence of Eduard Bernstein, he became a Marxist in 1881 and after Engels' death became one of the most important theoreticians of Marxism. Another socialist author, Karl Höchberg, published a book that same year on a Darwinian interpretation of aesthetics, *Die Lust an der Musik, den Farben und den körperlichen Formen* [Pleasure in Music, Colors, and Physical Forms].

<sup>467</sup> Letter from Charles Darwin to Karl von Scherzer, December 26, 1879. Cambridge University, Darwin Correspondence Project, Letter No. 12370F.

## Socialist Darwinism and the French Diaspora

In France, Virchow's entreaty to imagine a connection between Darwinism and socialism was not only undertaken, it was positively endorsed. French anarchist Emile Gautier – who would soon afterwards be arrested, along with Peter Kropotkin, and tried in Lyon for belonging to the First International – published a response to Haeckel, Virchow, and Schmidt in his 1880 work *Le Darwinisme Sociale*. This work represented the earliest use of the term “Social Darwinism” as a distinct category that deviated from Socialist Darwinism.

[N]otwithstanding M. Haeckel, his emulators, and his disciples, we are of Virchow's opinion. Far from being the most energetic condemnation of revolutionary socialism, Darwin's theory, properly understood and rigorously observed, may, on the contrary, if it is pushed to its ultimate conclusions, lend it valuable and unexpected support.<sup>468</sup>

Darwinism, for Gautier, was a determined law of nature and no political theory could be considered based in reality if it did not follow what had been demonstrated by evidence from the natural world. What could not be disputed was that “man is born today with social instincts” [*l'homme naît aujourd'hui avec des instincts sociaux*], and that our species represented the sociable animal – *Zon politikon* – as Aristotle had once said. “But these innate instincts, which are also possessed by a number of other animals to a lesser degree, are the result of an adaptation to external circumstances that have been

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<sup>468</sup> Émile Gautier, *Le Darwinisme Sociale* (Paris: Derveaux, 1880), p. 15. “C'est précisément ce que nous nous proposons de faire à propos de ce cas particulier : et, n'en déplaise à M. Haëckel, à ses émules et à ses disciples, nous sommes de l'avis de Virchow. Loin d'être la plus énergique condamnation du socialisme révolutionnaire, la théorie de Darwin, sainement comprise et rigoureusement observée, peut, au contraire, si elle est poussée jusqu'à ses dernières conséquences, lui prêter un concours précieux et inattendu.”

transmitted and fixed by heredity.”<sup>469</sup> These social instincts were the foundation for human morality and identified an innate inclination toward equality in our species. “In other words, instead of the struggle for existence, *aide pour l'existence*; instead of man, humanity; instead of the antagonism of interests, universal solidarity! *We must organize the struggle AGAINST the struggle to live*” [emphasis in original].<sup>470</sup> Ultimately, French Socialist Darwinism followed a common theme as their counterparts in Germany by emphasizing how Darwin’s theory promoted equality that was in large part justified because of the evolution of a social instinct.

This expression of natural selection supporting the precepts of a socialist economy existed from the earliest applications of Darwin’s theory to society in France just as it did in Germany. The works of Lange, Büchner, and Vogt were widely read in the French socialist circles of the First International in the mid-to-late 1860s and, apart from Clemence Royer who translated *On the Origin of Species*, the earliest applications of Darwinism to social questions were written by either radicals or reformers.<sup>471</sup> For example, philosopher and politician Edgar Quinet was among one of the best-known socialists to seek refuge in Belgium following the revolution of 1848, where he regularly corresponded with Victor Considerant.<sup>472</sup> Quinet’s reading of Darwin reinforced his progressive and republican vision of history by placing this trajectory as a natural law and

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<sup>469</sup> Ibid., p. 38-9. “Mais, ces instincts innés, que possèdent aussi, à un degré inférieur, nombre d'autres animaux, sont le résultat, transmis et fixé par l'hérédité, d'une adaptation aux circonstances extérieures.”

<sup>470</sup> Ibid., p. 68. “En d'autres termes, au lieu de la lutte pour l'existence, *l'aide pour l'existence*; au lieu de l'homme, l'humanité; au lieu de l'antagonisme des intérêts, la solidarité universelle! *Il faut organiser la lutte CONTRE la lutte pour vivre.*”

<sup>471</sup> See Chapter 2 for an overview of the radical interpretations of Darwin’s theory. The audience for Royer’s interpretations “was nil among scientists who read Darwin,” according to Yvette Conry and Sara J. Miles. See Jean-Marc Bernardini, *Le Darwinisme Social en France (1859-1918): Fascination et Rejet d'une Idéologie* (Paris: CNRS, 1997), p. 79.

<sup>472</sup> Jonathan Beecher, *Victor Considerant and the Rise and Fall of French Romantic Socialism* (University of California Press, 2001), p. 268; 533.

his two-volume work *La Création* (first published in 1869) sought to “establish the relationship of this new conception of nature with history.”<sup>473</sup> The Malthusian basis for inequality, following Darwin’s theory, “is strictly the natural law [but] needs to be corrected when it comes to man.”<sup>474</sup> The struggle for existence in human society, according to Quinet, should be understood as leading toward a society “where there will be neither inferior nor superior” [*où il n’y aura ni inférieur ni supérieur*].<sup>475</sup> This was because, just as in nature when individual plants or animals adapt to acquire an improved faculty, leaf, antenna, or tooth, “some of its conspecifics may suffer from this superiority, but the whole species benefits.”<sup>476</sup> Ultimately, morality came from “the same law that makes all things struggle, fight, and resist in both nature and in man. . . From this new knowledge of nature, therefore, there is a morality that is deduced from itself.”<sup>477</sup> Though Quinet would ultimately sign a declaration against the Commune, his work reportedly inspired at least one prominent Commune. An engineer known only as Citizen Assi – selected on behalf of the Central Committee to make the public announcement on May 28<sup>th</sup>, 1871 that declared the transfer of political authority to the Commune – stated that he had never read a book other than Quinet’s but that “his imagination was much affected.”<sup>478</sup>

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<sup>473</sup> Edgar Quinet, *La Création* (Paris, 1870), p. 1.

<sup>474</sup> *Ibid.*, p. 258. “Malthus, qui est de droit strict pour la nature, a besoin d’être corrigée quand il s’agit de l’homme.”

<sup>475</sup> *Ibid.*, p. 259.

<sup>476</sup> *Ibid.*, p. 265. “Quand un individu, un groupe végétal ou animal acquiert une faculté nouvelle, un organe meilleur, feuille ou racine, antenne, écaille, œil, dent ou défense, beaucoup de ses congénères ont à souffrir de cette supériorité, l’espèce entière en profite.”

<sup>477</sup> *Ibid.*, p. 410-12. “[E]lle grandit par la même loi qui fait que tout être lutte, combat, résiste dans la nature et dans l’homme. . . De la connaissance nouvelle de la nature, il y a donc une morale qui se déduit d’elle-même.”

<sup>478</sup> Reported in William Pembroke Fetridge, *The Rise and Fall of the Paris Commune in 1871* (New York: Harper & Brothers, 1871), p. 94. Elie Reclus wrote of Quinet’s letter in his journal at the time: “Those whom we love so much condemn us with severity.” Elie Reclus, *Commune de Paris au Jour le*

Within the French radical movement, the Paris Commune triggered a break within the International and a subsequent shift in how Darwin's ideas were applied to society.<sup>479</sup> Following the brutal suppression of the Commune, the Bakunin and Marxist factions were in open conflict about the future direction that should be taken. Whereas the Marxists saw the failure of the Commune as a sign that direct action was impossible and therefore sought political power for workers by taking over the existing institutions, the anarchist supporters of Proudhon and Bakunin believed the only path toward freedom was the dismantling of those institutions and the creation of their own from the bottom-up.<sup>480</sup> At issue, as the Jura Federal Committee of the International summarized, was a "war of principles . . . between authoritarian socialism and anti-authoritarian or federalist socialism."<sup>481</sup> This conflict proved unsolvable and Marx conspired, using secret testimony, to have Bakunin ejected from the International during the Hague Congress in September 1872.<sup>482</sup> This splitting of the Bakunin and Marxist camps was the beginning of the end for what later became known as the "First" International, and many on the radical left shifted their allegiance toward either the authoritarian or federalist poles in the years following. This division would also be manifested in the radical interpretations of Darwinism and the role evolution would play in human society. As a result, there existed a spectrum of thought between the authoritarian, or Marxist, interpretation that held evolution was a fact of nature that had no role in human society and the federalist

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*Jour* (Paris: Librairie C. Reinwald, 1908), p. 102. "Ceux que nous aimions tant nous condamnent avec sévérité."

<sup>479</sup> Ann Robertson explored the conflict over natural history as a philosophical basis behind the dispute between Bakunin and Marx in detail. See Robertson, "The Philosophical Roots of the Marx-Bakunin Conflict," *What's Next* 27, December 2003, pp. 47-59.

<sup>480</sup> An added conflict was that English trade unions were departing from the International and sought legitimacy (and donations) by working with the Liberal government now that unions had been legalized.

<sup>481</sup> *Bulletin de la Fédération Jurassienne*. June 8, 1872. Sonvillier, Switzerland: Fédération jurassienne.

<sup>482</sup> Mark Leier, *Bakunin: The Creative Passion* (New York: St. Martin's Press, 2006), pp. 265-70.

interpretation that saw evolution shaping the social and cooperative behavior on which human society was founded.

The Communards Benoît Malon and Paul Lafargue were representative of this shift within the French left following the Commune. Both figures were present during the Paris Commune and its destruction would become profound influences on their revolutionary work in the years afterwards.<sup>483</sup> Malon was born to a poor peasant family and spent much of his childhood working as a shepherd on farms in the Forez mountains.<sup>484</sup> He originally had plans to join the seminary, but the growing workers solidarity movement appealed to his passion for justice and, inspired by Proudhon, he became increasingly involved in revolutionary agitation.<sup>485</sup> Malon was initially closer to the Proudhon/Bakunin wing of the International and later sought a middle ground between the Marxist and anarchist perspectives through what he termed *socialisme intégral*. Lafargue was born in Cuba to a French émigré father and a mixed race Jewish/Kalinago Indian mother, inspiring his often repeated claim that “the blood of three oppressed races flows in my veins” (*le sang de trois races opprimées coule dans mes veines*).<sup>486</sup> It was during his time as a student in the University of Paris’ Faculty of Medicine that Lafargue became radicalized under the influence of Proudhon’s writing as well as Louis Auguste Blanqui’s political activism. After he was expelled from medical

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<sup>483</sup> During the Commune, Lafargue wrote to his father-in-law, Karl Marx, about the optimism and idealism of the Communards at the Hotel de Ville in which he described that “Paris was becoming invincible [with] a well-organized citizen army.” Leslie Derfler, *Paul Lafargue and the Founding of French Marxism, 1842-1882* (Cambridge: Harvard University Press, 1991), p. 101.

<sup>484</sup> K. Steven Vincent, *Between Marxism and Anarchism: Benoît Malon and French Reformist Socialism* (Berkeley: University of California Press, 1992), pp. 7-8. In 1868, Malon recalled that throughout his childhood he had “for true friends, only animals.”

<sup>485</sup> His earliest radical activity dates to July 1866 when he led a strike for higher pay by the dye workers of Puteaux, a town on the Western outskirts of Paris. Malon, *Le Socialisme Intégral*, 2:30n.

<sup>486</sup> Jacques Mace, *Paul et Laura Lafargue: Du Droit à la Paresse au Droit de Choisir sa Mort* (Paris: L’Harmattan, 2001), p. 13.

school for his radicalism, or what the Academic Council of Paris referred to as “attack[ing] the principles of social order,” Lafargue moved to London in 1866, where he met Karl Marx and became engaged to the German theorist’s daughter Laura.<sup>487</sup> Malon and Lafargue were initially on good terms and the latter served as a staff writer for Malon’s briefly realized *L’Emancipation* in 1880, a newspaper aligned with the Marxist Worker’s Party. However, by 1882, Malon and Lafargue were on opposite sides of the black and red divide. Following a divisive National Congress in Saint-Etienne, Malon conceded in private that there were “two agents of Marx: Guesde and Lafargue, who, *per fas et nefas*, want to run the party dictatorially, and if that’s impossible, to split it.”<sup>488</sup> However, even though Malon remained closer to Proudhon and Bakunin’s interpretation of socialism while Lafargue was committed to Marxism, both illustrate how the Darwinian principles of equality and morality as derived from a social instinct were widespread features on the French left.

The earliest evidence of Malon’s interest in Darwinian evolution can be found in his 1872 *Expose des Coles Socialistes Francaises* in which he characterized earlier socialist thought as being timid in their criticisms of absolutism and religious sentimentality and for not fully appreciating natural law. He noted that “Darwin, the most powerful of the theorists of materialism” had advanced a theory of evolution in which

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<sup>487</sup> That Lafargue was still under the influence of Proudhon during this period is clear from a letter that Marx wrote to his daughter on March 20, 1866: “That damned boy Lafargue pesters me with his Proudhonism, and will not rest it seems, until I have administered to him a sound cudgeling of his Creole pate.” Leslie Derfler, *Paul Lafargue and the Founding of French Marxism, 1842-1882* (Cambridge: Harvard University Press, 1991), p. 35.

<sup>488</sup> Letter from Benoît Malon to Eugène Fournière, December 1881, “Correspondence de Benoît Malon,” *La Revue Socialiste* 47, 1908, p. 234. “Il y a deux agents de Marx, Guesde et Lafargue, qui, *per fas et nefas*, veulent commander dictorialement le parti, et, si impossible, le briser.” The Latin phrase *per fas et nefas* means “through right and wrong,” and refers to one side of a debate claiming victory through eristic argument, or winning against one part of an opponent’s argument but without getting any closer to the truth.

there was a “progressive, successive and gradual organization of the world under the influence of natural causes.”<sup>489</sup> Malon identified the four principal points of Darwin’s theory as 1) the struggle for existence, 2) the formation of varieties or the alteration of individuals, 3) the transmission of these alterations to descendants through heredity, and 4) natural selection of the most superior individuals as a result of these modifications. These four influences were united and acted concurrently to produce a “continual evolution of beings” (*la transformation continuelle des êtres*).<sup>490</sup>

Between 1870 and 1876 Malon evoked a Darwinian foundation for his theory of society (with a progressivist interpretation justifying socialism) and it was a position he would return to more forcefully in the 1880s. However, beginning in 1876 Malon became a consistent critic of what he referred to as “the Darwinians” and their laissez-faire economic interpretations.<sup>491</sup> It is to this period that Vincent Steven is correct of Malon’s evolutionary arguments, in that he believed “Darwin’s theory applied only to humanity’s presocial existence as an animal in competition with other animals.”<sup>492</sup> In a footnote to his *La Question Sociale* Malon remarked that animals certainly undergo “the natural laws which torture it,” but this is not the case for “conscious humanity” which acts to

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<sup>489</sup> Benoît Malon, *Exposé des Coles Socialistes Françaises*, (Paris, 1872), p. 235, n. 1. “Darwin, le plus puissant des théoriciens du matérialisme . . . La théorie de Darwin. - Développement processif, successif et graduel du monde organisé sous l'influence des causes naturelles.”

<sup>490</sup> It should be noted that the second point makes no distinction between Darwinian or Lamarckian heredity. However, since Darwin did not make that distinction either, Malon reproduced an accurate representation of his theory. *Ibid.* “La théorie de Darwin. - Développement processif, successif et graduel du monde organisé sous l'influence des causes naturelles, se divise en quatre points principaux: 1. Le combat pour l'existence; 2. La formation des variétés ou l'altération des individus; 3. La transmission héréditaire de ces altérations aux descendants; 4. La sélection par la nature de ceux des individus modifiés qui se trouvent avoir une supériorité, sélection qui s'opère à la faveur du combat pour l'existence. Ces quatre influences étant réunies et agissant en concurrence, leur effet, qui est la transformation continuelle des êtres, se produit comme spontanément.”

<sup>491</sup> The identities of these “Darwinians” were not always provided, but Malon’s most frequent critiques were reserved for Clemence Royer, Yves Guyot, and Gustave de Molinari.

<sup>492</sup> Vincent, K. Steven, *Between Marxism and Anarchism: Benoît Malon and French Reformist Socialism*, p. 130.

“neutralize or modify their effects.”<sup>493</sup> Malon went on to critique Darwin for a “lack of reflection” (*a manqué ici de réflexion*) and for “putting his science at the service of Malthusian abstraction” (*mettre sa science au service de l'abstraction malthusienne*).<sup>494</sup>

In a subsequent work, Malon told his readers, “Do not talk about nature. . . An implacable law of blood oppresses all living beings,” a tragedy of life that humans can now move beyond.<sup>495</sup>

Darwinists and economists tell us that we are wrong to disturb the play of natural laws, that the whole process of existence is contained in the struggle for life, the strongest and the most gifted eliminating the weak and the imperfect. . . [But] it is good for us to protest against this cruel state of nature [in order to] raise us, under our own human forces, to justice, goodness, and applied altruism, by organizing a human state in which man will be the most moral, the most developed and the happiest possible.<sup>496</sup>

During this period Malon interpreted the Darwinian view of life as promoting only brutal competition in which the winner takes all and, therefore, “[t]o the Darwinists we may reply that the struggle for life is a law purely of the animal order.” Through solidarity humans had the ability to rise to “that fraternity which the human elite has dreamed of and sought for so many generations” against the “usurping minorities” who now

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<sup>493</sup> Benoît Malon, *La Question Sociale*, (Paris, 1876), p. 188, n. 1. “[L]’animalité subit purement et simplement le lois naturelles qui la torturent; l’humanité consciente, chercheuse et progressive, après avoir constaté l’existence de ces lois agit pour en neutraliser, ou modifier les effets.”

<sup>494</sup> Ibid.

<sup>495</sup> Benoît Malon, *Spartacus ou la Guerre de Esclaves. Roman Historique*, (Paris, 1876), pp. 173-4. “Ne parle pas de la nature alors. . . Une implacable loi de sang opprime tous les êtres vivants.”

<sup>496</sup> Benoît Malon, *Histoire du Socialisme: Depuis les Temps les Plus Reculés Jusqu’à la Fin de la Révolution* (Paris, 1879), pp. 14-5. From the Foreword, written in Zurich, Oct. 1879. “Les darwinistes et les économistes nous disent que nous avons tort de troubler le jeu des lois naturelles, que tout le procès de l’existence est contenu dans la lutte pour la vie, les plus forts et les mieux doués éliminant les faibles et les imparfaits. . . [Mais] il est beau à nous de protester contre ce cruel état de nature, contre cet égoïsme infini qui pèse, dit-on, sur nous; cela en nous élevant, par nos propres forces humaines, à la justice, à la bonté, à l’altruisme appliqué, en organisant un état humain où l’homme sera le plus moral, le plus développé et le plus heureux possible.”

“hypocritically invoke the law of Nature.”<sup>497</sup> Further, “Darwin corrupted the truths which he borrowed from Lamarck . . . It is only an institution of competition entirely in English fashion. Darwinism (which he separated from Lamarck’s theories) was merely the triumph of brutality over mankind.”<sup>498</sup> Malon was certainly not alone in his critique. It was during this same period that the term “Social Darwinism” was coined in Emile Gautier’s 1880 work *Le Darwinisme Sociale*, which Malon advertised in his *Le Nouveau Parti* the following year.<sup>499</sup> Malon, after initially responding enthusiastically to a scientific theory that seemed to undermine the theoretical foundation of the status quo, began to respond forcefully against those that would coopt Darwin’s theory to justify their position.

However, it would be a mistake to accept these examples of Malon’s enflamed rhetorical commentary as his final word on the subject, as is revealed in his discussion of Darwin’s theory (and human evolution more broadly) in the 1880s. As Malon made clear in his response to a letter from Louis Dramard, who insisted upon “the scientific truth of Darwinism,” Malon responded by clarifying that his objection was only partial.<sup>500</sup> “We

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<sup>497</sup> Benoît Malon, *Histoire du Socialisme*, p. 16. “Aux darwinistes nous pouvons répondre que la lutte pour la vie est la loi de l’ordre purement animal, que l’ordre humain, produit de nos progrès intellectuels affectifs et moraux, de notre raison enfin, a d’autres lois, qu’il peut s’élever pratiquement à cette justice et à cette fraternité que l’élite humaine a rêvées et cherchées pendant tant de générations et dont notre siècle doit préparer la réalisation; que d’ailleurs, dans la civilisation la prédominance est non pas à ceux qui sont individuellement supérieurs, mais à ceux qui disposent exclusivement de forces sociales: que ces forces sociales que les darwinistes veulent laisser aux minorités usurpatrices, en invoquant hypocritement la loi de nature qui n’a que faire ici, nous voulons, nous, les faire servir à l’élévation et au bien être de tous. Et nous le pouvons puisque, étant le nombre, nous serons, quand nous le voudrons, la force, comme nous sommes le droit.”

<sup>498</sup> “Darwin a corrompu des vérités qu’il emprunte à Lamark . . . Elle n’est qu’une institution de concurrence tout à fait à la mode anglaise. Le Darwinisme (il faut en séparer les théories de Lamark) n’est que le triomphe de la brutalité sur l’humanité.”

<sup>499</sup> Benoît Malon, *Le Nouveau Parti* (Paris, 1881), p. 116.

<sup>500</sup> According to Malon, Dramard was “one of the principal founders of *La Revue Socialiste*, one of its most eminent contributors and one of the most distinguished and dearest of our friends.” See Benoît Malon, “Louis Dramard,” *La Revue Socialiste* 7, Jan-June 1888, p. 408. “Louis Dramard, l’un des

never said the opposite; we have only protested against the anti-social conclusions of some Darwinists.” He went on to specify that he only disagreed with two aspects of Darwin’s theory. The first one was that the individual struggle for existence and natural selection undoubtedly governed the development of uncultivated plants and most unmanufactured animals but underwent “*modifications* in the human order by social relations.” The second was that “artificial advantages” in the current social state had given one relatively small group an “immense accumulation of productive and social forces” and had excluded the majority of the population.<sup>501</sup> Malon objected to the above two claims, such as that by Clémence Royer, that this was representative of the natural order and should be accepted without question. “[T]he purely zoological explanation of the Darwinists [read ‘social’ Darwinists - EMJ], as good supporters of the bourgeois order, have come into fashion to justify capitalist exploitation.”<sup>502</sup> In other regards, Malon remained committed to his view that Darwin’s theory was the explanation for the origin of the human species and continued to shape human society.

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principaux fondateurs de la Revue socialiste, un de ses plus éminents collaborateurs et l'un de nos amis les plus chers.”

<sup>501</sup> Benoît Malon, *Le Nouveau Parti*, pp. 108-9. “Que la lutte individuelle pour la vie et la sélection naturelle qui régissent sans conteste le développement des plantes non cultivées et la plupart des animaux non domestiqués est modifiée dans l'ordre humain par les rapports sociaux. . . Que dans l'état actuel où les uns possèdent à l'exclusion des autres, l'immense accumulation de forces productives et sociales, la *modification* sociale est inique au suprême degré, et ne fait qu'aggraver le droit du plus fort.” [Italics mine]

<sup>502</sup> Ibid., p. 109. “[L]’explication purement zoologique que les darwinistes, en bons souteneurs de l’ordre bourgeois, ont mis à la mode, pour justifier l’exploitation capitaliste.”

It is true that nature is an immense field of struggle and destruction, that in the vegetable world, as in the animal world, the species most fit or better adapted to their environment stifle the development and destroy the inferior or more delicate, or those less suited to the modifications made necessary by external conditions. The findings of the transformists or Darwinists on this subject are without question.

This natural law also bends the human race under its hard orders, *with attenuations, however.*<sup>503</sup>

Malon's use of "species" reveals his familiarity with Darwin's theory, as the Lamarckian theory was one of *individuals* striving toward adaptive change. It also makes clear that Malon was not opposed to Darwinian evolution continuing to be a factor in human society. Further, evolution for Malon, as for many on the radical left, was a guiding framework that revealed how human society, like the natural world, was not static but a system in constant flux as the result of natural and social forces.

[E]verything that is, is subject to the laws of evolution; Or, to speak more correctly, by recalling the formula of the old Heraclitus: nothing subsists, everything flows, everything passes, everything develops or transforms, everything becomes. There is in nature, from monad to man, only incessant evolutions. Evolutionary change is the universal law, matter is subject to the laws of organic evolution, everything that lives to the laws of vital evolution; Classes, races, and species obey their own laws of evolution.<sup>504</sup>

It was to these different laws – the "modifications" or "attenuations" of Darwinian theory – that Malon became devoted to in his later work. Human evolution, following natural

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<sup>503</sup> Benoît Malon, *Manuel d'Économie Sociale*, (Paris, 1883), p. 303-4. "Cela est si vrai que la nature n'est qu'un immense champ de luttes et de destruction, que dans le monde végétal, comme dans le monde animal les espèces les mieux douées ou s'adaptant mieux aux milieux étouffent dans leur développement, ou détruisent les espèces inférieures, plus délicates, ou se prêtent moins aux modifications rendues nécessaires par les conditions extérieures. Les constatations des transformistes ou darwinistes, à ce sujet sont sans réplique: Cette loi naturelle courbe aussi le genre humain sous ses durs commandements, *avec des atténuations toutefois.*" [Italics mine]

<sup>504</sup> Ibid., p. 168. "[T]out ce qui est, est soumis aux lois de l'évolution; ou pour mieux dire, en rappelant la formule du vieil Héraclite: rien ne subsiste, tout coule, tout passe, tout se développe ou se transforme, tout devient. Il n'y a dans la nature, de la monère jusqu'à l'homme que des évolutions incessantes. Le mouvement évolutif est la loi universelle, la matière est soumise aux lois de l'évolution organique, tout ce qui vit aux lois de l'évolution vitale; les classes, les races et les espèces obéissent à des lois d'évolution à elles propres."

laws, was “indispensable knowledge” (*connaissance indispensable*) and, despite the current ignorance on this question, Malon maintained his commitment that it “can be applied to the development and well-being of man” (*peuvent être appliquées au développement et au mieux être de l'homme*).<sup>505</sup>

The importance that Malon placed on Socialist Darwinism can be seen in the extended discussions of the subject he had published in the the journal he founded, *La Revue Socialiste*, first by Serge Podolinski in 1880 and then by Louis Dramard in 1885.<sup>506</sup> Podolinski received his PhD in natural sciences from Kiev University in 1871 and was involved with revolutionary circles in both Kiev and St. Petersburg. In Paris and Zurich, Podolinski continued his socialist activities while pursuing his degree in medicine and was a regular contributor to the revolutionary journal *Bnepëd!* (Forward!).<sup>507</sup> The populist Russian philosopher and sociologist Peter Lavrov noted his enthusiasm and encouraged Podolinski to write a history of the First International for the journal.<sup>508</sup> In his article, “Le Socialisme et la Theorie de Darwin,” Podolinski continued the critique of Haeckel and Schmidt in which he countered the anti-socialist Darwinians by arguing that “sociability promotes success in the struggle for existence” (*sociabilité favorise le succès*

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<sup>505</sup> Benoît Malon, *L'Agiotage de 1715 à 1870* (Paris: Administration de la *Revue Socialiste*, 1885), p. vii.

<sup>506</sup> *La Revue Socialiste* closed down after one year and was reestablished in 1885. Malon published many other essays between 1885-1890 that incorporated a Darwinian lens as a basis for sociology. See, e.g., Eugene Fourniere, “Essai sur l'Evolution Socialiste,” *La Revue Socialiste* 1, 1885, pp. 427-37; Eugene Raiga, “L'Evolution Du Mariage et de la Famille,” *La Revue Socialiste* 7, 1888, pp. 168-181; Napoleone Colajanni, “La Question Contemporaine de la Criminalite,” *La Revue Socialiste* 7, 1888, pp. 59-68; Benoît Malon, “Louis Dramard,” *La Revue Socialiste* 7, 1888, pp. 408-420; Paul Boilley, “Le Transformisme et le Socialisme,” *La Revue Socialiste* 9, 1889, pp. 405-418; Paul Argyriadès, “La Femme: Dans le Passé, Le Présent et L'Avenir,” *La Revue Socialiste* 9, 1889, pp. 419-435; Joannès Sagnol, “L'Égalité des Sexes,” *La Revue Socialiste* 9, 1889, pp. 685-697; Annie Besant, “Pourquoi Je Suis Socialiste,” *La Revue Socialiste* 10, 1889, pp. 539-544.

<sup>507</sup> Boris Sapir, *“Vpered!” 1873-1877: From the Archives of Valerian Nikolaevich Smirnov, Vol. 1* (Dordrecht: D. Reidel Publishing Company, 1970), pp. 70-74.

<sup>508</sup> Boris Sapir, pp. 53-63.

*dans la lutte pour l'existence*).<sup>509</sup> Beginning with an extended discussion of the social *Hymenoptera*, Podolinski continued with the evolution of sociability in fish, reptiles, birds, and mammals.

In considering animal societies, we have seen that those which attain the highest degree of evolution, and win the greatest number of victories in the struggle for existence against nature, are those who have reduced the struggle within society to a minimum, and who live in established relationships on the basis of solidarity.<sup>510</sup>

It was from this foundation in the evolution of sociability that “the law of nature, which must be based on the mutual sympathy of men, is not at all contrary to the general law of the struggle for existence in human society.” Rather than struggle against one another for limited resources, as the Malthusian doomsayers proposed, the feeling of sympathy could instead promote an egalitarian solidarity of purpose in “the continual struggle against nature.”<sup>511</sup>

Louis Dramard likewise sought to “refute the main arguments drawn from evolutionary biology against socialist claims” in his article “Transformisme et Socialisme.” Dramard (1841-1888) was a journalist and President of the French section of the Theosophical Society. He was a scholar of comparative religions and lived in Morocco for the second half of his life where he worked against French colonialism in the movement for Moroccan independence, publishing articles in *L'Emancipation*, *Le Proletaire*, *Le Citoyen de Paris*, *L'Intransigeant*, and other French publications.<sup>512</sup>

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<sup>509</sup> Serge Podolinski, “Le Socialisme et la Theorie de Darwin,” *La Revue Socialiste*, Vol. 1, No. 3, March 20, 1880, pp. 133-4.

<sup>510</sup> *Ibid.*, p. 147. “En envisageant les sociétés des animaux, nous avons vu que celles d'entre elles qui atteignent le plus haut degré d'évolution, remportent le plus grand nombre de victoires dans la lutte pour l'existence contre la nature, sont celles qui ont réduit la lutte à l'intérieur de la société au minimum, et qui vivent dans des rapports établis sur les bases de la solidarité.”

<sup>511</sup> *Ibid.*, p. 141.

<sup>512</sup> See, e.g., Louis Dramard, “En Afrique,” *L'Émancipation*, November 22, 1880; “Les Affaires d'Égypte et le Parti Ouvrier,” *Le Citoyen*, July 31, 1882; “La Défaite,” *Le Citoyen*, September 17, 1882; “Nos

According to Malon, “thanks to him [Dramard], glaring iniquities have been revealed, and the right of Algerian Arabs and Berbers to political emancipation has been formulated: they will have their day.”<sup>513</sup> As an advocate of “militant socialism” (*socialisme militant*), Dramard was also actively involved in the organization of labor unions and the establishment of the Algerian Workers Party. In his article, Dramard made many of the same points as Podolinski where it came to the social mammals (including the observation, in contrast to Schmidt, that wolves are not the epitomy of individualism but regularly gather in associations for organized hunts). “All the higher animals, when they live freely, are organized into families, groups, and societies, in which individuals are more or less in solidarity with each other.”<sup>514</sup> He also emphasized the important lesson that Darwinism had for equality by noting the dysgenic effect that wealth and privilege had in society.<sup>515</sup> Because, as Dramard noted, “heredity is the most constant factor of evolution” (*l'hérédité est le plus constant facteur d'évolution*), it stood to reason that inherited wealth could give individuals with inferior traits an advantage over others. “The advantages of fortune and position serve only to extinguish the natural qualities of

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Proconsuls en Afrique,” *Le Prolétaire*, July 22, 1882; La Férocité Arabe!,” *Le Prolétaire*, September 9, 1882; “L’Angleterre, La France, et L’Égypte,” *Le Prolétaire*, March 1, 1884. Léon Hugonnet shared this sensibility and wrote, “Solidarity is not a simple feeling, it is a law of nature. We have misunderstood it by not considering the barbarians of Algeria as brothers and we have been victims of our prejudices and selfishness.” (La solidarité n’est pas un simple sentiment, c’est une loi de nature. Nous l’avons méconnue en ne considérant pas les barbares d’Algérie comme des frères et nous avons été victimes de nos préjugés et de notre égoïsme.) Léon Hugonnet, “La Solidarité Chez les Berbères,” *Le Travailleur* 1(5), September 1877, p. 22.

<sup>513</sup> Benoît Malon, “Louis Dramard,” *La Revue Socialiste* 7, Jan-June 1888, p. 409.

<sup>514</sup> Louis Dramard, “Transformisme et Socialisme I,” *La Revue Socialiste* 1, 1885, p. 39. “Tous les animaux supérieurs, quand ils vivent librement, s’organisent en familles, en groupes, en sociétés, dans lesquels les individus sont plus ou moins solidaires les uns des autres.”

<sup>515</sup> Dramard also makes the observation that Schmidt’s assumption about solitary wolves may be the result of biased data. “In our countries, wolves are almost all exterminated. The few survivors are persecuted, hunted, hungry, bewildered. They live proscribed and solitary lives because it is a physically impossible for them to subsist in the same region.” [Dans nos contrées, les loups sont à peu près tous exterminés. Les rares survivants sont pourchassés, traqués, affamés, ahuris. Il vivent en proscrits, solitaires, parce qu’il y a pour eux impossibilité matérielle de subsister plusieurs dans la même localité.] Louis Dramard, “Transformisme et Socialisme I,” *La Revue Socialiste*, p. 38.

those who enjoy it from childhood.”<sup>516</sup> Dramard therefore held, like Büchner in Germany, that creating a society that promoted the equality of opportunity would be more consistent with Darwinian sociology than those – such as Haeckel and Huxley – who advocated aristocracy as representative of the natural order. “Therefore, socialism presents itself on all reasonable citizens as a necessary consequence of the law of evolution.”<sup>517</sup>

Beginning in 1883, with his book *Manuel d'Économie Sociale*, Malon began collecting material that pointed toward the evolution of a “social instinct” (*l'instinct social*) in the human species and took great interest in the “sociological laws [that] can only be discovered by scrutinizing the facts and by following the march of social development in humanity.”<sup>518</sup> The earliest pre-human populations, Malon summarized from the existing anthropological literature, were not the fastest or strongest species and “the fierce and relentless competition for life made aid and association necessary against the peril.”<sup>519</sup> This interest in the moral foundation of evolution culminated in his 1886 work *La Morale Sociale* in which Malon reinterpreted Herber Spencer’s synthetic philosophy to form the natural foundations of socialism.

Malon argued that morality was a continually evolving faculty in social organisms and was “indefinitely perfectible” [*indéfiniment perfectible*] based on the environmental conditions. “[M]orality, like all that exists, flows from the great law of

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<sup>516</sup> Ibid, pp. 36-7. “Les avantages de fortune et de position ne servent qu'à éteindre les qualités naturelles de ceux qui en jouissent dès l'enfance.”

<sup>517</sup> Louis Dramard, “Transformisme et Socialisme II,” *La Revue Socialiste*, 1885, p. 140. “Donc, le socialisme s'impose à tous les citoyens raisonnables comme conséquence forcée de la loi d'évolution.”

<sup>518</sup> Cited in Benoît Malon, *Manuel d'Économie Sociale*, p. 169. “Il est cependant des lois sociologiques; mais on ne pourra les découvrir qu'en scrutant les faits et en suivant la marche du développement social dans l'humanité.”

<sup>519</sup> Ibid., p. 170. “La concurrence vitale acharnée et sans trêve fit une nécessité de l'aide et de l'association contre le péril.”

attraction which, applied to living organisms, deserves the name of solidarity.”<sup>520</sup> Malon proceeded to cite examples from the natural world of “altruistic manifestations” such as observed behaviors in crows, finches, and magpies that warn members of their group about danger, orphans that are raised by unrelated couples, and storks that feed their aged parents.<sup>521</sup> Even more moral were the “natural associations of relation that have a permanent character” as found in the social mammals – such as dogs, oxen, horses, elephants, and llamas – with monkeys representing a “form of association that truly acquires the social character . . . whose customs include forming groups for mutual assistance, solidarity among all, occasional devotion to the weak, and subordination or absolute obedience to a leader in the common interest.”<sup>522</sup> Malon noted that monkeys would also gather in associations to remove parasites from one another’s fur, form chains in order to help others pass between distant trees, work together to lift rocks that were too heavy for one individual alone, and collectively defend the young from threats.<sup>523</sup>

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<sup>520</sup> Benoît Malon, *La Morale Sociale: Genèse et Évolution de la Morale* (Paris: Revue Socialiste, 1895), p. 21, n. 1. “Pour en revenir à notre sujet, la morale, comme tout ce qui existe, découle donc de la grande loi d'attraction qui, appliquée aux organismes des vivants, mérite le nom de solidarité.”

<sup>521</sup> His evidence is drawn largely from Alfred Brehm’s *Life of Animals* (first published in six volumes in German between 1864-69) and Alfred Espinas’ *Les Sociétés Animales* (1877).

<sup>522</sup> *Ibid.*, pp. 31-3. “Cette forme d'association acquiert véritablement le caractère social, avec les singes dont les coutumes comprennent les combinaisons du concours mutuel, de la solidarité entre tous, du dévouement parfois envers un faible et de la subordination ou obéissance absolue à un chef, dans l'intérêt commun. Grâce à ces aptitudes sociales, certains anthropoïdes ont pu tenir en respect le léopard, le lion et l'homme même, tant que ce dernier n'a pas eu d'armes à feu.”

<sup>523</sup> *Ibid.*, p. 32, n. 1. “Ainsi les singes se débarrassent réciproquement de la vermine; ils s'enlèvent, après une course à travers les buissons, les épines qui se sont attachées à leur peau; ils forment une chaîne pour franchir le vide entre deux arbres; ils s'unissent à plusieurs pour lever au besoin une pierre trop lourde; les adultes défendent indistinctement tous les jeunes dont l'éducation est très longue. Lorsque les ouistitis sont réunis en captivité et que l'un d'eux tombe malade, les autres s'empressent autour de lui et il est vraiment touchant de les voir lui prodiguer leurs soins.” (Espinas, *les Sociétés animales.*) Un grand aigle avait, dit Brehm, attaqué un petit cercopithèque; aussitôt toute la bande se mit sur pied et en moins d'une minute l'aigle se vit entouré d'une masse de grands singes qui se jetèrent sur lui avec des grimaces horribles et en poussant de grands cris. Le ravisseur, cruellement mordu, lâcha vite prise et eut peine à échapper. Darwin (*Origine des espèces*) cite, entre autres faits, l'héroïsme d'un chimpanzé qui, presque sous les crocs d'une meute aboyante, vint prendre et remporta triomphalement, au péril de sa vie un jeune qui était dégringolé des rochers et allait être mis en pièces.”

Because of such social skills, these anthropoids were able to hold leopards, lions, or even man at bay (provided the latter did not have firearms).

Not only is it impossible to establish a rigorous moral demarcation between animals and man, but also between superior animality and inferior humanity. . . . What can we conclude? That the moral fact derives from the social fact. There is also an animal morality, and this morality is due to the improvement of association.<sup>524</sup>

Because the social instinct was improved by habit and passed by inheritance to subsequent generations, there had been periods of increased association as well as disassociation. The human species thrived beyond that of the apes as a result of our penchant for solidarity.

Along with many on the French left, Paul Lafargue enthusiastically endorsed Darwin's theory in the 1860s and 1870s for the way that it undermined "theological traditions" and later extended the theory to incorporate the evolved social instincts that could form the basis for a more egalitarian society.<sup>525</sup> Lafargue had even approached Clemence Royer about translating *Das Kapital* into French, believing that her embrace of

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<sup>524</sup> Ibid., pp. 36-38. "Non seulement il est impossible d'établir une rigoureuse démarcation morale entre les animaux et l'homme, mais encore entre l'animalité supérieure et l'humanité inférieure. L'avantage, nous l'avons déjà vu, est souvent à la première pour l'esprit de solidarité, pour la fidélité en affection, quelquefois même pour le respect du travail, — comme chez la fourmi et l'abeille, — voire même pour la chasteté et la pudeur, comme chez l'éléphant, les vertus familiales et laborieuses comme chez le castor bâtisseur. Qu'en conclure? Que le fait moral dérivant du fait social, il y a aussi une moralité animale, et que cette moralité est en raison du perfectionnement de l'association."

<sup>525</sup> Jacqueline Lalouette, "Une Rencontre Oubliée: la Libre Pensée Française et les Savants Matérialistes Allemands (1863-1870)," *Romantisme* 73, 1991, pp. 57-8. In a review of Darwin's *Variations of Plants and Animals Under Domestication*, Lafargue wrote, "These hypotheses will appear hazardous and even false to people who accept theological traditions; but these hypotheses are the only ones we can have in the present state of human knowledge." (Ces hypothèses paraîtront hasardées et même fausses aux gens qui admettent des traditions théologiques; mais ces hypothèses sont les seules que nous puissions avoir dans l'état présent des connaissances humaines.) Paul Lafargue, "La Pangenèse de Darwin," *La Libre Pensée* 4, February 12, 1870, p. 2.

Darwinian evolution made her sympathetic to socialism.<sup>526</sup> Royer adamantly refused based on her belief that inequality between individuals was a natural law and undermined any basis for a socialist society.<sup>527</sup> However, despite Lafargue’s close connection with Marx and Engels, he never adopted their position that Darwin had been “led by the struggle for life in English society” as a justification for “human society never to emancipate itself from its bestial essence.”<sup>528</sup> Lafargue differed from their perspective by adopting what he referred to as the “artificial milieu” (*milieu artificiels*) among species like ants, bees, or beavers that extended to the economic milieu in humans. As he explained in his 1882 article “Le Parti Socialiste Allemand,” this social environment curtailed the intense competition that the Darwinians often referred to as the struggle for existence.<sup>529</sup> Lafargue expanded his argument about the importance of natural selection on the social instincts two years later in the second part of his pamphlet series on social economics, *Le Milieu Naturel: Théorie Darwinienne*.<sup>530</sup> Citing the Swiss botanist Carl Nägeli, Lafargue

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<sup>526</sup> See Bernard Naccache, *Marx: Critique de Darwin* (Paris: Librairie Philosophique J. Vrin, 1980), pp. 129-30 and Yves Christen, *Le Grand Affrontement: Marx et Darwin* (Paris: Albin Michel, 1981), pp. 149-51.

<sup>527</sup> After learning of this failure, Marx wrote that it had, “much amused us, Engels and I” (*beaucoup amusés, Engels et moi*) because he had read Royer’s introduction to *Origin of Species* and knew Royer to be a bourgeoisie. Letter from Karl Marx to Paul and Laura Lafargue, February 15, 1869, in *Marx & Engels Collected Works, Vol. 43, Letters 1868-70* (Lawrence & Wishart, 2010), p. 217.

<sup>528</sup> Letter from Karl Marx to Paul and Laura Lafargue, February 15, 1869, in *Marx & Engels Collected Works, Vol. 43, Letters 1868-70* (Lawrence & Wishart, 2010), p. 217. Engels would go on to reject Darwinism in human society directly in his 1877 work *Anti-Dühring: Herr Eugen Dühring’s Revolution in Science*. “The main reproach levelled against Darwin is that he transferred the Malthusian population theory from political economy to natural science, that he was held captive by the ideas of an animal breeder, that in his theory of the struggle for existence he pursued unscientific semi-poetry, and that the whole of Darwinism, after deducting what had been borrowed from Lamarck, is a piece of brutality directed against humanity.” Lafargue adapted three chapters of Engels book into the pamphlet *Socialism: Utopian and Scientific* which was translated into ten languages. Engels would later say of it, “I am not aware of any other Socialist work, not even our ‘Communist Manifesto’ of 1848 of Marx’s ‘Capital,’ has been so often translated.” Engels cited in Arthur M. Lewis, *Vital Problems in Social Evolution* (Chicago: Charles H. Kerr & Company, 1911), p. 115. Also see Enrique M. Ureña, “Marx and Darwin,” *History of Political Economy* 9 (4), 1977, pp. 552-3.

<sup>529</sup> Paul Lafargue, “Le Parti Socialiste Allemand,” *L’Egalité*, March 19, 1882.

<sup>530</sup> Paul Lafargue, *Cours d’Économie Sociale. Le Matérialisme Économique de Karl Marx, Vol. II, Le Milieu Naturel: Théorie Darwinienne* (Paris: Henry Oriol, 1884).

noted that plants living in clusters were more likely to exhibit variations than specimens that were isolated from other members of their species. “This fact unquestionably proves that their forms have been altered since they came together.”<sup>531</sup> The result of natural selection in response to association was even more powerful among animals since it “alters their organs and brings out moral qualities in them” (*elle altère leurs organes et fait apparaître chez eux des qualités morales*).<sup>532</sup> In monkeys, elephants, and buffalo naturalists had observed individuals placing themselves in danger to help others and, in their social life more generally, “do not want to offend the conscience or excite the moral indignation of their friends and acquaintances.”

The association dampens and even extinguishes another feeling even more necessary to the preservation of life than maternal love: individual selfishness, which in animals is as ferociously developed as in the heart of the most civilized bourgeois.<sup>533</sup>

Lafargue did not criticize Darwin directly, since he found that the English naturalist was careful to point out the incompleteness of his theory and what still remained to discover, but he pilloried the “Darwinians” who “preach the lesson of the economists [and] the ruling classes to explain social inequalities” in contradiction to what existed in many social species. Consequently, these anti-Socialist Darwinists “castrate their science so that it can apologize for capitalist society” (*Ils châtrant leur science pour qu'elle puisse faire l'apologie de la société capitaliste*).<sup>534</sup>

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<sup>531</sup> Lafargue quoted Nägeli but did not supply a source. *Le Milieu Naturel: Théorie Darwinienne*, p. 13. “Ce fait prouve incontestablement que leurs formes se sont altérées depuis qu’elles se sont associées.”

<sup>532</sup> Ibid.

<sup>533</sup> Ibid., pp. 13-4. “L’association amortit et éteint même un autre sentiment encore plus nécessaire à la conservation de la vie, que l’amour maternel, – l’égoïsme individuel, qui, chez les animaux, est aussi féroce ment développé que dans le cœur des bourgeois les plus civilisés.”

<sup>534</sup> Ibid., p. 14.

Later that same year, Lafargue extended his argument for the English socialist newspaper *To-Day* in response to Herbert Spencer's article "The Coming Slavery," in which the latter had written "[n]o political alchemy will get golden conduct out of leaden instincts."<sup>535</sup> Lafargue challenged Spencer by utilizing his own philosophy against him. "It was generally presumed that Mr. Spencer had understood the Darwinian theory, of which he had volunteered to be the propounder. The anti-Socialist axiom cited above inclines us to think that the presumption was erroneous."<sup>536</sup> Lafargue pointed out that, according to Darwin, the organs of animals, their habits, and their instincts were evolved traits based on the environmental conditions, or *milieu*, and different conditions would necessarily produce different instincts in both animals and men. The instinct for self-preservation, for example, "is deadened in animals living in troops," in which the males often face danger to protect their young or weak members. "These unmotherly and unselfish instincts, so unnatural, are like Mr. H. Spencer's pessimism, produced by the conditions of life to which their bearers have been exposed."<sup>537</sup> In contrast, early village communities in India that had no private property did not manifest the "parasitism" that existed in civilized England. Ultimately, Spencer's philosophy represented a "shopkeeper-like evolutionism" and, because he "misunderstands the evolution theory," he mistakenly assumed that human nature rigidly adhered to the selfish and hierarchical system that benefited modern capitalist society.<sup>538</sup>

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<sup>535</sup> Herbert Spencer, "The Coming Slavery," *The Contemporary Review* 65, April, 1884, p. 482.

<sup>536</sup> Paul Lafargue, "A Few Words with Mr. Herbert Spencer," *To-Day*, Jan-June 1884, pp. 416-7.

<sup>537</sup> *Ibid.*

<sup>538</sup> *Ibid.*

## Social Darwinism versus Socialist Darwinism in England

The 1880s in England saw the beginning of what would be a long-term economic decline, the dual rise of trade unionism and the first socialist political party, multiple labor strikes that culminated in the Great Dock Strike of 1889, and increased agitation about the question of Irish Home Rule.<sup>539</sup> While historians have largely rejected the idea of a general depression lasting between 1873 to 1896, there was a significant downturn in the British economy around 1883 after which industrial production fell by 10 percent and unemployment increased to a high of 10.2 percent by 1886 (precipitating a Royal Commission on the Depression of Trade and Industry).<sup>540</sup> Consequently, as concludes David Cannadine, “the 1880s were the most troubled decade—for the nobles and notables of Britain . . . since the 1840s or the 1790s.”<sup>541</sup> At the same time, from 1880 to 1900 England saw the emergence of 39 new socialist periodicals – broadly defined, ranging from Marxist to anarchist – that represented the largest growth of a radical social movement since the Chartist movement of the 1840s and 50s.<sup>542</sup> The discussion of Darwinian evolution as it related to socialism was a frequent topic, both in print and in public settings.<sup>543</sup>

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<sup>539</sup> Paul Adelman, *The Rise of the Labour Party 1880-1945* (New York: Routledge, 2014), pp. 1-37; Carl Levy, *Socialism and the Intelligentsia 1880-1914* (New York: Routledge, 1987), pp. 1-34; Roger Smith, *Free Will and the Human Sciences in Britain, 1870-1910* (New York: Routledge, 2015), p. 110-5.

<sup>540</sup> See *The Oxford Encyclopedia of Economic History, Vol. 3* (Oxford University Press, 2003), p. 304.

<sup>541</sup> David Cannadine, *The Decline and Fall of the British Aristocracy* (New Haven: Yale University Press, 1990), p. 25.

<sup>542</sup> Deborah Mutch, *English Socialist Periodicals, 1880-1900* (London: Ashgate Publishing, 2005).

<sup>543</sup> For examples of the latter, a debate was held on socialism and the struggle for existence between a Mr. Ellis and Mr. Hunt at Henley Hall in Battersea, see “Battersea,” *Justice*, May 10, 1884, p. 7. A lecture on “Freethought or Socialism” by Dr. Edward Aveling at the Hall of Science was reviewed in which he argued, “What the ‘Origin of Species,’ by Darwin is with regard to natural science, that the ‘Kapital’ of the great German philosopher is with regard to social science,” see “Meetings and Addresses,” *Justice*, May 31, 1884, p. 6. Lectures were also advertised on “Socialism and the Theory of Evolution” by Austrian anarchist Andreas Scheu at the Kelmescott House in Hammersmith, “Lecture Diary,” *Commonweal*, July 10, 1886, p. 120; “Evolution and Revolution,” by H. Charles as well as

In an 1882 essay for *The Contemporary Review*, Belgian economist Emile de Laveleye articulated the confusion many felt when he wrote, “It is not easy to understand the strange blindness which leads Socialists to adopt Darwinism.”<sup>544</sup> After all, he argued, laissez-faire was nothing more than allowing natural law to operate for the betterment of everyone.

According to Darwin, progress is effected among living things because those best adapted to circumstances get the upper hand in the struggle for life. The strongest, bravest, the best armed triumph, and gradually stamp out the weak and feeble, and thus races become more and more perfect. This natural optimism is also the basis of orthodox political economy.<sup>545</sup>

Few saw this rise of Socialist Darwinism in England with more concern than did Herbert Spencer who devoted a series of essays intent on undermining its development.

Described as a “diatribe against socialism,”<sup>546</sup> Spencer’s collection of essays was intended to establish his principle of individualism on a foundation of natural rights. However, whereas scholarly assessments in the late 19<sup>th</sup> and early 20<sup>th</sup> centuries held that Spencer never deviated from this commitment, his articulation of innate social instincts or a moral sense underwent considerable revision between his early work in *Social Statics* and *Man Versus the State*.<sup>547</sup> Initially, Spencer argued that the “moral sense” gave

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“Evolution and Socialism,” by H.A. Barker held at the Hall of the Socialist League in Clerkenwell, “Lecture Diary,” *Commonweal*, February 12, 1887, p. 56; “Lecture Diary,” *Commonweal*, July 16, 1887, p. 232; “Evolution and Socialism,” by Dr. Edward Aveling at the Communist Club in Bloomsbury, “Lecture Diary,” *Commonweal*, May 12, 1888, p. 152; “Lecture Diary,” *Commonweal*, May 26, 1888, p. 168; “Socialism and the Survival of the Fittest,” by C.E. Rice at the Kelmscott House in Hammersmith, “Lectures, &c., at Kelmscott House,” *Hammersmith Socialist Record* 9, 1892, p. 4. Many more such public events were advertised in the years between 1890-1920.

<sup>544</sup> Emile de Laveleye, “The Progress of Socialism,” *The Contemporary Review*, November 1882, p. 566.

<sup>545</sup> Ibid.

<sup>546</sup> Michael Taylor, *The Philosophy of Herbert Spencer* (London: Bloomsbury Publishing, 2010), p. 25

<sup>547</sup> For example, Sir Ernest Barker wrote of Spencer that, “He had not changed in 1884. He had preached natural rights from the beginning; and it was the change of political conditions which made him the prophet of a different cause.” Ernest Barker, *Political Thought from Spencer to Today* (London: Williams and Norgate, 1915), p. 128.

rise to intuitions “which the intellect is to develop into a scientific morality.”<sup>548</sup>

Ultimately, this natural foundation of morality would make all governments superfluous since human beings would form voluntary associations that would take on all the functions a government normally would offer.

That moral sense whose supremacy will make society harmonious and government unnecessary, is the same moral sense which will then make each man assert his freedom even to the extent of ignoring the state – is the same moral sense which, by deterring the majority from coercing the minority, will eventually render government impossible.<sup>549</sup>

Spencer saw that this moral sense was progressing over time through the development of sympathy, citing “declarations of rights, liberty of the press, slave emancipation, removal of religious disabilities, Reform Bills, Chartism, &c. . . as illustrating the efforts of the moral sense to realize the democratic state.”<sup>550</sup> Democracy was to be defined as representing “a dominant moral sense” in society just as a reduction in the level of social injustice implied “a more prevalent and energetic moral sense.”<sup>551</sup>

This basis of human cooperation through the evolution of a moral sense continued to be an important component of Spencer’s philosophy after Darwin published *On the Origin of Species*. In his response to Huxley’s critique of individualism in 1871, Spencer responded in an article entitled “Specialized Administration.”

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<sup>548</sup> Spencer, *Social Statics*, p. 19.

<sup>549</sup> *Ibid.*, p. 215.

<sup>550</sup> *Ibid.*, p. 240. Spencer further explained: “Political freedom, therefore, is, as we say, an external result of an internal sentiment—is alike, in origin, practicability, and permanence, dependent on the moral sense; and it is only when this is supreme in its influence that so high a form of social organization as a democracy can be maintained” (p. 243).

<sup>551</sup> *Ibid.*, p. 239; 246.

The truth that in this condition of mutual dependence brought about by social life, there inevitably grow up arrangements such that each secures his own ends by ministering to the ends of others, seems to have been for a long time one of those open secrets which remain secret because they are so open. . . . There seems to be a deliberate omission of the fact that, in addition to their selfish interests, men have sympathetic interests, which, acting individually and cooperatively, work out results scarcely less remarkable than those which the selfish interests work out.<sup>552</sup>

Spencer carried this argument further in his 1879 *Data of Ethics* and incorporated his Darwinian interpretation to support his perspective that there was “an entire correspondence between moral evolution and evolution as physically defined.”<sup>553</sup>

I have argued that conformably with the laws of evolution in general, and conformably with the laws of organization in particular, there has been, and is, in progress, an adaptation of humanity to the social state.<sup>554</sup>

Spencer concluded that the last stages in the evolution of the moral sense were when human beings, because of an increase in population, were forced to live in larger and larger communities. “Hence the moral man is one whose functions . . . are all discharged in degrees duly adjusted to the conditions of existence.”<sup>555</sup> Consequently, there was a form of social selection taking place as human behavior became less aggressive such that they did “not necessitate mutual injury or hindrance, but consist with, and are furthered by, co-operation and mutual aid.”<sup>556</sup>

However, by 1884 and the precipitous rise of socialism in England, sympathy itself was the problem because feeling with another person’s condition “suppresses, for the time being, remembrance of his transgressions.”<sup>557</sup>

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<sup>552</sup> Herbert Spencer, “Specialized Administration,” *The Fortnightly Review* 60, Dec. 1, 1871, pp. 648-9.

<sup>553</sup> Herbert Spencer, *The Data of Ethics* (London: Williams and Norgate, 1879), p. 74.

<sup>554</sup> *Ibid.*, p. 275.

<sup>555</sup> *Ibid.*, p. 76.

<sup>556</sup> *Ibid.*, p. 20.

<sup>557</sup> Herbert Spencer, “The Coming Slavery,” *The Contemporary Review* 65, April, 1884, p. 461.

Those whose hardships are set forth in pamphlets and proclaimed in sermons and speeches which echo throughout society, are assumed to be all worthy souls, grievously wronged; and none of them are thought of as bearing the penalties of their own misdeeds. . . . They are simply good-for-nothings, who in one way or other live on the good-for-somethings – vagrants and sots, criminals and those on the way to crime, youths who are burdens on hard-worked parents.<sup>558</sup>

Spencer did not offer any evidence, other than personal anecdotes, to justify why these individuals were not subject to the “mutual aid” he had advocated five years earlier.

Further, he implicated the “co-operators” in the recent Lancashire cotton strike with pushing middle-class artisans into unemployment and argued that the demand from other unionists for safe working conditions would ultimately lead to “compulsory co-operation” in the form of “regulative legislation.”<sup>559</sup> The simple truth, as Spencer articulated it, was that “the existing evils of human nature” can never be removed but only pushed from one place to another.<sup>560</sup> While Spencer had always rejected interference by a coercive State, he maintained that the evolved moral sense would lead toward increased democracy and, ultimately, freedom. Now, however, the wrong kind of democracy was taking place as “communistic theories” were being enacted by various Acts of Parliament favored by “popular leaders, and urged on by organized societies.”<sup>561</sup> Further, there were “editorial assertions that this economic evolution is coming and must be accepted.”<sup>562</sup>

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<sup>558</sup> Ibid.

<sup>559</sup> Ibid., p. 465. The strike began when the wages for cotton-pickers were reduced by 10 percent. The Final Report of the Royal Commission on Labour determined that “In the cotton industry of Lancashire reductions in wages are a fruitful source of strikes.” See Great Britain Royal Commission on Labour, *Fifth and Final Report of the Royal Commission on Labour* (London: Eyre and Spottiswoode, 1894), p. 273, paragraph 392. The 1884 strike was subsequently crushed when cotton baron Charles Macara brought in scabs and refused to rehire any of the strikers. See P.F. Clarke, *Lancashire and the New Liberalism* (Cambridge: Cambridge University Press, 2007), p. 82.

<sup>560</sup> Herbert Spencer, *The Coming Slavery*, p. 469.

<sup>561</sup> Ibid., p. 472-3.

<sup>562</sup> Ibid., p. 473.

A further exemplification of this truth is supplied by these political enthusiasts and fanatical revolutionists. Impressed with the miseries existing under our present social arrangements, and not regarding these miseries as caused by the ill-working of a human nature but partially adapted to the social state, they imagine them to be forthwith curable by this or that re-arrangement.<sup>563</sup>

Despite the fact that Spencer had previously endorsed labor unions as “voluntary co-operators” organized around mutual aid, he now determined that, because Trades Unions were engaged in an “industrial war in defence of workers’ interests versus employers’ interests,” they inevitably adopted military strictness and enact “the tyranny of organization.”<sup>564</sup> Ultimately, this would lead to political slavery since the “defective natures of citizens will show themselves in the bad acting of whatever social structure they are arranged into.”<sup>565</sup>

Herbert Spencer’s 1884 article series in *The Contemporary Review* resulted in significant backlash among socialists in England that coincided with an increased utilization of Darwinian arguments on the political left.<sup>566</sup> For example, Henry Mayers Hyndman was an English writer and politician who organized the first socialist political party, the precursor to what became the Social Democratic Federation, in 1881 and wrote the first popularization of Karl Marx’s ideas in his highly successful *England For All*.<sup>567</sup>

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<sup>563</sup> Ibid., p. 479.

<sup>564</sup> Ibid.

<sup>565</sup> Ibid., p. 482.

<sup>566</sup> There were few explicit connections between socialism and Darwinism prior to this, with the exception of socialists embracing Darwinism as an argument against religion. While Alfred Russel Wallace published his book *Land Nationalisation: Its Necessity and Its Aims* in 1882, there were no connections to his science. By his own admission, Wallace wouldn’t become a socialist until 1889 and the first scientific application of his newly embraced philosophy would be his September, 1890 essay “Human Selection” in the *Fortnightly Review*. See Alfred Russel Wallace, *My Life: A Record of Events and Opinions* (London: Chapman and Hall, 1905), pp. 266-7.

<sup>567</sup> Many criticized Hyndman’s authoritarian tendencies and poor leadership qualities. After Hyndman refused to step down following a vote of no confidence in 1884, many members including William Morris, Eleanor Marx, and Edward Aveling left the SDF to form the Socialist League. See Edward P. Thompson, *William Morris: Romantic to Revolutionary* (Oakland: PM Press, 2011), pp. 341-9.

Soon after “The Coming Slavery” was published in the April 1884 edition of *The Contemporary Review*, Hyndman produced a pamphlet critiquing what he saw as Spencer’s justification that “‘the survival of the fittest’ means the permanent supremacy of human animals of the type of [prominent railroad tycoons] Jay Gould or Edward Watkin.”<sup>568</sup>

Hyndman considered the hierarchical interpretation of Darwinian natural selection to be laughable considering that, for a growing sector of Great Britain, “the truth is now being admitted that Socialism is really neither more nor less than the science of sociology.”<sup>569</sup>

Unlike Spencer, who represented an extreme proponent of Darwinian individualism, the future for the human species was one of “[o]rganised co-operation for existence in place of anarchical competition for existence. . . . This evolution, I say, is inevitable.”<sup>570</sup>

Hyndman found Spencer’s article especially ironic given that the esteemed philosopher had “led a considerable number of those who have been taught the doctrine of evolution by Mr. Spencer himself to accept Socialism as the only logical outcome of his own earlier theories.”<sup>571</sup>

Likewise, Frank Fairman (a pseudonym of Theodore Wright, a secularist and member of the Fabian Society) took up this same critique in a pamphlet entitled “Herbert Spencer on Socialism” that was later incorporated into his 1888 book *The Principles of Socialism Made Plain*.<sup>572</sup> Freedman referred to Spencer’s *Social Statics* as “a complete

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<sup>568</sup> H.M. Hyndman, *Socialism and Slavery: Being an Answer to Mr. Herbert Spencer's attack on the Social Democratic Federation in the Contemporary Review, April, 1884, under the title "The Coming Slavery* (London: William Reeves, 1884), p. 3.

<sup>569</sup> Ibid.

<sup>570</sup> Ibid., p. 5; 13.

<sup>571</sup> Ibid., p. 13.

<sup>572</sup> Frank Fairman, *Herbert Spencer on Socialism. A reply to the article entitled, "The Coming Slavery," in the "Contemporary Review" for April, 1884* (London: The Modern Press, 1884). For the identity of Wright as Fairman’s pseudonym see Samuel Halkett, *Dictionary of Anonymous and Pseudonymous English Literature, Vol. 7* (London: Ardent Media, 1926), p. 29. On Wright’s connection to the Fabian Society see Chushichi Tsuzuki, *Edward Carpenter 1844-1929: Prophet of Human Fellowship*

arsenal of weapons with which to defend the socialist position that all human beings have equal rights,” but noted that the philosopher “seems now to have forgotten or repudiated all he then wrote.”<sup>573</sup> Fairman argued that the scientific study of morals taught that notions of right and wrong were not a result of divine intervention, but an innate conception that evolved because it conveyed advantages to those who possessed them. The current inequality of advanced societies therefore represented a “retrogression in the moral sense”<sup>574</sup> and Fairman asked if “anything be more repugnant to the moral sense” than to see such extreme wealth and extreme poverty coexisting in the same society?<sup>575</sup> This condition was comparable to conducting an experiment on different saplings planted in a field, “some of which were plentifully supplied with water and manure . . . while others were totally neglected.”<sup>576</sup> Such a scenario would be counter to the “now fashionable hypothesis of the struggle for existence, and the survival of the fittest” and it was “childish to dignify the result of such a process by the name of Natural selection [or] invoke the honoured name of Darwin in favour of continuing the present condition of things.”<sup>577</sup> Spencer clearly read these critiques since he referenced them when “The

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(Cambridge: Cambridge University Press, 2004), p. 80. Wright was also active in the London secular community and opened the inaugural service of the Leicester Secular Hall on March 6, 1881. See F.J. Gould, *The History of the Leicester Secular Society* (Leicester, 1900). Wright’s wife was a well-known actress made famous for her appearances in plays by Ibsen, especially *Ghosts*. See Marian Comyn, “My Recollections of Karl Marx,” *The Nineteenth Century and After* 91, January 1922.

<sup>573</sup> Frank Fairman, *The Principles of Socialism Made Plain* (London: William Reeves, 1888), pp. 138-9.

<sup>574</sup> *Ibid.*, pp. 130-1. Further, “The professional man or trader who refused orders for the sake of helping a competitor who was in difficulties, or the manufacturer who had scruples about paying his hands for less than they produced, *might show that his moral sense was highly developed*, and humanitarians might perhaps consider such men the best members of society, but it would soon be demonstrated that they were *not the fittest to survive in the struggle for existence*” (italics mine). *Ibid.*, p. 144.

<sup>575</sup> *Ibid.*, p. 16.

<sup>576</sup> *Ibid.*, p. 17.

<sup>577</sup> *Ibid.*

Coming Slavery” was republished the following year as a chapter in *Man Versus the State*, where he denied that he had changed his position on the moral sense.<sup>578</sup>

The socialist and feminist writer Annie Besant – a leading speaker for the Fabian Society and SDF – continued in this vein by explaining, “I am a Socialist because I am a believer in Evolution.”<sup>579</sup> The equality of all people was inherent based on the human species’ common primitive beginnings and, to this, Besant was immensely grateful to Darwin, Huxley, Haeckel, Büchner, and their followers for having “unravelling the tangles of existence.” However, “both in mind and in morals Spencer was the great servant of Evolution” based on his formulation that “progress is a process of continued integrations” and for bringing evolution to the study of sociology. But Besant could not endorse his conclusions on laissez-faire given that, based on Spencer’s own argument, “the individualistic has become co-operative [such that] the progress of society has been from individualistic anarchy to associated order; from universal unrestricted competition to competition regulated.”<sup>580</sup>

Hyndman, Fairman, and Besant may have had the most systematic critiques of Spencer’s position, but they were certainly not alone. J.L. Joynes, writing in *Justice* – the weekly newspaper of the Social Democratic Federation – invoked Spencer’s philosophy for the progress of social evolution in that it “tends always towards more complex

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<sup>578</sup> Herbert Spencer, *The Man Versus the State* (London: Williams & Norgate, 1885), p. 43. “I am quite unconscious of any such change as he alleges. Looking with a lenient eye upon the irregularities of those whose lives are hard, by no means involves tolerance of good-for-nothings.”

<sup>579</sup> Annie Besant, “Why I Am A Socialist,” *Our Corner* 7, September 1, 1886, p. 158. It should also be noted that Besant, like many who advocated Socialist Darwinism, was not opposed to the incorporation of Malthus, which “has been proved up to the hilt by Charles Darwin [and] has led, and still leads, to the survival of those who are fittest for the conditions of the struggle.” Rather than tell the poor to remain celibate until middle age, as Malthus recommended, Besant instead endorsed the position of the Neo-Malthusians “who advise early marriage and limitation of the family within the means of existence.” Annie Besant, “The Socialist Movement,” *The Westminster Review* 126 (139), July 1886, pp. 228-9.

<sup>580</sup> Annie Besant, “Why I Am A Socialist,” *Our Corner* 7, September 1, 1886, pp. 158-9.

organisation, and to a greater interdependence of all men upon each other” but that, rather than laissez-faire, it would ultimately lead toward Socialism.<sup>581</sup> William Boulting, in the socialist newspaper *To-Day*, countered Spencer’s position as “Misapplied Darwinism” and held that “man is not merely an animal, nor even merely gregarious. He is social.” This fact, Boulting argued, should form the basis of modern society if it was to be consistent with natural selection. The “working classes have given good evidence by their trades’ unions and their great benefit societies that they are even more disposed to providence than the luxurious class.” However, the artificial conditions that had been created “under the veil of commercial morality” were instead selecting “the most unscrupulous, the most self-assertive, the least moral, the least social” as the victors in modern society.

Buoyed by the life-saving apparatus of protected wealth, how many unworthy, unsocial, and unscrupulous natures are preserved from sinking into that abyss which by the survival of the fittest should be their natural meed.”<sup>582</sup>

This argument that artificial selection under modern capitalist society was elevating anti-social traits would be made that same year in the anonymously authored book *Darkness and Dawn*.<sup>583</sup> “Competition drives the worthiest to the wall—there is a survival of the unfittest and unworthiest.”<sup>584</sup> For most English proponents of Socialist Darwinism,

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<sup>581</sup> J.L. Joynes, “The Socialist Catechism XI,” *Justice*, July 19<sup>th</sup>, 1884, p. 3.

<sup>582</sup> William Boulting, “Misapplied Darwinism,” *To-Day*, 1884, pp. 93-5.

<sup>583</sup> The book has been attributed variously to Clement, Conrad, or P.C. Wise. See Lyman Tower Sargent, *British and American Utopian Literature, 1516-1985: An Annotated, Chronological Bibliography* (New York: Garland Reference Library of the Humanities, 1988), p. 71.

<sup>584</sup> Anonymous, *Darkness and Dawn: The Peaceful Birth of a New Age* (London: Kegan Paul, Trench & Co., 1884), p. 41. The author used the phrase “survival of the unfittest” three other times (p. 42, 44 & 45). Alfred Russel Wallace referred to *Darkness and Dawn* as a book that dealt “rather with the evils of the present system than with constructive socialism, but which nevertheless give eloquent expression to its fundamental ideas and aspirations [and] in its terrible description of the horrors of the factory system in all its forms and ramifications, is unsurpassed in our language.” Alfred Russel Wallace, *My Life: A Record of Events and Opinions, Vol. 2* (London: Chapman & Hall, 1905), p. 268.

Spencer's work was cited as their primary inspiration and his disavowal inspired frustration as well as a commitment to emphasizing the moral sense as an evolutionary foundation for human society.

The Russian geographer and anarchist Lev (Léon) Metchnikoff highlighted this frustration expressed by many on the political left over Spencer's disavowal of his earlier position on the evolution of cooperation. In his 1886 essay "Revolution and Evolution" in the *Contemporary Review*, Metchnikoff first acknowledged the *Man versus the State* series published in the same journal before pointing out that, much like the French philosopher Auguste Comte, Spencer "proscribes animal societies from his sociological province" and limits social evolution to "the appearance of the human family."<sup>585</sup> For Metchnikoff, the science of sociology should more properly be based on "the great Darwinian law of the struggle for life [and] well-nigh dissolved in the vast domain of biology."<sup>586</sup> What Darwinian science had revealed was that "association is the law of every existence," and the concept of society "is only a particular case of that general law."<sup>587</sup>

Wherever we see a phenomenon of association – be it in the shape of a vegetable and animal organism, or in that of a more perfect human community – we cannot fail to detect something new, as essentially distinct from the law of individualistic competition or struggle. . . . That something is, namely, the consensus of a number of more or less individualized forces aiming at an end, not personal to one of the allies, but common to them all, and that is what we call co-operation.<sup>588</sup>

Metchnikoff raised the examples of wolves in organized hunts as well as wild horses in perfectly coordinated herds as representative of this cooperation adapted for individual

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<sup>585</sup> Léon Metchnikoff, "Revolution and Evolution," *The Contemporary Review* 50, September 1886, p. 421.

<sup>586</sup> *Ibid.*, pp. 417-8.

<sup>587</sup> *Ibid.*, p. 415.

<sup>588</sup> *Ibid.*, pp. 432-3.

and collective advantage. From this zoological basis, Metchnikoff concluded that cooperation was a natural law of sociology that had evolved by natural selection.

In many cases we can easily see how the struggle for life impels men, like animals, to the constitution of a league or society; but even then we can assert a priori that the laws of an alliance are not the laws of war. In many other cases social action seems not to be imposed on them by considerations of personal preservation; but it is plain that the roots of social life must be deeply buried in their physiological needs and wants, egoistic, altruistic, or whatever else they may be.<sup>589</sup>

This, what the Baltic German zoologist Karl Kessler highlighted as a “law of sociability, or co-operation, as a powerful agent of biological progress,”<sup>590</sup> Metchnikoff argued was a zoological conception of sociology that prevailed more among the German social theorists – including Lange and Buchner – and provided “a compendium of social knowledge based upon the Darwinian principle.”<sup>591</sup> While Spencer might claim to have a Darwinian basis for his justification of laissez-faire, he ultimately fell closer to the humanistic tradition of the older, idealist philosophers like Comte. Metchnikoff concluded by citing a quote from Spencer, that government drew much of its power from “the accumulated and organized sentiment of the past” rather than based on contemporary concepts, as people might prefer to believe. Through thinly veiled opprobrium, Metchnikoff said Spencer’s statement “points out the very reason why our social atmosphere becomes so soon impregnated with deadly miasmas, emanations from the tombs of past generations, when a refreshing breeze from the future does not purify it, blowing through a revolutionary agency.”<sup>592</sup>

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<sup>589</sup> Ibid., p. 431.

<sup>590</sup> Ibid., p. 432. More will be said about Kessler’s 1880 paper, “On the Law of Mutual Aid,” read before the St. Petersburg Zoological Society in Chapter 4.

<sup>591</sup> Ibid., pp. 417-8.

<sup>592</sup> Ibid., p. 437.

## Conclusion: Darwin's Bulldog in the Gladiator's Show

Following the conflict with Spencer in 1871, Thomas Henry Huxley largely eschewed political questions during the intervening fifteen years, but ended his political neutrality at the height of economic and social turmoil in 1886.<sup>593</sup> He soon found common ground with the one-time “administrative nihilist” in their united opposition to Socialist Darwinism. Just as it would be in the case of Spencer, Huxley targeted the Darwinian basis of the moral sense as providing scientific support for socialism. Huxley had initially supported the idea of an innate moral sense, building from his argument on the material basis of mind that he expounded in multiple works in the 1860s and 70s.<sup>594</sup> In his 1871 response to Mivart's critique of Darwin's theory in *The Quarterly Review*, Huxley insisted, “I do not see how the moral faculty is on a different footing from any of the other faculties of man.”<sup>595</sup> As he further made clear in a Rectorial Address at Aberdeen University in 1874, Huxley explained how injuries to the brain often result in damage to that individual's moral behavior.

In the unfortunate subjects of such abnormal conditions of the brain, the disturbance of the sensory and intellectual faculties is not unfrequently accompanied by a perturbation of the moral nature, which may manifest itself in a most astonishing love of lying for its own sake.”<sup>596</sup>

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<sup>593</sup> Huxley continued to make speeches prior to this on the need for government to support science and science education, but otherwise avoided getting involved with political controversies.

<sup>594</sup> See, e.g., “On the Physical Basis of Life” (1868), “On the Hypothesis That Animals Are Automata, and its History” (1874), and “On Sensation and the Unity of Structure of Sensiferous Organs” (1879).

<sup>595</sup> Thomas Henry Huxley, “Mr. Darwin's Critics,” *Contemporary Review* 18, November 1871, p. 469.

<sup>596</sup> Thomas Henry Huxley, “On the Hypothesis That Animals Are Automata, and its History,” Rectorial Address, Aberdeen, 1874. Published in *Science and Education: Essays* (New York: D. Appleton and Company, 1899), p. 238, n. 1. However, Huxley felt that some individuals had a more advanced innate moral sense than others. “But, in the mass of mankind, the aesthetic faculty, like the reasoning power and the moral sense, needs to be roused, directed, and cultivated.”

Further, at an address before the British Association for the Advancement of Science later that same year, Huxley argued, “the moral nature of man is greater than the intellectual.”<sup>597</sup> Therefore, the study of society was ultimately a scientific question, for “just as ants form a polity and a social state . . . so do men organise themselves into a social state.”

[T]hough the province of politics is of course outside that of anthropology, yet the consideration of man, so far as his instincts lead him to construct a social economy, is a legitimate and proper part of anthropology, precisely in the same way as the study of the social state of ants is a legitimate object of zoology.<sup>598</sup>

Huxley had, at times, demonstrated sympathy toward the treatment of the poor in English society in that “any social condition in which the development of wealth involves the misery, the physical weakness, and the degradation of the worker, is absolutely and infallibly doomed to collapse.”<sup>599</sup> Curiously, he had even considered the possibility, in private, that socialism could be the result of evolutionary forces. In a letter to W. Platt Ball, Huxley asked, “Have you considered that State Socialism (for which I have little enough love) may be a product of Natural Selection? The societies of Bees and Ants exhibit socialism *in excelsis*.”<sup>600</sup> That he held this thought in private, while publicly

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<sup>597</sup> Thomas Henry Huxley, “Universities: Actual and Ideal,” Published in *Science and Culture and Other Essays* (New York: D. Appleton and Company, 1882), p. 46.

<sup>598</sup> Thomas Henry Huxley “Address to the Anthropological Department of the British Association, Dublin, 1878,” *Nature* 18, 1878, pp. 445-448.

<sup>599</sup> Thomas Henry Huxley, “Technical Education,” 1877. Published in *Science and Education: Essays* (New York: D. Appleton and Company, 1899), pp. 447-8. “Your bayonets and cutlasses will break under your hand, and there will go on accumulating in society a mass of hopeless, physically incompetent, and morally degraded people, who are, as it were, a sort of dynamite which, sooner or later, when its accumulation becomes sufficient and its tension intolerable, will burst the whole fabric.”

<sup>600</sup> Letter from T.H. Huxley to W. Platt Ball, October 27, 1890. In Leonard Huxley, *Life and Letters of Thomas Henry Huxley*, Vol. 2 (New York: D. Appleton and Company, 1900), p. 284. Ball, in his subsequent book *Are the Effects of Use and Disuse Inherited?* wrote: “The selective influences by which our present high level has been reached and maintained may well be modified, but they must not be abandoned or reversed in the rash expectation that State education, or State feeding of children, or State housing of the poor, or any amount of State socialism or public or private

espousing the exact opposite in the late 1880s, suggests that his disavowal of socialism based on Darwinian principles was an act of rhetorical performance.

Huxley's return to political commentary in 1886 was in part triggered by the General Election in January (a plebiscite on William Gladstone's Irish Home Rule), the widespread social unrest that gripped the city, and a Christian polemic that charged him with immorality. On February 8, Huxley was caught in the worst riot London had seen in fifty years as thousands of SDF and United Workmen's Committee supporters overturned buses, smashed windows, and looted shops near Trafalgar Square following an incendiary speech by Henry Hyndman.<sup>601</sup> Huxley couldn't abide the strategy of "fanning the embers of ancient wrong, in setting class against class, and in trying to tear asunder the existing bonds of unity."<sup>602</sup> Soon afterward, Liberal MPs opposed to Irish Home Rule requested Huxley's support in challenging Gladstone's bill and Huxley supplied commentary that was contemptuous of democracy, castigating politicians for slavishly following "the loudest squeakers of the herd." Those opposed to England's colonial rule over Ireland were "too grossly ignorant of the elements of political science" to recognize that this policy was little more than choosing a few "Irish malcontents" over British sovereignty. "[T]his disruption of the Union is nothing but a cowardly wickedness, an act

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philanthropy, will prove permanently satisfactory substitutes. If ruinous deterioration and other more immediate evils, are to be avoided, the race must still be to the swift and the battle to the strong. The healthy Individualism so earnestly championed by Mr. Spencer must be allowed free play." Even though the mechanism Spencer championed was deemed to be wrong, Ball agreed with his conclusions for society. See William Platt Ball, *Are the Effects of Use and Disuse Inherited?* (London: Macmillan and Co., 1890), p. 155.

<sup>601</sup> Piers J. Hale, *Political Descent: Malthus, Mutualism, and the Politics of Evolution in Victorian England* (University of Chicago Press, 2014), p. 210; Adrian Desmond, *Huxley: From Devil's Disciple to Evolution's High Priest* (Reading: Addison Wesley, 1994), p. 548; Lisa Keller, *Triumph of Order: Democracy and Public Space in New York and London* (New York: Columbia University Press, 2010), pp. 105-116.

<sup>602</sup> Thomas Henry Huxley, "Science in the Last Half Century," in *Annual Report of the Board of Regents of the Smithsonian Institution, Part 1* (Smithsonian Institution Board of Regents, 1889), p. 88.

base in itself, and fraught with immeasurable evil.”<sup>603</sup> Finally, to end this tumultuous year, the Catholic barrister and author William Samuel Lilly targeted Huxley as an exemplar of Materialism, a belief system that rejected morality and promoted political disruption. Lilly connected Huxley’s philosophy with that of Spencer’s, French socialists like Hippolyte Taine and Ernest Renan, as well as the German socialists Büchner and Lange.<sup>604</sup> Consequently, this “inglorious liberty of the sons of matter” who sought to create “morality out of the unethical” was further represented by the English radical Frederic Harrison who, in August 1871, had railed against the fall of the Paris Commune by stating “[t]he status quo is impossible. The alternative is Communism or Positivism.”<sup>605</sup> Huxley and Spencer’s scientific philosophy was thus being targeted from two ends; attacked from conservative moralists who claimed that the Darwinian worldview was fundamentally immoral and challenged by leftist radicals who held that the evolution of morality supported a socialist future.

Huxley’s response, first to Lilly and then to proponents of Socialist Darwinism the following year, attempted to forge a third path between these political poles. Huxley responded to Lilly’s charge that he only believed in matter and force by insisting “it seems to me pretty plain that there is a third thing in the universe, to wit, consciousness,” which was not reducible to either physical phenomena.<sup>606</sup> This dualism was to be a radical shift from his earlier position and would place him closer to Alfred Russel Wallace than to Herbert Spencer. Huxley likewise sought another form of dualism to

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<sup>603</sup> Thomas Henry Huxley, “The Home-Rule Bill,” *The Standard*, April 13, 1886, p. 5. This was written some months previously and released to the press once Gladstone introduced his Home Rule Bill on April 8.

<sup>604</sup> William Samuel Lilly, “Materialism and Morality,” *The Fortnightly Review*, 1886, p. 580.

<sup>605</sup> *Ibid.*, pp. 577-8; Frederic Harrison, “The Fall of the Commune,” *The Fortnightly Review* 10, August 1871, p. 155.

<sup>606</sup> Thomas Henry Huxley, “Science and Morals,” *The Fortnightly Review*, 1886, p. 130.

evade the problem of morals, in that “morality lies neither in the adoption of this or that philosophical speculation, or this or that theological creed, but in a real and living belief in that fixed order of nature which sends social disorganisation upon the track of immorality.”<sup>607</sup> In other words, morality should be defined not by what one believes but by whether or not they support the status quo, a position that served the dual purpose of redefining political radicals as immoral by default.

Huxley’s 1888 essay “The Struggle for Existence in Human Society” would recapitulate his 1871 Hobbesian argument while simultaneously undermining the basis for an evolved moral sense.<sup>608</sup> In the following two years he would unleash a series of political essays that targeted land nationalisation,<sup>609</sup> condemned the moral basis for socialism,<sup>610</sup> provided a Darwinian basis for social inequality,<sup>611</sup> supported laissez-faire capitalism,<sup>612</sup> and reified oligarchy<sup>613</sup> all on the foundation of natural law. This unprecedented political advocacy on his part was in direct response to the threat Huxley perceived from socialist activism and the ideological support many radicals found in the principle of natural selection. Just as Spencer did, Huxley felt obligated to reframe his scientific philosophy in order to make Darwinian science more conducive to modern political and social order. Both evolutionary theorists had been placed in a bind between

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<sup>607</sup> Ibid., p. 146.

<sup>608</sup> Thomas Henry Huxley, “The Struggle for Existence in Human Society,” *The Nineteenth Century* 23, 1888, pp. 195-236.

<sup>609</sup> Thomas Henry Huxley, “Mr. Spencer on the Land Question,” *The Times*, November 12, 1889; “The Ownership of the Land,” *The Times*, November 21, 1889.

<sup>610</sup> Thomas Henry Huxley, “Are Men Born Free and Equal?” [exchange of letters with Robert Buchanan] *The Daily Telegraph*, January 27, 29, 30, 1890.

<sup>611</sup> Thomas Henry Huxley, “On the Natural Inequality of Men,” *The Nineteenth Century*, January 1890, pp. 290-335; “Natural Rights and Political Rights,” *The Nineteenth Century*, February 1890, pp. 336-82.

<sup>612</sup> Thomas Henry Huxley, “Capital—The Mother of Labour,” *The Nineteenth Century*, March 1890, pp. 147-87.

<sup>613</sup> Thomas Henry Huxley, “Government: Anarchy or Regimentation,” *The Nineteenth Century*, May 1890, pp. 383-430.

the religious critiques that Darwinism embraced the ethics of immorality while simultaneously staving off the socialist argument that humanity had evolved primarily as social and egalitarian creatures, a reality that laid the foundation for radically transforming society around socialist principles. Ultimately, the fact that Darwinism would appeal most strongly to socialists should not have been a surprise to any of its early advocates. In contrast to Haeckel's later argument that natural selection should best be understood as aristocratic, the revolutionary doctrine that all people share a common origin with nonhuman animals was always going to be a direct challenge to the status quo. No one should have known this better than Haeckel himself who articulated this very idea in his 1868 book *Natürliche Schöpfungsgeschichte*:

That origin must be a very unpleasant truth to members of the ruling and privileged castes in those nations among which there exists an hereditary division of social classes . . . What are those nobles to think of the noble blood which flows in their privileged veins, when they learn that all human embryos, those of nobles as well as commoners, during the first two months of development, are scarcely distinguishable from the tailed embryos of dogs and other mammals?<sup>614</sup>

This equality of origins and evolution based on a bottom-up process had to therefore be challenged in order to defend the status quo.

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<sup>614</sup> Ernst Haeckel, *The History of Creation, of the Development of the Earth and its Inhabitants by the Action of Natural Causes, Vol. 1*. E. Ray Lankester (trans.) (New York: D. Appleton and Company, 1880), p. 295.

## Chapter 4

### Evolution, Mutual Aid, and the Moral Sense in Transnational Context

“[T]he great difficulty for ethical philosophy is to explain the first germs of the ‘ought’ – the appearance of the first whisper of the voice which pronounces that word. If that much has been explained, the accumulated experience of the community and its collective teachings will explain the rest.”

- Peter Kropotkin, “The Morality of Nature,” 1905<sup>615</sup>

In the last decades of the nineteenth century, naturalists, philosophers, and political thinkers regularly employed Darwin’s theory of natural selection as an example of how nature *is* to provide a foundation to their argument for the way human society *ought* to be structured. This violation of the philosophical principle known as Hume’s Guillotine, or the *is-ought* problem, was commonplace and the way that thinkers addressed this problem offers a key insight into how they sought to apply Darwin’s ideas for society, even by Darwin himself. Figures such as Thomas Henry Huxley, Alfred Russel Wallace, and Karl Marx would embrace Darwinism for its scientific value but ultimately denied that it should have any role in modern society (their respective laissez-faire, socialist, and communist ideas for society would be employed despite our nature rather than because of it). Francis Galton, Karl Pearson, August Weismann, and John Maynard Keynes saw eugenics as the principle that ought to be applied based on Darwin’s findings.<sup>616</sup> The Socialist Darwinists emphasized the principles of cooperation and solidarity while the Social Darwinists emphasized competition and individualism.<sup>617</sup> One of the most controversial evolutionary topics, other than the mechanism of how

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<sup>615</sup> Peter Kropotkin, “The Morality of Nature,” *The Nineteenth Century*, March 1905, p. 413.

<sup>616</sup> As will be explored at greater length in Chapter 5.

<sup>617</sup> See Chapters 2 and 3.

species evolved, was the extent to which cooperation and morality were factors of evolution.

Despite Darwin's extensive discussion of this question in *The Descent of Man*, the most detailed presentation about the evolution of cooperation and the moral sense in English would fall to Peter Kropotkin.<sup>618</sup> This chapter will provide the historical context behind Kropotkin's theory of mutual aid by first detailing Darwin's theory for the evolution of the moral sense, the theoretical contributions of naturalists and social theorists on this question between 1871 and 1890, followed by a detailed examination of the processes and evolutionary mechanisms involved in Kropotkin's theory of mutual aid. The original contribution of this analysis is, 1) the transnational comparison of the evolution of the moral sense that demonstrates how Kropotkin's argument was ultimately closest to Darwin's than any of his contemporaries, 2) Kropotkin's unique articulation of *social selection* as an evolutionary mechanism to explain the evolution of within-group cooperative behavior, and 3) in contrast to most contemporary scholarship on this subject, I demonstrate that Kropotkin's theory of mutual aid did not rely on the Lamarckian mechanisms of the direct action of the environment nor the inheritance of acquired characteristics. Kropotkin, like Darwin before him, determined that sympathy was the foundation for social cooperation in both human and nonhuman animals, detailed how natural selection could operate at multiple hierarchical levels to promote the moral sense within groups, and utilized this evolutionary history to make recommendations for the

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<sup>618</sup> Notable contributions in French would be Alfred Espinas' (1877) *Des Societies Animals* and Jean Marie Antoine de Lanessan's (1881) *La Lutte Pour l'Existence et l'Association Pour la Lutte*, and, in German, Ludwig Büchner's (1885) *Liebe und Liebes-Leben in der Thierwelt*. All, however, would be criticised by Kropotkin for their idealized portrayal or lack of scientific rigor.

structure of modern human society. This places Darwin, along with Kropotkin, outside of the Neo-Darwinian orthodoxy that coalesced in the years following his death in 1883.

For Thomas Henry Huxley, the evolution of the human species was a tragedy. After countless prehistoric ages, humans had emerged bearing the mark of their “lowly” origin. “He is a brute, only more intelligent than the other brutes, a blind prey to impulses which as often as not lead him to destruction.”<sup>619</sup> The very idea that evolution could provide a foundation of moral behavior was an “illusion” and, as he argued in his 1893 Romanes Lecture, the cosmic process of evolutionary history had produced an outcome fundamentally opposed to human ethics.<sup>620</sup>

Social progress means the checking of the cosmic process at every step and the substitution for it of another, which may be called the ethical process; the end of which is not the survival of those who happen to be the fittest in respect of the whole of the conditions which exist, but of those who are ethically the best.<sup>621</sup>

It was therefore necessary, not to imitate or run away from the cosmic process of evolution in human society, but to combat it directly. As John Dewey summarized Huxley’s position, “The rule of the cosmic process is struggle and strife. The rule of the ethical process is sympathy and co-operation. . . . Before the ethical tribunal the cosmic process stands condemned.”<sup>622</sup>

It is widely acknowledged that Kropotkin’s series of articles on mutual aid was in direct response to Huxley’s argument in “The Struggle for Existence in Human

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<sup>619</sup> Thomas Henry Huxley, “Agnosticism,” *The Nineteenth Century*, February 1889, p. 191.

<sup>620</sup> Thomas Henry Huxley, “An Apologetic Irenicon,” *The Fortnightly Review*, November 1, 1892, p. 568. “The notion that the doctrine of evolution can furnish a foundation for morals seems to me to be an illusion, which has arisen from the unfortunate ambiguity of the term ‘fittest’ in the formula, ‘survival of the fittest.’ We commonly use ‘fittest’ in a good sense, with an understood connotation of ‘best;’ and ‘best’ we are apt to take in its ethical sense. But the ‘fittest’ which survives is the struggle for existence may be, and often is, the ethically worst.”

<sup>621</sup> Thomas Henry Huxley, “Evolution and Ethics,” in *Evolution & Ethics and Other Essays* (London: Macmillan and Co., 1895), p. 81.

<sup>622</sup> John Dewey, “Evolution and Ethics,” *The Monist* 3(3), April, 1898, p. 323.

Societies.”<sup>623</sup> However, Kropotkin had previously written on similar themes while he served as editor for the Geneva-based anarchist journal *Le Révolté*. Following the death of Charles Darwin, Kropotkin wrote an anonymous obituary that emphasized the English naturalist’s important contributions demonstrating that species evolved according to the principles of natural selection, the struggle for existence, and the direct action of the environment.<sup>624</sup> Kropotkin went on to critique what he saw as attempts by the “bourgeoisie” to utilize Darwin’s argument about the “struggle for existence” as an argument against socialism. In fact, Kropotkin argued, “the facts established by Darwin are absolutely against the theories which the bourgeoisie want to support.”

[I]f Darwin has not said so himself, others, applying his methods and developing his ideas, have proven that the sociable species, where all individuals are in solidarity with one another, are those which prosper, develop, and propagate; while the species that live by brigandage, like the falcon, for example, are in decay around the world. Solidarity and collective labor – that is what unifies the species in their struggle to sustain themselves against the hostile forces of nature and to maintain their existence – this is what science tells us.<sup>625</sup>

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<sup>623</sup> See Daniel P. Todes, *Darwin Without Malthus: The Struggle for Existence in Russian Evolutionary Thought* (Oxford: University of Oxford Press, 1989), p. 131; Mark Borrello, “‘Mutual Aid’ and ‘Animal Dispersion’: An Historical Analysis of Alternatives to Darwin,” *Perspectives in Biology and Medicine* 47(1), 2004: 15-31 (p. 16); Ruth Kinna, “Kropotkin and Huxley,” *Politics* 12(2), 1992: 41-47; Piers J. Hale, “Of Mice and Men: Evolution and the Socialist Utopia. William Morris, H.G. Wells, and George Bernard Shaw,” *Journal of the History of Biology* 43, 2010: 17-66 (p. 22); Matthew S. Adams, “‘Uniformity is Death’: Human Nature, Variety and Conflict in Kropotkin’s Anarchism,” In Paul, J. (ed.) *Governing Diversities: Democracy, Diversity and Human Nature* (Newcastle-Upon-Tyne: Cambridge Scholars, 2012), pp. 150-168. (p. 154); Caroline Cahm, *Kropotkin and the Rise of Revolutionary Anarchism, 1872-1886* (Cambridge: Cambridge University Press, 1989), p. 4; Beth Eddy, “Struggle or Mutual Aid: Jane Addams, Petr Kropotkin, and the Progressive Encounter with Social Darwinism,” *The Pluralist* 5(1), 2010: 21-43 (pp. 25-6); Adam Goodwin, “Evolution and Anarchism in International Relations: The Challenge of Kropotkin’s Biological Ontology,” *Millenium: Journal of International Studies* 39(2), 2010: 417-437 (p. 422).

<sup>624</sup> [Peter Kropotkin], “Charles Darwin,” *Le Révolté*, April 29, 1882, p. 1.

<sup>625</sup> Ibid. “La bourgeoisie a cherché à se faire de la “lutte pour l’existence” un argument contre le socialisme. Cela se comprend: elle fait flèche de tout bois. Mais, — sans entrer dans des développements que le format du Révolté n’admet pas — il suffit de dire que les faits établis par Darwin sont absolument contre les théories que veut soutenir la bourgeoisie. . . D’autre part, si Darwin ne l’a pas dit lui-meme, d’autres, appliquant ses méthode t développant ses idees, ont prouvé que les especes sociables, où tous les individus sont solidaires les uns des autres, sont celles qui prospèrent, se développent, se propagent; tandis que les espèces qui vivent de brigandage, comme le faucon, par exemple, sont en décadence sur toute la surface de notre globe.”

As Daniel Todes identified, Kropotkin's reference to falcons indicates that he was already familiar with the address by Karl Kessler "On the Law of Mutual Aid" given before the St. Petersburg Society of Naturalists on December 28, 1879.<sup>626</sup> Early the following year the title of the talk was accompanied by a summary of comments made in the society's journal by Kropotkin's friend, the zoologist N.A. Severtsov, in which Severtsov remarked that the more cooperative falcon species had greater success than noncooperative species, even though the latter may have been physically superior.<sup>627</sup> Kropotkin later wrote that he did not read the full text of Kessler's address until late 1882 or early 1883 while he was in Clairvaux prison. However, he had previously been collecting material in the hopes of "completely revising the formula" of the struggle for existence in the animal world and its application to human society given that "attempts which had been made by a few socialists in this direction had not satisfied me."<sup>628</sup> Kropotkin had also written along similar lines in May 1882 with his article series "La Loi et l'Autorité" in *Le Révolté*.

Since man does not live in a solitary state, habits and feelings develop within him which are useful for the preservation of society and the propagation of the race. It is not the law that establishes them, they are prior to all laws. . . They are found amongst all animals that live in societies. They are spontaneously developed by the very nature of things, like those habits in animals which men call instinct. They spring from a process of evolution, which is useful, and, indeed, necessary, to keep society together in the struggle it is forced to maintain for existence.<sup>629</sup>

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<sup>626</sup> Todes, *Darwin Without Malthus*, p. 131.

<sup>627</sup> Anonymous, *Труды Санкт-Петербургского Общества Естествоиспытателей* 11, 1880, p. 119.

<sup>628</sup> Peter Kropotkin, *Memoirs of a Revolutionist*, Vol. 2 (London: Smith, Elder & Co., 1899), p. 317.

<sup>629</sup> [Peter Kropotkin], "La Loi et l'Autorité II," *Le Révolté*, May 27, 1882, p. 1. "Puisque l'homme ne vit pas solitaire, il s'elabore en lui des sentiments, des habitudes, utiles à la conservation de la société et à la propagation de la race. Sans les sentiments sociables, sans les pratiques de solidarité, la vie en commun eût été absolument impossible. Ce n'est pas la loi qui les établit: ils sont antérieurs à toutes lois. Ce n'est pas non plus la religion qui les prescrit; ils sont antérieurs à toute religion; ils se retrouvent chez tous les animaux qui vivent en sociétés. Ils se developpent d'eux-mêmes, par la force

The “habits and feelings” Kropotkin referred to would not follow the concept of *Liebe* (love) as it would for Büchner, but the feeling of experiencing another’s pain or pleasure, what Kropotkin referred to as sympathy but would now more accurately be defined as empathy. This is the same foundation that Darwin provided for the evolution of the moral sense and the one application of his scientific theory that both naturalists believed ought to be applied in modern society. While Kropotkin critiqued Darwin (and especially Darwin’s followers) for the emphasis placed on competition and struggle, the mechanism and selection pressures that Kropotkin posited in the evolution of mutual aid were fully consistent within a Darwinian framework and, indeed, closer to the English naturalist’s conception than any other contemporary scholars.

### **Sympathy and the Evolution of Darwin’s Moral Sense**

The first mention Darwin makes of sympathy in his published work comes from his 1871 book *The Descent of Man* where he offered multiple examples of this trait in the behavior of nonhuman primates.<sup>630</sup> From Alfred Brehm’s *Tierleben*, or *Life of Animals* as it was known in England, Darwin drew the example of a young Hamadryas baboon of about six months old who was left behind after the troop fled up a steep cliff to escape Brehm’s greyhounds.<sup>631</sup> However, with the young baboon surrounded by these experienced hunting dogs, one large male baboon (“a true hero,” in Darwin’s estimation)

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même des choses, comme ces habitudes que l'homme a nommé instincts chez les animaux: ils proviennent d'une évolution utile, nécessaire même, pour maintenir la société dans la lutte pour l'existence qu'elle doit soutenir.”

<sup>630</sup> Charles Darwin, *The Descent of Man, and Selection in Relation to Sex*, Vol. 1 (John Murray, London, 1871).

<sup>631</sup> Alfred Brehm, *Brehm’s Life of the Animals*, Vol. 1 (A.N. Marquis & Company, Chicago, 1895).

charged down the rock face to confront the dogs and rescue the youngster.<sup>632</sup> Darwin also cited the example of a young *Cercopithecus* that was seized by an eagle but held tight to a branch to prevent from being carried off. Responding to its cries, other members of the troop “rushed to the rescue,” surrounded the eagle and pulled out so many feathers that the eagle dropped its prey in order to escape.<sup>633</sup> “It must have been sympathy in the cases above given,” Darwin wrote, “which led the baboons and the Cercopithecids to defend their young comrades from the dogs and the eagle.”<sup>634</sup> In one final anecdote, Darwin described a keeper that he met at the Zoological Gardens who showed him “some deep and scarcely healed wounds on the nape of his own neck” that he received from a baboon. However, in the same compartment as the baboon was a small American monkey (of which no species name is offered) that this keeper had befriended. Darwin wrote that this monkey was “dreadfully afraid of the great baboon” but, upon seeing his friend in danger, “rushed to the rescue, and by screams and bites so distracted the baboon that the man was able to escape...running great risk of his life.”<sup>635</sup>

Darwin was clear that he viewed sympathy as distinct from love, either parental or familiar as in the case of a man’s love for his dog and *vice versa*. Citing Adam Smith’s *Theory of Moral Sentiments* and Alexander Bain’s *Mental and Moral Science*, Darwin wrote, “the basis of sympathy lies in our strong retentiveness of former states of pain or pleasure. Hence, ‘the sight of another person enduring hunger, cold, fatigue, revives in us some recollection of these states, which are painful even in idea.’ We are

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<sup>632</sup> Darwin, *The Descent of Man*, p. 76. The story Darwin cites comes from Brehm, *Life of the Animals*, p. 48.

<sup>633</sup> Ibid.

<sup>634</sup> Ibid., p. 78.

<sup>635</sup> Ibid. In the second edition Darwin adds a footnote quoting Scottish philosopher Alexander Bain that “effective aid to a sufferer springs from sympathy proper.” *Mental and Moral Science: A Compendium of Psychology and Ethics* (Longmans, Green, and Co., London, 1868), p. 245; cited in Darwin, *The Descent of Man* (John Murray, London, 1874), p. 103, n. 15.

thus impelled to relieve the sufferings of another, in order that our own painful feelings may be at the same time relieved.”<sup>636</sup> Likewise, Darwin noted, we are able to participate in the pleasures of others through the same process.<sup>637</sup>

This dual understanding of sympathy is something that Darwin had long held as an important part of the moral sense as indicated by his notebook entries. The years 1838 and 1839 contain the only notes on this topic until Darwin published his mature ideas in 1871-2 (it was in 1838 that he conducted the observations he later described in *The Expression of the Emotions in Man and Animals*).<sup>638</sup> These early notes therefore contain important clues on the development of his ideas on sympathy and the evolution of the moral sense. In the first entry of his Notebook M concerning “Metaphysics on Morals and Speculations on Expression,” Darwin emphasized that sympathy can be evoked through both delight and sorrow as well as artistic works such as fine poetry or a particular strain of music. He speculated that, following Edmund Burke,<sup>639</sup> that sympathy must also incorporate the German concept of *schadenfreude*, or what Darwin called “pleasure in beholding the misfortunes of others.”<sup>640</sup> In this way Darwin identified two separate conceptions of sympathy from the very beginning: 1) sharing the felt experience of what another individual feels, or emotional contagion, and 2) taking the perspective of, or mentalizing, another individual’s situation while having a unique emotional experience because of this understanding. In an entry dated August 24, 1838, Darwin noted that he

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<sup>636</sup> Ibid., p. 81. The quoted section comes from Bain, *Mental and Moral Science*, p. 279.

<sup>637</sup> Ibid.

<sup>638</sup> Charles Darwin, *The Expression of the Emotions in Man Animals* (John Murray, London, 1972), p. 19.

<sup>639</sup> Edmund Burke, *Philosophical Inquiry into the Origin of Our Ideas of the Sublime and Beautiful: with an Introductory Discourse Concerning Taste* (London, 1757), Part I, Section XIV, “The Effects of Sympathy in the Distresses of Others.”

<sup>640</sup> Charles Darwin, “Notebook M: Metaphysics on morals and speculations on expression,” p. 58, (undated, written sometime between 22 July and 7 August, 1838).

was reading Dugald Stewart's introduction to Adam Smith's life and writing. According to Smith, Darwin wrote, "we can only know what others think by putting ourselves in their situation, & then we feel like them." However, he ultimately found Smith's concept "unsatisfactory" because, unlike Burke, it does not explain pleasure."<sup>641</sup> He went on to write, on September 6<sup>th</sup>, that "putting ourselves in their situation" could also apply to non-sentient entities where "we may often trace the source of this 'inward glorying' to the greatness of the object itself or to the ideas excited & associated with it."<sup>642</sup> This product of sympathy Darwin associated with the sublime, in which, because of the grandeur of what we contemplate, the "superiority we transfer to ourselves in the same manner as we are acted on by sympathy." The following year, on May 5<sup>th</sup>, 1839, Darwin wrote in another notebook on the moral sense, that he viewed sympathy to be an instinct shared by other social animals and formed the basis for altruistic behavior. "Without regarding their origin, we see in other animals they consist in such active sympathy that the individual forgets itself, & aids & defends & acts for others at its own expense."<sup>643</sup> In this way, Darwin added to emotional contagion and perspective-taking a third category of sympathy that involved prosocial concern for others.

For Darwin, the instinct of sympathy was the single factor upon which he rested the basis of the moral sense. Its evolutionary development, he argued in *The Descent of Man*, involved four important stages that "any animal whatever, endowed with well-marked social instincts, would inevitably acquire."<sup>644</sup> The first is that a social animal would "take pleasure in the society of its fellows" and wish to aid them in certain general

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<sup>641</sup> Ibid., p. 108, (24 August, 1838).

<sup>642</sup> Ibid., p. 19v. (6 September, 1838).

<sup>643</sup> Charles Darwin, "Old & useless notes about the moral sense & some metaphysical points," p. 42, (5 May, 1839).

<sup>644</sup> Darwin, *The Descent of Man*, pp. 71-3.

ways. However, these services would not be extended to every individual of their species indiscriminately, but “only to those of the same association,” or group. Secondly, once the mental faculties of a given species had become highly developed, “images of all past actions and motives would be incessantly passing through the brain of each individual.” This would leave the animal with a “feeling of dissatisfaction” if they had yielded to a temporary selfish desire rather than to the “enduring and always present social instinct.” This would be the early formation of what we call conscience. Thirdly, once the ability to communicate through language had developed and the wishes of community members could be made known, “the common opinion how each member ought to act for the public good, would naturally become to a large extent the guide to action.” In other words, gossip, or what he referred to as “public opinion” would motivate individuals to act for the good of the community, “the power of which rests on instinctive sympathy.” Finally, “habit” would play an important part in guiding each individual’s behavior and would ultimately promote “obedience to the wishes and judgment of the community.” Darwin’s use of the term habit, of which more will be discussed below, involved both the individual level of behaviors that follow a regular tendency or practice, as well as at the group level involving cultural norms.

While Darwin identified three categories of affective sympathy: sharing the felt experience of another (or emotional contagion), perspective-taking (or mentalizing the situation of another), and prosocial concern that would promote ending another’s pain as a means of ending our own, he predicted there would be associated expressions that communicated these affective states. Darwin offered several observations of nonverbal expressions of sympathy, the most striking for him being the occurrence of tears for the

sorrow or joy of another individual that resulted in stereotypical muscle contractions in many human populations around the world.<sup>645</sup>



Figure 4.1. Six examples of children crying. Cited by Darwin from photographs by Mr. Rejlander, of Victoria Street, London, and Herr Kindermann, of Hamburg.<sup>646</sup>

He noted that his observation of multiple species of monkeys, chimpanzees, and orangutans showed that they regularly utilized similar facial muscles when screaming or frowning, such as the contraction of the corrugators that allowed the eyebrows to be lowered and brought together. Likewise, gorillas lowered their under lip and dilated their nostrils when emitting loud yells in a similar fashion as humans. However, Darwin wrote that no evidence could be found of any nonhuman primates producing tears and he argued that human-specific eye muscle contractions triggered the activation of the lachrymal gland and the secretion of tears. Likewise, laughter was commonly observed in

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<sup>645</sup> Darwin cited examples of indigenous New Zealand women who cry “in the most affecting manner,” a chief who “cried like a child because the sailors spoil his favourite cloak by powering it with flour,” a Tierra del Fuego native who had lost a brother “and who alternately cried with hysterical violence, and laughed heartily at anything which amused him,” and Sandwich Islanders for whom “tears are actually recognized as a sign of happiness.” *Ibid.*, pp. 155-6; 175.

<sup>646</sup> Charles Darwin, *Expression of Emotions in Man and Animals*, p. 149, Plate I.

groups of children and anthropoid apes, the latter of whom “utter a reiterated sound, corresponding with our laughter,” but only in humans would laughter extend to the point of tears.<sup>647</sup> That weeping as well as laughter was most common in children when around others, with marked tendencies for emotional contagion when many children begin laughing or crying once one child starts, led Darwin to hypothesize that such expressions were largely communicative aspects of sympathy.<sup>648</sup> “The movements of expression in the face and body, whatever their origin may have been, are in themselves of much importance for our welfare. [...] They reveal the thoughts and intentions of others more truly than do words, which may be falsified,” or, in nonhuman animals, absent.<sup>649</sup>

While Darwin himself did few experiments he nevertheless generated testable predictions that followed from his theoretical argument. In *Expression of the Emotions in Man and Animals* (1872) he stated that his conclusions could be empirically verified by determining whether the same principle by which one expression could be explained was applicable in other allied cases and whether these principles applied equally “both to man and the lower animals.” One such principle was that the affective states of sympathy had been gradually acquired until they became instinctive, and Darwin predicted that their expression would likewise have become instinctive (in much the same way that a sexually selected trait and the attraction that same trait had among the opposite sex were linked).<sup>650</sup> The underlying framework of Darwin’s theory for the evolution of sympathy was that both the feeling and the expression had developed in synchrony, each promoting the other in a communicative-affective feedback loop. As such, independently of the will,

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<sup>647</sup> Ibid., p. 201; 217-8.

<sup>648</sup> Ibid., pp. 175-7; 190-7; 217-9.

<sup>649</sup> Ibid., pp. 365-6.

<sup>650</sup> Ibid., pp. 358-9.

Darwin hypothesized that expressions representing powerful emotions would often mean that “nerve-force is generated and set free whenever the cerebro-spinal system is excited” in another individual witnessing the movements associated with this strong affective state.<sup>651</sup> In other words, the perspective taking that occurred when witnessing the expression of a strong affective state triggered emotional contagion as the observer’s nervous system would respond to recreate the felt experience of another, and, in many cases, prosocial concern was the result. “We readily perceive sympathy in others by their expression; our sufferings are thus mitigated and our pleasures increased; and mutual good feeling is thus strengthened.”<sup>652</sup>

In this way, sympathy was the key instinct that Darwin utilized to understand, not just the basis of the moral sense, but the origin and future of human society. Once sympathy emerged during the course of evolution it was a trait acted upon by natural selection to become a hereditary instinct, much like the emotion of fear; but how powerfully it was felt depended on the strength of the association and the force of habit. The selection pressure on “instinctive sympathy” was still the environment, but it wasn’t the physical environment that would direct adaptations in anatomical evolution; the social environment provided its own selection pressures on individual behavior, traits that were further mediated by the local culture. The same can be said for Darwin’s concept of sexual selection, a factor that he spent significantly more time discussing in *The Descent of Man* and which is considered that book’s signature contribution. However, while sexual selection sought to explain the anatomical differences between males and females, the mechanism was parallel to that of natural selection because both operated at the level

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<sup>651</sup> Ibid., p. 349.

<sup>652</sup> Ibid., pp. 365-6.

of individuals. Darwin's argument for instinctive sympathy, however, offered a significantly different approach because it was here that Darwin embraced a mechanism of evolution championed by Jean-Baptiste Lamarck and coupled it with selection at the group level in order to explain the evolution of human moral behavior.

Darwin had first introduced the idea that there could be hierarchies of selection in *On the Origin of Species* as an explanation for the biological altruism displayed by the eusocial *Hymenoptera* (ants, bees, and wasps). Of course, the central premise of Darwin's theory of natural selection was that all characteristics of a species – whether physical, like the elaborate antlers of an Irish Elk, or behavioral, like the formation of a V-shaped flock in migratory geese – were traits that had evolved through successive, slight modifications passed down over many generations. Because these modifications would only be passed on if they were beneficial, any trait that brought harm to their possessor would ultimately be discarded. “Natural selection will never produce in a being anything injurious to itself, for natural selection acts solely by and for the good of each.”<sup>653</sup> Therefore, any characteristic that violated this premise “would be absolutely fatal to my theory.” However, the eusocial *Hymenoptera* presented a “special difficulty” that demanded explanation. Not only did individuals sacrifice themselves for the group, such as bee stings in which an individual died in defense of the colony, but the vast majority of group members had also given up reproduction altogether.

Darwin's solution to the problem was what he referred to as “community selection,” or what today is called group or multilevel selection, in which certain traits are selected because they are advantageous at the individual level while others are

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<sup>653</sup> Darwin, *Origin of Species*, p. 201. The quote would change slightly in the sixth, and final, edition in 1872 to read “Natural selection will never produce in a being *any structure more injurious than beneficial to that being*, for natural selection acts solely by and for the good of each.” (pp. 162-3).

advantageous at the family or group level. In both cases, the trait would be selected because it allowed more offspring to be born who also carried that particular trait. Darwin was vague in *On the Origin of Species* as to how the different hierarchies of selection interacted or what factors could account for the evolution of some traits at the individual level while others were only at the group level. However, it is clear that in the use of higher levels of selection as an explanation for biological altruism, Darwin was still utilizing the mechanism of natural selection based in individual reproductive success. As he concluded, “we can perhaps understand how it is that the use of the sting should so often cause the insect’s own death: for if on the whole the power of stinging be useful to the community, it will fulfill all the requirements of natural selection, though it may cause the death of some few members.” In other words, if proportionately more individuals survived when they had a given trait than died because of it, natural selection could be understood as the primary mechanism. In this unique situation of eusociality, in which only queens reproduced while the vast majority of female workers remained sterile, individuals could retain a trait “injurious to itself” because queens ultimately had higher reproductive success as a result.<sup>654</sup>

While group selection was used to explain the “special difficulty” of biological altruism, the same concept would be used to explain the origin of instinctive sympathy but with the addition of a Lamarckian mechanism. As Darwin wrote in *The Descent of Man*, “sympathy, is, like any other instinct, greatly strengthened by habit.”<sup>655</sup> While this initial statement could be interpreted as little more than an acknowledgement of

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<sup>654</sup> Ironically, Darwin saw the persistence of sterility in *Hymenoptera* females other than the queen as a refutation of Lamarck. “I am surprised that no one has advanced this demonstrative case of neuter insects, against the well-known doctrine of Lamarck.” Darwin, *Origins of Species*, p. 242.

<sup>655</sup> Darwin, *The Descent of Man*, p. 82.

behavioral plasticity, it is clear that Darwin was introducing a quite different mechanism of evolutionary change once he expanded his argument. Noting that he likely overestimated the importance of natural selection in his previous book, Darwin explained that his two chief aims had been merely to show that, first, species were not separately created, and second, that natural selection was the primary mechanism of change, “though largely aided by the inherited effects of habit, and slightly by the direct action of the surrounding conditions.”<sup>656</sup> These two mechanisms, central to the Lamarckian inheritance of acquired characteristics, were necessary to emphasize because of “the paramount importance” of the social instincts and how they were acquired, “namely, through natural selection, aided by inherited habit.”<sup>657</sup> Because behavioral habits that are followed over many generations “probably tend to be inherited,” Darwin concluded that there “is not the least inherent improbability, as it seems to me, in virtuous tendencies being more or less strongly inherited.”<sup>658</sup> In this way, Darwin made little distinction between the horizontal transmission of cultural behavior and the vertical transmission of hereditary instincts.

Darwin briefly considered that the selfish motivation for reciprocity, along with experience and imitation, could be the reason for an enhancement of instinctive sympathy.<sup>659</sup> However, he argued that the primary mechanism would have been

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<sup>656</sup> Ibid., p. 152-3.

<sup>657</sup> Ibid., p. 162.

<sup>658</sup> Ibid., p. 164; p. 102. Darwin also noted, “Whether the several foregoing modifications would become hereditary, if the same habits of life were followed during many generations, is not known, but is probable.” Ibid., p. 117. In *Expression of the Emotions in Man and Animals* there are many similar statements, e.g., “Actions, which are at first voluntary, soon became habitual, and at last hereditary, and may then be performed even in opposition to the will.” Darwin, *Expression of the Emotions*, p. 357.

<sup>659</sup> Darwin, *Descent of Man*, p. 82. Also where he wrote, “The moral sense is fundamentally identical with the social instincts; and in the case of the lower animals it would be absurd to speak of these instincts as having been developed from selfishness.” Darwin, *Descent of Man*, pp. 97-8.

unconscious in the same way it was for altruism among the *Hymenoptera*. Darwin reasoned that the “ape-like progenitors of man” would have felt sympathy for others in the same way all social species do: they “would have felt uneasy when separated from their comrades... would have warned each other of danger, and have given mutual aid in attack or defence.”<sup>660</sup> With strictly social animals, Darwin argued, natural selection can act indirectly on the individual by preserving variations that are only beneficial to the community as a whole. Instinctive sympathy would therefore have increased because “those communities, which included the greatest number of the most sympathetic members, would flourish best and rear the greatest number of offspring.”<sup>661</sup> However, Darwin consistently stated that instinctive sympathy was geared primarily toward the in-group. Consequently, when two tribes of primeval humans came into competition, the one whose members “were always ready to give aid to each other and to sacrifice themselves for the common good, would be victorious over most other tribes; and this would be natural selection.”<sup>662</sup> As a result of this group selection in action, “the social and moral qualities would tend slowly to advance and be diffused throughout the world.”<sup>663</sup>

It was through this mechanism of Lamarckian group selection, or what might more appropriately be called cultural group selection, that Darwin explained the origin of civilization and also based his argument against racism and eugenics.<sup>664</sup> As small tribes were united into larger communities, each individual began to apply their instinctive

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<sup>660</sup> Ibid., pp. 161-2.

<sup>661</sup> Ibid., p. 82.

<sup>662</sup> Ibid., p. 166.

<sup>663</sup> Ibid., p. 163.

<sup>664</sup> I borrow the term cultural group selection from Robert Boyd and Peter Richerson. See *Culture and the Evolutionary Process* (Chicago: University of Chicago Press, 1985); also Soltis, J., Boyd, R., Richerson, P.J., “Can group-functional behaviours evolve by cultural group selection? An empirical test,” *Current Anthropology* 36 (3), pp. 473–494.

sympathy toward larger groups, and eventually to all members of the same nation. “This point being once reached, there is only an artificial barrier to prevent his sympathies extending to the men of all nations and races” (although he noted that, if these other groups have large differences in appearance or habits, “experience unfortunately shews us how long it is before we look at them as our fellow-creatures”).<sup>665</sup>

Looking to future generations, there is no cause to fear that the social instincts will grow weaker, and we may expect that virtuous habits will grow stronger, becoming perhaps fixed by inheritance. In this case the struggle between our higher and lower impulses will be less severe, and virtue will be triumphant.<sup>666</sup>

It may not be a coincidence that Darwin published these ideas just six years after the American Civil War. As his correspondence with Asa Gray during the conflict clearly demonstrated, Darwin had an intense hatred of slavery and his sympathies for a Northern victory were tied to his vision of moral progress. As he wrote to Gray on June 5, 1861, “Some few, & I am one, even wish to God, though at the loss of millions of lives, that the North would proclaim a crusade against Slavery. In the long run, a million horrid deaths would be amply repaid in the cause of humanity. . . Great God how I shd like to see that greatest curse on Earth Slavery abolished.”<sup>667</sup>

In the same way that sympathy would expand to other races and nations, this instinct would also extend outwards “to the imbecile, the maimed, and useless members of society,”<sup>668</sup> for whom Darwin said we build asylums, institute poor-laws, establish hospitals, and provide vaccines. Darwin noted that this certainly would allow the weak members of society to propagate and, comparing the situation to animal breeding for

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<sup>665</sup> Ibid., pp. 100-1.

<sup>666</sup> Ibid., p. 125.

<sup>667</sup> Charles Darwin, Correspondence 9:163.

<sup>668</sup> Darwin, *Descent of Man*, p. 103.

which he was intimately familiar, “must be highly injurious to the race of man [for] hardly any one is so ignorant as to allow his worst animals to breed.”<sup>669</sup> However, Darwin ultimately fell back on humanity’s advanced instinct of sympathy to conclude that we must reject eugenics and ought to offer aid to the helpless. We could not “check our sympathy, if so urged by hard reason without deterioration in the noblest part of our nature.”<sup>670</sup> This was the basis of human compassion, and Darwin concluded that, ultimately, “from the power of the imagination and of sympathy we put ourselves in the position of the sufferer.”<sup>671</sup>

### **Sympathy and the Foundation of Mutual Aid**

Kropotkin’s primary focus in the three articles on nonhuman animals in his mutual aid series was establishing the ubiquity and persistence of cooperative behavior within groups of the same species. Other than Darwin, the only English naturalist to have touched on this subject was the Canadian-born evolutionary biologist George Romanes whose books *Animal Intelligence* (1882), *Mental Evolution in Animals* (1883), and *Mental Evolution in Man* (1888) were praised by Kropotkin since “none of the immediate followers of Darwin ventured to further develop his ethical philosophy.”<sup>672</sup> It was unfortunate, Kropotkin felt, that Romanes’ early death prevented him from expanding on

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<sup>669</sup> Ibid., p. 168.

<sup>670</sup> Ibid., pp. 168-9.

<sup>671</sup> Darwin, *Expression of the Emotions*, p. 305.

<sup>672</sup> Kropotkin, “The Morality of Nature,” p. 418. The full quote is as follows: “As already said, none of the immediate followers of Darwin ventured to further develop his ethical philosophy. George Romanes probably would have made an exception, because he proposed, after he had studied animal intelligence, to discuss animal ethics and the probable genesis of the moral sense; for which purpose he was already collecting the materials. Unfortunately, we lost him before he had sufficiently advanced in his work.”

the work he had ventured to explore in these books.<sup>673</sup> Given how pervasive the assumption of competition was as the sole factor of evolution, Kropotkin believed that it was necessary to correct the record by documenting the great extent to which animals engaged in cooperation and mutual aid.

Following Darwin's inductive method of presenting a litany of examples from the natural world and building up toward his conclusion, Kropotkin's first two articles written in 1890 were primarily composed of the numerous examples of cooperative associations observed among insects – especially the eusocial *Hymenoptera* – followed by those found in birds and mammals. Kropotkin distinguished between the “physiological structure” of mutual aid in ants or bees and the “voluntary” or “conscious” mutual aid found in many species of birds or mammals.<sup>674</sup> In the former, natural selection had weeded out those individuals that failed to engage in cooperative interactions with the colony or hive while, in the latter, natural selection promoted sympathetic feelings that encouraged individuals to choose mutual aid over selfish motivations. For example, Kropotkin argued that birds possessing traits that promoted “conscious mutual help” and “tenderer feelings” were preferentially selected. Kropotkin cited the work of Severtsov in which he documented that white-tailed eagles (*Haliaeetus albicilla*) would signal others when an individual had located prey and, subsequently, group members would take turns keeping watch while others were eating the kill.<sup>675</sup> Likewise, citing the work of Maximilian Perty, South American pelicans would capture fish in two large groups moving in toward each other, “just as if two parties of men dragging two long nets should

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<sup>673</sup> Romanes work in the early 1890s focused on preserving Darwin's original theory from the influence of what he termed the “Neo-Darwinists,” most notably those under the sway of German evolutionary biologist August Weismann.

<sup>674</sup> Peter Kropotkin, “Mutual Aid Among Animals II,” *The Nineteenth Century*, November 1890, p. 710.

<sup>675</sup> *Ibid.*

advance to capture all fish taken between the nets when both parties come to meet.”<sup>676</sup>

Cranes and parrots, other than short periods searching for food, would choose to spend most of their time engaged in “society life” and, as a result, were largely free from predators. This allowed them a long life and, contrary to the expectations of Malthusian multiplication, each female would only have a few offspring during their lifetimes. The importance of this social environment was such that it enabled the birds “to attain that very high level of almost human intelligence and almost human feelings which we know in them.”<sup>677</sup> These feelings – traits that had evolved as a result of new selection pressures within the social environment – promoted mutual defense and “reconnoitring” parties that would alert others once food was discovered. These feelings would also promote close bonds of “mutual friendship” among conspecifics in which the accidental death of one could sometimes lead to “the death from grief and sorrow of the other friend.”<sup>678</sup>

According to Kropotkin, as social complexity increased so too did the range of sympathetic behaviors which, in turn, promoted the development of complex social intelligence.

In mammals, from rodents to elephants to primates, Kropotkin emphasized the role of sympathy as the foundation of the social instincts and what had led to the persistence of mutual aid in the class of animals including humans. It was in mammals that Kropotkin argued the social instincts had reached their highest point with, for example, the common existence of play behavior and a preference for social life that would seem to have no utility if there were not a clear benefit to the individuals maintaining these bonds. “As to the young birds and mammals whom we continually see

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<sup>676</sup> Peter Kropotkin, “Mutual Aid Among Animals,” *The Nineteenth Century*, September 1890, p. 350.

<sup>677</sup> *Ibid.*, p. 353.

<sup>678</sup> *Ibid.*

associating, sympathy – not love – attains a further development in their associations.”<sup>679</sup>

But it was to the monkeys and apes, the animals that “most approach man by their structure and intelligence,” that Kropotkin saw the clearest evidence that mutual aid had been critical in human evolution. Most primates had been found to be highly social – the only exceptions were the nocturnal insectivores and orangutans that Alfred Russel Wallace had only ever seen individually or in small groups. Kropotkin cited Humboldt’s observations that many primate species often protect one another and “display the greatest solicitude for their wounded.”<sup>680</sup> Like J.G. Wood’s narrative of a weasel carrying away its wounded comrade or Darwin’s observation of a blind pelican that had been fed by other members of its group, Kropotkin assured his readers that many field zoologists mentioned similar “facts of compassion with wounded comrades,” particularly among the primates.<sup>681</sup>

Compassion is a necessary outcome of social life. But compassion also means a considerable advance in general intelligence and sensibility. It is the first step towards the development of higher moral sentiments. It is, in its turn, a powerful factor of further evolution.<sup>682</sup>

Following a line of thought nearly identical to that of Darwin, Kropotkin argued that the evolution of sympathetic feelings was a prerequisite for living in social groups. These social groups subsequently provided the stimulus for individuals to develop even more complex social feelings that could be passed on both vertically by heredity as well as horizontally through shared habits, or culture.

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<sup>679</sup> Kropotkin, “Mutual Aid Among Animals II,” p. 712.

<sup>680</sup> *Ibid.*, p. 709.

<sup>681</sup> John George Wood, *Man and Beast: Here and Hereafter* (New York: Harper & Brothers, 1875), p. 107; Charles Darwin, *The Descent of Man* (London: John Murray, 1871), p. 77. Darwin’s example of the pelican was the reproduction of an observation by Captain Sansbury quoted in Lewis Henry Morgan’s, *The American Beaver* (Philadelphia: J.B. Lippincott & Company, 1868), p. 272.

<sup>682</sup> Kropotkin, “Mutual Aid Among Animals II,” p. 712.

[L]ife in societies would be utterly impossible without a corresponding development of social feelings, and, especially, of a certain collective sense of justice growing to become a habit. . . And feelings of justice develop, more or less, with all gregarious animals.<sup>683</sup>

For Kropotkin, the origin and foundation of the social instincts was based on sympathy, just as it had been for Darwin. “[S]ympathy being understood here in its proper sense – not as a feeling of commiseration or love, but as a ‘fellow-feeling’ or ‘mutual sensibility’; the fact of being influenced by another’s feelings.”<sup>684</sup>

However, given the central role that the social instincts played in Darwin’s theory of morality, Kropotkin did not think he pursued the subject with the seriousness it deserved.<sup>685</sup> This was particularly the case since a great deal of additional information on the subject had been published after the 1871 publication of *Descent of Man*. This material had many additional examples of cooperative behavior among nonhuman animals but had not been examined in much detail, especially by English naturalists. Kropotkin ultimately disagreed with much of what these theorists wrote in terms of the mechanism to explain how mutual aid had evolved but, when included with Darwin’s theory and viewed through the lens of natural selection, it established mutual aid as a serious area of research that presented a direct challenge to the Neo-Darwinian interpretation.

### **Social Instincts and Evolutionary Mechanisms in Transnational Context**

Kropotkin presented his analysis of mutual aid firmly within a Darwinian framework and as a continuation of prior work that had been published in the German,

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<sup>683</sup> Ibid., p. 711.

<sup>684</sup> Kropotkin, “The Morality of Nature,” p. 408.

<sup>685</sup> Ibid., p. 409.

French, and Russian scholarly literature. He emphasized the publications by German-Swiss entomologist Maximilian Perty, Belgian naturalist Jean-Charles Houzeau, German physiologist and philosopher Ludwig Büchner, French sociologist Alfred Espinas, Russian zoologist Karl Kessler, as well as the French naturalist and politician Jean-Louis de Lanessan which, when viewed together, provided a collective *précis* that demonstrated how the concept of mutual aid had been “in the air.”<sup>686</sup> It is unclear to what extent Kropotkin was familiar with the wider Socialist Darwinian literature of the radical diaspora, however, of the figures he mentioned, Büchner, Espinas, and Lanessan would all justify their socialist politics on the foundation of natural history.<sup>687</sup>

Other than the Russian Darwinian naturalist Karl Kessler, all of the authors Kropotkin cited offered a range of mechanisms to explain the evolution of cooperation, with most rejecting natural selection altogether. For example, German entomologist Maximilian Perty’s 1865 *Über das Seelenleben der Thiere* (On the Mental Life of Animals) documented a wide variety of interactions within species involving cooperative “social relations” (*geselligen Verhältnisse*) but argued that, despite what Darwin’s enthusiastic supporters might wish, the “research in this field is far too limited and uncomprehensive” to support natural selection as the explanation. Perty believed that the development of cooperative instincts was less a gradual evolution and more associated with rapid periods of punctuated change “with the trait and disasters of different periods

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<sup>686</sup> Kropotkin, “Mutual Aid Among Animals,” p. 340, n. 1. The works cited included Perty’s *Ueber das Seelenleben der Thiere* (Leipzig, 1865), Houzeau’s *Les Facultés Mentales des Animaux* (Brussels: Henri Manceaux, 1872), Büchner’s *Aus dem Geistesleben der Thiere* (1877) and *Liebe und Liebes-Leben in der Thiervelt* (1885), Espinas’ *Les Sociétés Animales* (Paris, 1877), Kessler’s “On the Law of Mutual Aid” (1881), and Lanessan’s *La Lutte Pour l’Existence et l’Association Pour la Lutte* (Paris, 1882).

<sup>687</sup> Other than his critique of how this material was handled by “a few socialists,” of whom he only identified Espinas and Büchner by name. However, the Socialist Darwinian literature primarily cited these three figures when drawing examples of cooperative behavior in the natural world. For a discussion of Socialist Darwinism see Chapters 2 and 3.

closely linked.”<sup>688</sup> Likewise, Jean-Charles Houzeau’s 1872 book *Etudes sur les Facultes Mentales des Animaux Comparees a Celles de l’Homme* (Research on the Mental Faculties of Animals Compared to Man) offered a wealth of observations concerning sociability in nonhuman animals and how they compared with human society but did not explore the mechanism of evolutionary change. For example, when describing how the teeth or intestines of a given species were so well-adapted to their particular diet, Perty noted that “[w]hether the function determines the trait or the trait imposes its character on the function, it is not our responsibility to address.”<sup>689</sup> In reviewing his book, Alfred Russel Wallace concluded that “the author is not an evolutionist” because Perty did not specify whether new animal species were coming into existence or whether humans originated from a non-animal ancestor.<sup>690</sup> However, this was not entirely accurate since Houzeau took it for granted that changing an animal’s diet would slowly modify the affected trait and that “this modification can lead, with the help of time, to significant transformations in structure.”<sup>691</sup>

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<sup>688</sup> Maximilian Perty, *Über das Seelenleben der Thiere* (Leipzig: C.F. Winter'sche Verlagshandlung, 1865), pp. 102-3. “Die Frage über die Veränderlichkeit der Instinkte hängt mit der über die Umwandlung der Artcharaktere zusammen, aber die Untersuchungen auf diesem Gebiete sind noch viel zu wenig zahlreich und umfassend, als daß jetzt schon eine Entscheidung über diese Punkte und über die Haltbarkeit der ganzen Theorie Darwin's möglich wäre, so sehr dies auch die enthusiastischen Anhänger derselben wünschen. So viel scheint mir aber schon jetzt wahrscheinlich zu sein, daß Veränderungen der organischen Schöpfung in den verschiedenen Erdperioden viel weniger in einer allmäligen Abweichung der Formen durch natürliche Züchtung im Sinne Darwin's, als vielmehr in tiefgreifenden raschen, mit dem Charakter und den Katastrophen der verschiedenen Perioden eng verketteten Metamorphosen begründet sind.”

<sup>689</sup> Jean-Charles Houzeau, *Etudes sur les Facultes Mentales des Animaux Comparees a Celles de l’Homme* (Brussels: Henri Manceaux, 1872), p. 61. “Si la fonction détermine l'organe, ou si l'organe impose son caractère à la fonction, c'est une question qui n'est nullement de notre ressort.”

<sup>690</sup> Alfred Russel Wallace, “Houzeau on the Faculties of Man and Animals,” *Nature* 6, Oct. 10, 1872, p. 471. This characterization may have been unfair. Houzeau was certainly an evolutionist. He cited Darwin’s *Origin* multiple times but did not endorse his mechanism of natural selection.

<sup>691</sup> Houzeau, *Etudes sur les Facultes Mentales des Animaux Comparees a Celles de l’Homme*, p. 62. “Que les organes varient lentement, quand la nourriture habituelle est changée, on ne peut le contester un instant. Cest un fait général que, dans l'organisme, les pièces qui font le plus d'exercice vont en se développant, tandis que les pièces dont l'animal cesse de se servir, s'affaiblissent et s'atrophient.”

Alfred Espinas' 1877 *Des Sociétés Animales* offered the most detailed accounting of cooperative associations in nonhuman animals of any of the sources Kropotkin cited, and Kropotkin wrote that it "contains all that has been written since upon mutual aid, and many good things besides."<sup>692</sup> However, while Kropotkin drew heavily from the observations Espinas included about animal organizations, he differed significantly in the evolutionary mechanism to explain them. Espinas argued that association was an integral developmental force that extended from the simplest animals to the most complex. He adopted a Spencerian interpretation in which society was to be viewed as an organism but, in addition, held that each organism with its interconnected components was itself a society. Interdependence was therefore an innate feature of the natural world that, in simple organisms was utilized for survival, while in more complex animals manifested as instinctive sympathy as a result of association with other members of their group. "Between primitive dispersion and normal competition, sympathy seems to us to offer an indispensable intermediary."<sup>693</sup> This principle, Espinas noted, was one "often invoked by Darwin," though he misinterpreted natural selection as being a principle selecting traits only when they were "advantageous to the species" rather than to the individual as Darwin had emphasized.<sup>694</sup> Further, Espinas treated the biology of cooperative behavior

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Cette modification peut conduire, avec l'aide du temps, à des transformations notables de structure, dont la limite n'est pas bien assignée jusqu'à présent."

<sup>692</sup> Kropotkin, "Mutual Aid Among Animals," p. 340, n. 1.

<sup>693</sup> Alfred Espinas, *Des Sociétés Animales*, 2<sup>nd</sup> Edition (Paris: Librairie Germer Bailliere et C<sup>ie</sup>, 1878), p. 471. "Entre la dispersion primitive et le concours normal, la sympathie nous semble offrir un intermédiaire indispensable."

<sup>694</sup> Ibid., p. 471. "C'est un principe très juste que celui si souvent invoqué par Darwin que nul être ne revêt un attribut nouveau si ce n'est un attribut avantageux à l'espèce." Espinas may be forgiven, however, given that the French translation of *On the Origin of Species* was sometimes unclear on this question. For example, in one passage it reads "On en peut inférer qu'il est avantageux à une espèce végétale que les étamines et les pistils soient portés par des fleurs, ou mieux encore, par des individus distincts." (It may be inferred that it is advantageous to a plant species that the stamens and pistils be carried by flowers, or better still, by distinct individuals.) Another passage reads "Une somme extraordinaire de modifications implique une variabilité considérable, inusitée et de longue

as a top-down process, stating that social insects operated through a “collective individuality” (*individualité collective*).<sup>695</sup> Collective behavior was explained as the queen imprinting each of the workers with her psychological directives that resulted in their unconscious obedience. In this Spencerian organicist sociology, Espinas saw society itself as the unit of existence while the individual was largely an illusion. In the case of single cells, polyps, or social insects, this physiological framework operated in the interests of society as a whole without consideration of the individual. Similar hierarchically derived collective behavior was explained in horses, monkeys, and humans that, for Espinas, justified the formation of a socialist state that should be run by elites. In these “higher” animals, Espinas argued that specific leaders would play the role of the queen bee – whether it was a herd of horses following an alpha or a troop of chimpanzees demonstrating obedience to the dominant male. Human society operated in similar fashion and it was therefore necessary for people to obey their superiors in the interest of

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durée, dont les effets avantageux se sont accumulés par sélection naturelle pour le bénéfice de l'espèce.” (An extraordinary amount of modification implies considerable, unusual and long-lasting variability, the beneficial effects of which have accumulated by natural selection for the benefit of the species.) See Charles Darwin, *De l'Origine des Espèces ou des Lois du Progrès Chez les Êtres Organisés*. Translated and with preface and notes by Mlle Clémence-Auguste Royer. (Paris: Guillaumin et Cie., 1862), p. 132 & p. 221. This was only partially a problem of Clemence Royer's translation. While the same passages appear very differently in the 1873 translation by Jean-Jacques Moulinié, a different passage is written that conveys the same impression. “Nous sommes, dans la plupart des cas, trop ignorants de l'importance que tel ou tel point de l'organisation peut avoir sur la prospérité d'une espèce, pour affirmer que ses modifications n'ont pas pu être lentement accumulées par la sélection naturelle. Mais nous pouvons croire avec confiance que bien des modifications, dues entièrement aux lois ordinaires de la croissance, et n'ayant d'abord rien de particulièrement avantageux pour une espèce, se sont ultérieurement trouvées utiles à ses descendants, encore plus modifiés.” (We are, in most cases, too ignorant of the importance that this or that point of the organization can have on the prosperity of a species, to affirm that its modifications could not be slowly accumulated by natural selection. But we can confidently believe that many modifications, due entirely to the ordinary laws of growth, and having at first nothing particularly advantageous for a species, have later found themselves useful to his descendants, even more modified.) See Charles Darwin, *L'Origine des Espèces au Moyen de la Sélection Naturelle, ou La Lutte Pour l'Existence dans la Nature*. Traduit sur l'invitation et avec l'autorisation de l'auteur sur les cinquième et sixième éditions anglaises. Augmentées d'un nouveau chapitre et de nombreuses notes et additions de l'auteur, par J.-J. Moulinié. (Paris: C.Reinwald et Cie, 1873), p. 225.

<sup>695</sup> Espinas, *Des Sociétés Animales*, p. 350-1.

national unity. Despite receiving an enthusiastic reception in France and Germany (where his concept of collective identity was of great interest to Nietzsche),<sup>696</sup> Espinas' work was not often cited by English naturalists before the First World War.<sup>697</sup> A rare exception was George Romanes who referenced Espinas' description of coordinated planning among ants (a citation that had been recommended by Darwin).<sup>698</sup> In one of the only English reviews of the book, in the journal *Mind: A Quarterly Review of Psychology and Philosophy*, the reviewer praised Espinas for his thoroughness in cataloguing an enormous compendium of observations by other naturalists but did not go into much depth about Espinas' theoretical perspective.<sup>699</sup>

In contrast to the earlier examples, Jean-Louis de Lanessan's 1881 address "La Lutte Pour L'Existence et L'Association Pour La Lutte" (The Struggle for Existence and Association for the Struggle) was a mixture of natural selection and the direct action of the environment as the primary mechanisms of cooperative behavior. Further, Lanessan presented a clear articulation of group selection in his emphasis that natural selection led to the evolution of cooperative associations, both accidentally in the case of plants, and

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<sup>696</sup> Gregory Moore, *Nietzsche, Biology and Metaphor* (Cambridge: Cambridge University Press, 2002), pp. 76-80; Mattia Riccardi, "Virtuous Homunculi: Nietzsche on the Order of Drives," *Inquiry* 61 (1), 2018, pp. 21-41.

<sup>697</sup> After the war W.C. Allee and his circle of American ecologists at University of Chicago enthusiastically rediscovered his work. See Gregg Mitman, *The State of Nature: Ecology, Community, and American Social Thought, 1900-1950* (Chicago: University of Chicago Press, 1992), pp. 65-7; 78-80.

<sup>698</sup> George Romanes, *Animal Intelligence*, 1882, p. 130. Romanes thanked Darwin for suggesting Espinas in a letter dated September 10, 1878. See *The Life and times of George John Romanes* (London: Longmans, Green, and Co., 1896), p. 81. Darwin is known to have had a copy of *Des Sociétés Animales* in his library. See H.W. Rutherford, *Catalogue of the Library of Charles Darwin now in the Botany School, Cambridge* (Cambridge: Cambridge University Press, 1908), p. 26. Espinas sent an eight-page letter to Darwin in March 1872 where he accepted natural selection but suggested that it needed to follow a progressive direction (DCP-LETT-8231). Darwin responded briefly by stating that Espinas barely seemed to admit evolution indicating that they clearly had differing opinions on the topic (DCP-LETT-11027). Espinas wrote again on July 1, 1877 after completing *Des Sociétés Animales* and commented that the overall reception of Darwin's theory in France had been poor (DCP-LETT-11030).

<sup>699</sup> J. Collier, "Critical Notices," *Mind* 3(9), January 1878, pp. 105-12.

voluntarily through animal associations.<sup>700</sup> In both cases, such associations were coincidentally useful in the protection of individuals from the natural elements. Lanessan argued that the feeling of “social affection” (*l'affection sociale*), beginning with social imprinting on the young and mediated by sexual attraction in the young adult, was the mechanism that bonded individuals of the same group together.<sup>701</sup> These “bonds of social affection . . . tend to develop more and more a quality that can be referred to by the name of sociability. The latter, transmitted by heredity, becomes inherent in the nature of certain animals for which life in society is henceforth a necessity.”<sup>702</sup> Those individuals that, for whatever reason, did not inherit this quality were subsequently placed at higher risk and less likely to reproduce as a result. Closely associated with this group selection was that of the evolutionary inheritance of hierarchy. Species as distantly related as ants, oxen, and horses had evolved rigidly hierarchical behaviors in which certain individuals took on leadership roles that other members followed in the interests of group protection. This, for Lanessan, explained the human tendency to organize into strict hierarchies. However, Lanessan believed that this form of hierarchical group selection was harmful in modern society – and ultimately dysgenic – because of the way that elite groups, composed of individually inferior members, had manipulated others for protection based on their hierarchical control.

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<sup>700</sup> Lanessan is frequently critical of Darwin’s followers who emphasized the “struggle for existence” as meaning only interindividual competition, but Lanessan is clear that he accepts natural selection in the large and metaphorical sense that Darwin articulated.

<sup>701</sup> Jean-Louis de Lanessan, *La Lutte Pour L’Existence et L’Association Pour La Lutte* (Paris: Octave Doin, 1881), p. 56. “[L]es premiers êtres qui frappent la vue des jeunes sont, je le répète, des animaux ayant les mêmes formes, les mêmes habitudes et les mêmes besoins. Ces premières formes aperçues se gravent profondément dans la mémoire.”

<sup>702</sup> *Ibid.*, p. 58. “[L]es liens de l’affection sociale . . . tendent à développer de plus en plus une qualité que l’on peut désigner par le nom de sociabilité. Celle-ci, se transmettant par l’hérédité, devient inhérente à la nature de certains animaux pour lesquels la vie en société est désormais une nécessité, à laquelle n’échappent pas sans danger les quelques individus qui, pour un motif quelconque, ne présentent pas cette qualité.”

“[T]he weak and the lazy, who are almost always the rich, sheltered from danger by care and precautions of all sorts, escape danger, multiply at ease, and perpetuate their weakness or laziness. . . It is a descending evolution and not an ascending evolution that results from this selection.”<sup>703</sup>

Lanessan argued that much of this problem resulted from “the antagonism between family interests and social interests,” because it was the promotion of family members by powerful groups (and the inheritance of property that had been taken by force) that created this inequality in the first place.<sup>704</sup> Lanessan’s solution was therefore to allow every citizen, man and woman, the full exercise of their rights and “to eliminate family property which constitutes the most formidable obstacle to the disappearance of castes” (*supprimer la propriété familiale qui constitue l’obstacle le plus redoutable à la disparition des castes*).<sup>705</sup> This, incidentally, was the same solution Alfred Russel Wallace would come to, but without citing a justification from natural history.

Finally, Ludwig Büchner’s 1885 *Liebe und Liebes-Leben in der Thierwelt* (Love and Love-Life in the Animal World), adopted a mixture of Spencerian organicism, natural selection, and Lamarckian progressive development to establish love as a force that provided the foundation for, not only social behavior, but all of existence.

This power of love has not only directed the stars, but it has implanted in the smallest worm the impulse of self-love, self-preservation and procreation, as well as the protection of its offspring. It has also commanded those smallest indestructible particles of matter, which form the basis of our entire existence, to attract and repel one another, and to put themselves back into accordance with fixed laws so as to take shape and form billions of connections within separate bodies.<sup>706</sup>

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<sup>703</sup> Ibid., p. 68. “Les faibles et les paresseux, qui sont aussi presque toujours les riches, mis à l’abri du danger par des soins et des précautions de toutes sortes, échappent au péril, se multiplient à l’aise et perpétuent leur faiblesse ou leur paresse. . . C’est une évolution descendante et non une évolution ascendante qui résulte de cette sélection.”

<sup>704</sup> Ibid., p. 71.

<sup>705</sup> Ibid., p. 80.

<sup>706</sup> Ludwig Büchner, *Liebe und Liebes-Leben in der Thierwelt* (Leipzig: Theodor Thomas, 1885), p. 3. “Diese Kraft der Liebe hat nicht bloß den Sternen ihre Bahnen gewiesen, sondern auch dem kleinsten Wurm den Trieb der Selbst liebe, der Selbsterhaltung und der Fortpflanzung, sowie der Erhaltung

Love was an all-encompassing force that, not only culminated in social solidarity, but literally bound the galaxies together. Through continuous striving and the inheritance of skills attained through practice, love was on the verge of achieving its true potential in the human species. Thus, “the finest and most complex thoughts, feelings, and sensations of civilized humanity are nothing but the result of a slowly arising socialization of lower or simpler psychic processes,” that Büchner likened to the stamens of flowers, “shimmering in the most magnificent colors,” that had transformed from simple leaves.<sup>707</sup> In his chapter on “sociability or gregariousness” (*Sociabilität oder Geselligkeit*) Büchner argued that the parent-child bond was the origin of all social instincts, such that “the pleasure of society is nothing but an extension of parental or childlike affections, an extension that is partly the result of natural selection and partly of habit.”<sup>708</sup> This extension of love from parent or offspring to all members of the social group had been acquired and transmitted by heredity over multiple generations. In many species – such as coral polyps, siphonophores, and the social insects – this had progressed to what Büchner called “the zoological image of a socialist state” (*zoologische Bild eines socialistischen Staates*).<sup>709</sup> These united polyps that would build enormous reefs and “defy the storms of

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seiner Nachkommenschaft eingepflanzt. Sie hat aber auch jenen kleinsten und aller kleinsten unzerstörbaren Theilchen des Stoffes, welche die Grundlage des gesammten Daseins bilden, geboten, sich gegenseitig anzuziehen, abzustoßen und sich wieder anzuziehen nach bestimmten Gesetzen und Ordnungen und so in milliardenfachen Verbindungen in bestimmten Körpern Form und Gestalt anzunehmen.”

<sup>707</sup> Ibid., p. 17. “So sind im Lichte einer solchen Anschauung die feinsten und complicirtesten Gedanken, Gefühle, Empfindungen der civilisirten Menschheit nichts Anderes, als das Resultat einer langsam entstandenen Vergesellschaftung niedriger oder einfacherer seelischer Vorgänge, in ähnlicher Weise wie die Staubgefäße der in den prächtigsten Farben schillernden Blumenkronen nach der Meinung der Botaniker nichts Anderes, als verwandelte oder umgeformte Blätter sind.”

<sup>708</sup> Ibid., p. 362. “Darwin im Sinne der Entwicklungs-Theorie es für wahrscheinlich hält, daß das Gefühl des Vergnügens an Gesellschaft nichts weiter sei, als eine Erweiterung der elterlichen oder kindlichen Zuneigungen, und daß diese Erweiterung Folge theils der natürlichen Zuchtwahl, theils der Gewohnheit sei.”

<sup>709</sup> Ibid., p. 390.

the ocean” or colonies of spider-jellfish that formed a “union of polymorphic (multifarious) individuals into a common stock,” as well as the bees, ants, and termites which formed that “highest principle of sociability, the ‘division of labor,’” represented the truest example of *Viribus unitis* (strength through unity) in which the “free psyche” had all but disappeared.<sup>710</sup> Much like Espinas and Lanessan, Büchner envisioned the future human socialist society as one mandated by nature and, in which, the interests of the individual would be subordinated to the will of society as a whole.

Despite the fact that Kropotkin built upon and expanded the work of Espinas, Lanessan, and Büchner, the evolutionary mechanisms in mutual aid theory differed from these earlier theorists in three important ways: 1) Kropotkin held that the social instinct was a trait that had evolved in a bottom-up process chiefly through the mechanism of natural selection, 2) that this selection occurred at both the individual as well as at the group levels, and, 3) as a result, the social environment that emerged had created novel selection pressures that promoted complex intelligence and a moral sense to evolve in early humans. All three points were central to Darwin’s theory about the evolution of the moral sense. However, the idea that social living itself could give rise to selection

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<sup>710</sup> Ibid., p. 359. “Was die Macht der Association oder Vergesellschaftung, die Anwendung des bekannten Grundsatzes “Viribus unitis” selbst in der niedersten Thierwelt zu leisten vermag, ist wohl Jedermann aus den großartigen Leistungen der zu s.g. “Thierstöcken” vereinigten Polypen oder Korallenthiere bekannt, welche bekanntlich ganze, den Stürmen des Weltmeers trotzende Riffe und Inseln aus den Tiefen des Oceans emporbauen. Doch mag von ihnen, sowie von den merkwürdigen Colonieen der Siphonophoren oder Nöhrenquallen, deren Vereinigung polymorpher (vielgestaltiger) Individuen zu einem gemeinsamen Stocke nach Bergmann und Leuckart gewissermaßen das zoologische Bild eines socialistischen Staates darstellt, zu dessen Bestehen und Integrität ein jedes Glied in feiner Weise nach Kräften beiträgt, sowie auch von ähnlichen Erscheinungen bei den Infusorien hier nicht weiter geredet werden, da von einem eigentlichen Mitwirken der freien Psyche bei diesen Vorgängen entweder gar nicht oder nur in einem sehr beschränkten Maaße die Rede sein kann. In um so höherem Maße dagegen kann dieses von den wunderbaren Staaten oder Gesellschaften der Bienen, Ameisen und Termiten behauptet werden, über welche Verfasser in seiner bereits öfter citirten Schrift “Aus dem Geistesleben der Thiere” eingehend berichtet hat, und welche das eigentlich höchste Princip der Sociabilität, die “Theilung der Arbeit” nämlich, zu einem für ihre Verhältnisse fast vollendeten Ausdruck bringen.”

pressures that promoted the evolution of more complex social feelings seemed to be at odds with the way that natural selection was thought to operate – that is, through the individual “struggle for existence.” Darwin himself recognized that there was an inherent contradiction in suggesting that natural selection would promote social and moral traits. “It is extremely doubtful whether the offspring of the more sympathetic and benevolent parents, or of those which were the most faithful to their comrades, would be reared in greater number than the children of selfish and treacherous parents.”<sup>711</sup> Under the pressure of Malthusian multiplication, the most intense competition was supposed to be found between individuals that had a common mode of life as they sought food and mating opportunities. However, for both Darwin and Kropotkin, the evolution of sociability contradicted this Malthusian engine and the more ardent Neo-Darwinists therefore disregarded this hypothesis and sought the origin of sociability in culture rather than in biology. In this way, the struggle that Darwin described as a metaphorical concept had come to be so narrowly defined that it made Darwin’s own theory about the evolution of the moral sense fall outside the boundaries of Neo-Darwinian orthodoxy.

### **Mutual Aid and the Metaphorical “Struggle for Existence”**

Darwin’s central argument in *On the Origin of Species* was that natural selection had been the main, but not the exclusive, means of modification.<sup>712</sup> This selection was made possible as a result of “the Struggle for Existence amongst all organic beings throughout the world, which inevitably follows from their high geometrical powers of increase. . . This is the doctrine of Malthus, applied to the whole animal and vegetable

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<sup>711</sup> Darwin, *Descent of Man*, p. 163.

<sup>712</sup> Darwin, *On the Origin of Species*, p. 6.

kingdoms.”<sup>713</sup> However, Darwin had made it clear that his concept of a “struggle for existence” was not one to be taken literally as meaning only inter-individual struggle but should rather be understood “in a large and metaphorical sense.”<sup>714</sup> But the struggle for existence was not the only metaphorical concept that was misconstrued by his contemporaries; the Malthusian doctrine itself was also a metaphor meant to provide rhetorical vigor to a theory intended for a particular readership that needed to be persuaded about Darwin’s ideas.

Darwin’s emphasis on the “struggle for existence” as the basis for natural selection is one of the most misinterpreted ideas he ever developed.<sup>715</sup> As he explained in *On the Origin of Species* – and at greater length in his unpublished *Natural Selection* from which *Origin* was an abbreviated version – this term was to be understood as a metaphorical concept that incorporated multiple meanings.<sup>716</sup> These included “dependence of one being on another,” animals that “struggle with each other” over limited food resources, plants that “struggle for life against the drought” and that “struggle with other fruit-bearing plants, in order to tempt birds to devour and thus disseminate its seeds.”<sup>717</sup> Darwin’s concept was therefore an umbrella term that he utilized to describe three unique forms of struggle: 1) Cooperative mutualism between individuals in the same species as well as between different species, 2) Competition

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<sup>713</sup> Ibid., pp. 4-5.

<sup>714</sup> Ibid., p. 62.

<sup>715</sup> The other is “survival of the fittest” which was first coined by Herbert Spencer and only incorporated into *On the Origin of Species* in its fifth edition in 1869. See Gregory Claeys, “The ‘Survival of the Fittest’ and the Origins of Social Darwinism,” *Journal of the History of Ideas* 61 (2), 2000, pp. 223-240.

<sup>716</sup> The first two chapters of *Natural Selection* became the two volumes of *Variation of Animals and Plants under Domestication* (1868) and the remaining sections were eventually published in 1975 by Cambridge University Press under the title *Charles Darwin’s Natural Selection; being the second part of his big species book written from 1856 to 1858*.

<sup>717</sup> Darwin, *On the Origin of Species*, pp. 62-63.

between individuals in the same species or between one species with another, and 3) Strategies that enhance fitness when confronted by harsh environments.<sup>718</sup> Any of these forms that led to greater fitness, which Darwin defined as “success in leaving progeny,” or reproductive success, would therefore be vital to understanding natural selection. However, this “large and metaphorical sense” was overlooked by Darwin’s primary English supporters, chief amongst them Thomas Henry Huxley, Herbert Spencer, Joseph Hooker, and Francis Galton. These figures interpreted Darwin’s metaphor only in the form of individualistic competition, an interpretation that found justification in the social realities of English life during the height of the British Empire. As Kropotkin wrote of these figures, particularly Huxley and Spencer: “They came to conceive the animal world as a world of perpetual struggle among half-starved individuals, thirsting for one another’s blood.”<sup>719</sup>

This overemphasis on interindividual struggle was an extension of the Malthusian doctrine applied to the natural world. In some places Darwin himself seemed to justify the narrow interpretation later taken by the Neo-Darwinists, for example in his “wedge” metaphor in which he argued that nature “may be compared to a yielding surface, with ten thousand sharp wedges packed close together and driven inwards by incessant blows, sometimes one wedge being struck, and then another with greater force.”<sup>720</sup> This would suggest that unchecked reproduction led to direct struggle between individuals and that only those well adapted to their environmental niche would survive in the incessant

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<sup>718</sup> Darwin made the same point in a letter to W.T. Preyer on March 29, 1869: “It is correct to say in English that two men struggle for existence who may be hunting for the same food during a famine, and likewise when a single man is hunting for food; or again it may be said that a man struggles for existence against the waves of the sea when shipwrecked.” Darwin Correspondence Project, Cambridge University, Letter no. 6687.

<sup>719</sup> Kropotkin, “Mutual Aid Among Animals,” p. 338.

<sup>720</sup> Darwin, *On the Origin of Species*, p. 67.

blows they received. However, in the *Origin* – and at great length in *Natural Selection* – Darwin moderated this interpretation by acknowledging, “how ignorant we are” where it came to the Malthusian framework that ostensibly formed the basis of natural selection. “What checks the natural tendency of each species to increase in number is most obscure,” he wrote and promised to discuss many of the limits to reproduction in a future work.<sup>721</sup> Darwin never pursued this line of thought in his subsequent publications, but he was clearly referring to the vast collection of examples that he had already written about in *Natural Selection* but which he did not include in his *Origin*.

On the subject of checks to multiplication, what Darwin had limited to a paragraph in *On the Origin of Species* was explored for twenty-two pages in his “big species book.”<sup>722</sup> Of the forty-two specific examples Darwin offered as factors that checked reproduction, only two were given for interindividual competition between members of the same species (male horses indirectly committing infanticide by forcing females to abandon their foals and young birds that were driven away by older individuals). There were fourteen examples of predation – from parasitic flies to wolves – and six examples of competition between closely related species. The majority of examples (16 in total) used to demonstrate a check on reproduction were the result of climactic or environmental changes that reduced the population. In fact, five of the predation examples were also climate-dependent (such as an unexpected dry season resulting in a tick infestation that caused a massive die-off of Brazilian wild cattle or reindeer near the Polar Sea that were forced to migrate and died *en masse* from mosquitos). After listing multiple examples of large animal populations dying from

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<sup>721</sup> Ibid., p. 67.

<sup>722</sup> Charles Darwin, *Natural Selection* (Cambridge: Cambridge University Press, 1975), pp. 182-208.

climate or environment-related causes, Darwin was driven to question the very foundation of the Malthusian paradigm. “We are perhaps apt to lay too much stress on the amount of food as determining the numbers of any species.”<sup>723</sup>

The overall theme of Darwin’s discussion on the checks to multiplication in species, however, was an expansion on his metaphor of a “tangled bank” in which there were overlapping layers of struggle and dependency between one species and another. For example, as Darwin explained, a species of parasite may depend on a certain host species for their survival and would suffer in direct relationship as the host population did. Therefore, if the parasites were to seriously injure their animal host, or climactic changes caused their host’s primary foodsource to diminish, those parasites that could not survive in the changed circumstances could perish as well. Darwin saw no better example of this complicated interrelationship between species than that of the “Misseltoe.” This hemiparasitic plant depended on specific tree species for support, specific insects for fertilization, and specific birds for the diffusion of their seeds. But there would also be a struggle over which plant produced the most seeds with the most tempting pulp for the birds, which seeds grew best if several were dropped close together, and a struggle between misseltoe and tree since the latter would suffer if they became host for too many. It was here that Darwin clarified his metaphorical meaning of the term “struggle for existence” and also made it clear he was making a rhetorical choice rather than adopting what he considered to be a more accurate scientific description. “In many of these cases, the term used by Sir C. Lyell of ‘equilibrium in the number of species’ is the more correct but to my mind it expresses far too much quiescence. Hence I shall employ the word

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<sup>723</sup> Ibid., p. 182.

struggle.”<sup>724</sup> This concept of “equilibrium” was a common feature of early nineteenth-century economics and natural science (particularly in the work of Alexander von Humboldt) and had Darwin employed what he deemed to be the more correct expression, the political debate over Darwinian theory may have manifested quite differently.<sup>725</sup>

Kropotkin could not have known about the sheer number of qualifications Darwin had placed on the Malthusian engine in his unpublished work, but he correctly identified that the majority of examples used in Darwin’s *Origin* were based on climactic or environmental factors rather than interindividual competition. “The struggle between individuals of the same species is not illustrated under that heading by even one single instance: it is taken as granted; and the competition between closely allied animal species is illustrated by but five examples.”<sup>726</sup> Kropotkin did not deny that competition between individuals existed, but he questioned the interpretation that it was the primary driver of evolutionary change.

Life *is* struggle; and in that struggle the fittest survive. But the answers to the questions, ‘By which arms is this struggle chiefly carried on?’ and ‘Who are the fittest in the struggle?’ will widely differ according to the importance given to the two different aspects of the struggle: the direct one, for food and safety among separate individuals, and the struggle which Darwin described as ‘metaphorical’ – the struggle, very often collective, against adverse circumstances.

However, because environmental and climactic factors were largely uniform and impacted members of a species more or less equally, Kropotkin knew that such adverse circumstances could only be a small driver of evolutionary change. “All that natural

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<sup>724</sup> Ibid., p. 187.

<sup>725</sup> For more on equilibrium in nature see M. Norton Wise and Crosbie Smith, “Work and Waste: Political Economy and Natural Philosophy in Nineteenth Century Britain,” *History of Science* 27 (3), 1989, pp. 263–301; Ulrich Päßler, “A Political Economy of Nature. Alexander von Humboldt’s Essay on the Fluctuations in the Supplies of Gold,” *Internationale Zeitschrift für Humboldt Studien* 18 (34), 2017.

<sup>726</sup> Kropotkin, “Mutual Aid Among Animals II,” p. 713.

selection can do in times of calamities is to spare the individuals endowed with the greatest endurance for privations of all kinds.”<sup>727</sup> Kropotkin therefore proposed additional evolutionary processes and mechanisms that could better explain the selection pressures necessary for mutual aid to become a common adaptation in group-living species.

### **Processes, Mechanisms, and the Evolution of Mutual Aid**

Kropotkin perceived that there was a weakness with interindividual competition as a driver of evolutionary change, particularly where it came to explaining cooperative social behavior in group-living species. As an alternative, he proposed migration and isolation as processes that would cause social traits to aggregate in select populations, and the evolutionary mechanisms of social selection and group selection that would result in these traits becoming more prominent in future generations. Kropotkin assumed, as did Darwin, that phenotypic variations resulting from the direct action of the environment could be inherited along with the effects of behavioral habit. However, Kropotkin’s argument for the evolution of mutual aid did not employ these Lamarckian mechanisms and he was ultimately less reliant on the Lamarckian mechanism of inherited habit as an explanation for the moral sense than Darwin was.<sup>728</sup> Kropotkin would later publish

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<sup>727</sup> Ibid., p. 717.

<sup>728</sup> Kropotkin does not mention the direct action of the environment or inherited habit in either of his 1890 articles on “Mutual Aid Among Animals.” He mentions Lamarck once in his 1902 book *Mutual Aid: A Factor of Evolution*. “It hardly need be added that if we admit, with Spencer, all the Lamarckians, and Darwin himself, the modifying influence of the surroundings upon the species, there remains still less necessity for the extermination of the intermediate forms.” He subsequently suggested that this could be an explanation for the gaps in the fossil record, but does not state that the direct action of the environment is necessary for the evolution of mutual aid. Kropotkin, *Mutual Aid: A Factor of Evolution* (New York: McClure Phillips & Co., 1902), p. 65. In his 1905 “Morality of Nature” Kropotkin mentioned that Darwin argued for the important role of habit in the evolution of the moral sense, but said only that it “strengthens the social instinct and mutual sympathy.” He subsequently noted that the “facts of nature” reveal “the *direct* influence of the surroundings for producing *variation in a definite direction*” (italics in original) and therefore the “struggle for existence” should be understood metaphorically. Kropotkin, “The Morality of Nature,” p. 408; 415.

extensively on the direct action of the environment and the inheritance of acquired characters, but he did not rely on these mechanisms for the evolution of mutual aid.<sup>729</sup>

The first process Kropotkin identified that could promote the evolution of mutual aid was the large-scale mass migration that many species would participate in during periods of environmental and climactic change. From the “numberless associations of locusts, vanessae, cicindelae, cicadae, and so on” to the myriad species of birds that “gather in the thousands” to fly south for the winter, or horses that come together in “herds of sometimes 10,000 individuals strong,” migration emphasized the importance of mutual aid as a survival tactic.<sup>730</sup> But the most striking example Kropotkin ever witnessed of migration as an expression of mutual aid was on the Amur River while he was traveling from Transbaikalia to Merghen. Fallow deer, which were usually scattered in small groups across the landscape, had come together in the thousands to migrate across the river where it was narrowest. The migration across the river lasted for “several days in succession” as the result of an early and heavy snow-fall in the Great Khingan, “which compelled the deer to make a desperate attempt at reaching the lowlands in the east of the Dousse mountains.”<sup>731</sup> Similar mass migrations of black squirrels highlighted the selection pressures at play, since those individuals that did not have the sociable traits necessary to form such associations would perish from either the harsh environment or as a result of prey animals that “follow their thick columns and live upon the individuals

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<sup>729</sup> See Chapter 5.

<sup>730</sup> Kropotkin, “Mutual Aid Among Animals,” p. 342; “Mutual Aid Among Animals II,” p. 701; 707. Other examples include some species of land-crabs in the West Indies and North America that “combine in large swarms in order to travel to the sea and to deposit therein their spawn.” Kropotkin, “Mutual Aid Among Animals,” p. 343.

<sup>731</sup> Kropotkin, “Mutual Aid Among Animals II,” pp. 707-8.

remaining behind.”<sup>732</sup> In this way, natural selection could be observed preferentially choosing those individuals that expressed sociable traits since those that remained behind were less likely to reproduce.

Closely associated with migration was the process of isolation, or geographic separation, that ensured that these sociable traits would be more likely in subsequent generations. Kropotkin remained ambivalent about isolation as a process of evolutionary change in his initial 1890 papers on mutual aid, but he expanded on this topic with the release of his book in 1902.<sup>733</sup> As the result of migration, individuals that possessed the sociable traits necessary to form associations based on mutual aid would self-select to enter new environments together. Once isolated from individuals lacking these sociable traits, this new population would create a founder’s effect in which more individuals possessing these sociable traits would reproduce and pass them on to subsequent generations. After repeated migrations and periods of isolation, these sociable traits would become fixed in the species or even form the basis of “new varieties” or “incipient new species.”<sup>734</sup> Furthermore, this migration could occur at multiple levels: the family, the group, or associations of scattered individuals. Whether under the pressure of “robbers” (i.e. selfish free-riders) or as the result of environmental conditions, “when birds associate against a robber, or mammals combine, under the pressure of exceptional circumstances, to emigrate” the traits that promote mutual aid would combine in a variety

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<sup>732</sup> *Ibid.*, p. 704.

<sup>733</sup> At the time, Kropotkin stated the problem as “one of the most contested parts of the Darwinian theory – namely, in how far isolation is necessary for the appearance of new species.” *Ibid.*, p. 714, n24.

<sup>734</sup> Kropotkin went on to describe individuals adapting to novel food sources rather than competing with others in their ecological niche, a process that would later be defined as sympatric speciation. Peter Kropotkin, *Mutual Aid: A Factor of Evolution* (New York: McClure Phillips & Co., 1902), p. 66.

of gradations once this founding group was isolated from the ancestral population.<sup>735</sup>

Kropotkin was clearly concerned with the problem of free-riders, or cheaters, that would exploit the benefits of group-living for purely selfish ends and he highlighted what he saw as adaptations that would limit their numbers through the mechanism of social selection.<sup>736</sup> As would many scientists in the years following, Kropotkin used the example of a simpler organism in order to clarify the evolutionary mechanism he was describing. According to Kropotkin's theory, social instincts were not uniform in any given species but were voluntary (i.e. subject to variation) that offered the raw material upon which natural selection could act. In ants, their "voluntary mutual aid" included the rearing of progeny, foraging, building, rearing of aphids, collective defense, or even one member of the same nest regurgitating food into the mouth of another if requested through specific movements of its antennae.<sup>737</sup> Kropotkin emphasized the voluntary nature of these actions by pointing out that some ants would refuse to offer food when requested, resulting in the selfish actor being attacked as though it were an enemy. This

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<sup>735</sup> Kropotkin, "Mutual Aid Among Animals II," p. 710.

<sup>736</sup> Kropotkin did not use this term, nor did he use the terms *group* or *community selection*, *sympatric speciation*, or *founder effect*, though his descriptions clearly fit those of later definitions. Social selection was first coined by Rev. John Thomas Gulick in two papers read before the Linnaean Society, the first of which was read by Alfred Russel Wallace. See Rev. John Thomas Gulick, "Divergent Evolution through Cumulative Segregation," (read December 15<sup>th</sup>, 1887) p. 209. Social selection was defined as "the exclusive breeding of those better fitted to the social constitution and instincts of the race through the failure to breed of those less fitted." John Thomas Gulick, "Intensive Segregation, or Divergence through Independent Transformation," *Zoological Journal of the Linnean Society* 23, December, 1889, p. 332. Social selection, as a distinct mechanism from that of sexual selection, was not widely discussed following Gulick's paper, such that Leonard Huxley proposed coining the term in 1921 as a form of evolution that dealt with mental evolution in humans alone. See Leonard Huxley, *Charles Darwin* (London: Watts, 1921), p. 64. The mechanism of social selection was reinvented by Mary Jane West-Eberhard to describe the subset of natural selection that occurred within the social group. It subsumed Darwin's mechanism of sexual selection and was utilized to explain sexual signals as well as cooperative or altruistic behavior. See Mary Jane West-Eberhard, "Sexual Selection, Social Competition, and Speciation," *Quarterly Review of Biology* 58 (2), 1983, pp. 155-183; On social selection in humans see: Christopher Boehm, *Moral Origins: The Evolution of Virtue, Altruism, and Shame* (New York: Basic Books, 2012).

<sup>737</sup> Kropotkin, "Mutual Aid Among Animals," p. 343.

process of social selection promoted groups with a higher percentage of cooperative members. Likewise, some bees had also been observed displaying “anti-social” behaviors such as theft or laziness, “but natural selection continually must eliminate them,” because, ultimately, the traits promoting mutual aid were more beneficial to each individual in the group than traits that encouraged individuals to pursue selfish interests.<sup>738</sup> Both ants and bees likewise engaged in “a temporary division of labour,” while each individual also had the capacity to perform every kind of work when required.<sup>739</sup> The complexity and intelligence of the *Hymenoptera* was therefore no accident. These cooperative associations resulted in a social environment in which there was a selection pressure for the “development of individual initiative” that promoted intellectual progress.<sup>740</sup> As a result, the eusocial *Hymenoptera* were the most widespread and successful organisms of the animal kingdom despite the fact that, individually, they lacked many of the protective elements that would allow them to succeed on their own. In a direct rebuke to Huxley, Kropotkin concluded that the eusocial insects had “renounced the ‘Hobbesian war,’ and they are better for it.”<sup>741</sup>

This mechanism involving the punishment of cheaters had also been observed in birds and mammals. Kropotkin noted that other group members in associations of nesting sparrows would frequently thwart those individuals intent on “appropriating” the nest of a

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<sup>738</sup> Ibid., p. 346. Kropotkin here stated that cooperative behavior was “more advantageous to the species than the development of individuals endowed with predatory inclinations.” Some scholars have argued that this meant Kropotkin thought natural selection operated at the level of species. However, in the very next paragraph he states that the eusocial insects have not “risen to the conception of a higher solidarity embodying the whole of the species.” This suggests that Kropotkin was actually using the term *species* in a dual sense, both as shorthand for “group within the same species” (former) and as a unit of analysis (latter). The imprecision does, however, lend itself to misunderstanding.

<sup>739</sup> Ibid., p. 346.

<sup>740</sup> Ibid., p. 344.

<sup>741</sup> Ibid.

conspecific for themselves.<sup>742</sup> Likewise, in marmots, individuals had been observed using violence against other members of their group in captivity but, in their natural habitat, such “unsociable instincts” were rare and Kropotkin argued were largely kept in check by natural selection.<sup>743</sup> The generality of this process could be observed in the much larger distribution of group-living species found among birds or mammals than those that lived a solitary existence. Quoting Severtsov, Kropotkin identified that the few species of solitary falcons that have “almost an ideal organisation for robbery” are nevertheless in decline whereas the highly sociable duck “almost invades the earth, as may be judged from its numberless varieties and species” because of how pervasive mutual aid had become as a strategy.<sup>744</sup>

The cunningest and the shrewdest are eliminated in favour of those who understand the advantages of sociable life and mutual support. . . If every individual were constantly abusing its personal advantages without the others interfering in favour of the wronged, no society-life would be possible.<sup>745</sup>

Ultimately, as a result of this mechanism of social selection operating within groups, the percentage of free-riders in the population would be reduced and those individuals possessing the adaptations for mutual aid would have greater reproductive fitness.

Kropotkin’s use of social selection was likewise highlighted in his 1891 paper on mutual aid amongst indigenous populations, in which he emphasized the way that group identity was supreme and could result in significant punishments for any violation of group social norms. Kropotkin summarized the literature on indigenous culture by stating that their entire behavior “is regulated by an infinite series of unwritten rules of propriety” to such an extent that this “common law is his [the indigenous person’s]

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<sup>742</sup> Kropotkin, “Mutual Aid Among Animals II,” p. 712.

<sup>743</sup> *Ibid.*, p. 705.

<sup>744</sup> Kropotkin, “Mutual Aid Among Animals,” p. 341.

<sup>745</sup> Kropotkin, “Mutual Aid Among Animals II,” p. 711; “Mutual Aid Among Animals,” p. 347.

religion; it is his very habit of living.”<sup>746</sup> Because everything was shared in common, food was always divided equally, and the sensibility of “each for all” was the standard by which indigenous people viewed their moral responsibilities, this could result in harsh judgements should these values not be upheld. Citing the German anthropologist Adolf Bastian’s work *Der Mensch in der Geschichte* (History of Man), Kropotkin outlined how the fear of punishment could be severe.<sup>747</sup>

If the savage has infringed one of the smaller tribal rules, he is prosecuted by the mockeries of the women. If the infringement is grave, he is tortured day and night by the fear of having called a calamity upon his tribe. If he has wounded by accident any one of his own clan, and thus has committed the greatest of all crimes, he grows quite miserable: he runs away in the woods, and is ready to commit suicide, unless the tribe absolves him by inflicting upon him a physical pain and sheds some of his own blood.<sup>748</sup>

Bastian also added, on the same page that Kropotkin cited, that a common punishment for committing a grave violation to the group was banishment, suggesting why members of the tribe could react as they did. “Driven out of the circles of society, he drags on a miserable, desperate life in the barren wilderness” (*Fortgetrieben aus den Kreisen der Gesellschaft schleppt er in öden Wildnissen ein jämmerliches*).<sup>749</sup> These punishments would, as a result, serve two purposes at once: they would reduce the number of selfish actors within the community and encourage habits of “self-restriction and self-sacrifice” in the interests of the group. However, as Kropotkin explored at length, these same moral

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<sup>746</sup> Peter Kropotkin, “Mutual Aid Among Savages,” *The Nineteenth Century*, April 1891, p. 558.

<sup>747</sup> Bastian would have a major influence on the American anthropologist Franz Boas, who was his student at the Ethnological Museum of Berlin. See Matt Bunzl, “Franz Boas and the Humboldtian Tradition,” in George W. Stocking (ed.) *Volkgeist as Method and Ethic: Essays on Boasian Ethnography and the German Anthropological Tradition* (Madison: University of Wisconsin Press, 1996), pp. 17-78; George W. Stocking, *A Franz Boas Reader: The Shaping of American Anthropology, 1883-1911* (Chicago: University of Chicago Press, 1989), p. 57.

<sup>748</sup> Kropotkin, “Mutual Aid Among Savages,” p. 558.

<sup>749</sup> Adolf Bastian, *Der Mensch in der Geschichte. Zur Begründung einer psychologischen Weltanschauung*, Vol. 3 (Leipzig: Otto Wigand, 1860), p. 7

values that operated *within* groups were not upheld *between* groups, and this led to what he deemed to be a “double conception of morality” that had been an important factor in human evolution.<sup>750</sup>

Just as Darwin proposed for the high-levels of cooperation in both the eusocial *Hymenoptera* and in the human species, Kropotkin utilized the mechanism of group selection as a means by which mutual aid could thrive as an evolutionary strategy. Kropotkin quoted Darwin’s hypothesis that “those communities, which included the greatest number of the most sympathetic members, would flourish best and rear the greatest number of offspring.”<sup>751</sup> Darwin’s formulation of group selection emphasized that competition between groups would be the primary driver of this evolutionary mechanism, and Kropotkin acknowledged that this was indeed one means by which selection at the level of the group could operate. Kropotkin cited examples of competition between groups while also highlighting how the environment could be seen as a driver of selection at higher levels of organization. For example, Kropotkin cited the wars between ant colonies and the observation that sparrows in the Jardin du Luxembourg “bitterly fight all other sparrows which may attempt to enjoy their turn of the garden and its visitors; but within their own communities they fully practise mutual support.”<sup>752</sup> However, the mechanism of competitive group selection seemed most apparent in the conflicts between human populations.

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<sup>750</sup> Kropotkin, “Mutual Aid Among Savages,” p. 559.

<sup>751</sup> Kropotkin, *Mutual Aid: A Factor of Evolution*, p. 2; citing Charles Darwin, *Descent of Man*, p. 82.

<sup>752</sup> Kropotkin, “Mutual Aid Among Animals,” p. 344; 350.

Therefore the life of the savage is divided into two sets of actions, and appears under two different ethical aspects: the relations within the tribe, and the relations with the outsiders; and (like our international law) the ‘inter-tribal’ law widely differs from the common law. Therefore, when it comes to a war the most revolting cruelties may be considered as so many claims upon the admiration of the tribe.<sup>753</sup>

These conflicts, despite the devotion to solidarity within each group, represented a characteristic of human nature that would take considerable effort to eradicate. However, Kropotkin emphasized that there was already evidence that human populations could rise above this innate “double conception of ethics” as many European peoples had demonstrated through the expansion of the in-group to the level of the nation state. Ultimately, the path forward was to better understand how evolution operated in the formation of human predispositions so that, in the future, society could be organized in such a way that it worked with human nature rather than at odds with it.

### **Conclusion: Reorienting Socialist Darwinism**

The evolution of cooperative behavior – whether formulated as mutual aid, the moral sense, or *l’association pour la lutte* – challenged many preconceptions about Darwinian theory and the “struggle for existence” it relied upon. Darwin himself had to invent a unique explanation that championed the inheritance of acquired behavioral habits that few adherents of natural selection chose to endorse. Peter Kropotkin, reacting to the Neo-Darwinian orthodoxy as expressed through Thomas Henry Huxley’s interpretation, was well versed on the subject from literature published in France, Germany, and Russia as well as from his own explorations in Siberia. In contrast to the literature published in Continental Europe, Kropotkin adopted a strictly Darwinian

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<sup>753</sup> Kropotkin, “Mutual Aid Among Savages,” p. 559.

interpretation of the mechanisms involved (i.e. natural selection) while also incorporating the large number of examples of cooperative behavior that had been reported since Darwin's initial work in 1871. While Kropotkin shared with Darwin the assumptions about the direct action of the environment and the inheritance of acquired characteristics, these mechanisms were not necessary nor were they emphasized in his theory of mutual aid. Instead, Kropotkin adopted the processes of migration and isolation along with the evolutionary mechanisms of social selection and group selection to explain how mutual aid could be understood as an adaptive strategy that enhanced individual reproductive success.

Theorists from across the ideological spectrum found common ground in their shared justification of social policy based on their interpretation of natural history. The evolution of sympathy and the social instincts allowed both Darwin and Kropotkin to articulate an optimistic and progressive vision of human society that was based firmly in the evolved moral instincts of the human species (following Darwin, Kropotkin would likewise come to reject the arguments in favor of eugenics as will be explored in Chapter 5). In contrast, English Darwinian liberals such as Thomas Henry Huxley and socialists like Alfred Russel Wallace, accepted a pessimistic vision of human nature that saw competition and aggression as endemic features of society that had to be combatted with social policy (though laissez-faire economics and nationalist conflict were both justified within Huxley's interpretation of evolutionary sociology). Darwinian socialists in France and Germany, such as Alfred Espinas, Jean-Louis de Lanessan, and Ludwig Büchner, envisioned a future socialist state modeled on the most rigid and hierarchical examples gleaned from the natural world in which the majority ought to cooperate for the good of

society as directed by elites. Such social and political justifications based on alternative (and often conflicting) interpretations of natural history were a common feature of the late-nineteenth and early-twentieth centuries. This cross-fertilization of ideas between the social and scientific realms illuminates both the individual theorists as well as the social milieu in which they operated. Kropotkin was no exception, and his articulation of an optimistic future of individual autonomy and collective freedom based firmly in the Darwinian “struggle for existence” was reflective of his belief that science offered the tools necessary to free people from the blinders imposed by ideology and oppression. We ought to cooperate with one another and form associations based on mutual aid because evolutionary history has demonstrated that this is how our species became successful in the first place.

## Chapter 5

### **Darwin's Russian Defender: Peter Kropotkin, August Weismann, and Evolutionary Epigenetics**

In the September 1910 edition of *The Nineteenth Century*, one of the most distinguished members of the British scientific establishment condemned Peter Kropotkin as a liar and scientific fraud.<sup>754</sup> Sir E. Ray Lankester, a former student of T.H. Huxley's at Oxford, had reached the zenith of an exemplary career as Jodrell Professor of Zoology at University College London (1874-1890), Linacre Professor of Comparative Anatomy at Merton College, Oxford (1891-1898), and director of the Natural History Museum (1898-1907). Lankester had been inducted as a Fellow of the Royal Society, served twice as the Society's Vice-President, received the distinguished Darwin-Wallace Medal from the Linnean Society, and had been dubbed Knight Bachelor by King Edward VII.<sup>755</sup> With his considerable scientific influence he now accused Peter Kropotkin of "sheer invention" and "the most flagrant mis-quotation of records" with the intention to "manufacture evidence in favour of the inheritance of acquired characters."<sup>756</sup> In one strike, Lankester dismissed Kropotkin's credentials as a naturalist, accused him of placing ideological commitments before sound science, and demanded that he now provide evidence in order to prove the existence of Lamarckian inheritance, the view that "characters acquired by

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<sup>754</sup> E. Ray Lankester, "Heredity and the Direct Action of Environment," *The Nineteenth Century*, Sept. 1910, pp. 483-491.

<sup>755</sup> Lankester became a Fellow of the Royal Society on June 3, 1875, one year after he began teaching at University College London. He served as Vice-President in 1895 and 1896, became a Knight Bachelor in 1906, and received the Darwin-Wallace Medal in 1908. In 1913 he would receive the Copley Medal for "outstanding achievements in research" from the Royal Society and in 1920 received the Gold Medal of the Linnean Society, which had earlier been awarded to figures such as Thomas Henry Huxley, Alfred Russel Wallace, and Ernst Haeckel. GB 117 The Royal Society, EC/1875/26; NA8247

<sup>756</sup> Lankester, "Heredity," p. 487-8.

new conditions, as a result of the direct action of environment... are *transmitted by heredity* to the offspring and are retained by successive generations.”<sup>757</sup>

The paper that raised Lankester’s ire was one of twelve reviews that Kropotkin published – beginning in 1892 but mostly between 1910 and 1915 – dealing specifically with the direct action of environment and heredity in an evolutionary context, portions of which were later collected under the title *Evolution and Environment*.<sup>758</sup> Whereas Kropotkin’s primary target in *Mutual Aid* was T.H. Huxley’s pessimistic vision of nature, in this later series the focus was August Weismann and his theory of hereditary germ-plasm. Given that Kropotkin’s signature research on mutual aid in animals amounted to just two papers, this *Evolution and Environment* series represented the most substantial work on biology he ever produced.<sup>759</sup> However, compared to *Mutual Aid*, this later work has received only limited treatment by historians.<sup>760</sup> Part of the reason for this is certainly

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<sup>757</sup> Ibid.

<sup>758</sup> Peter Kropotkin, *Evolution and Environment* (Montreal: Black Rose, 1996). The original papers in this series include the following: Peter Kropotkin, “The Theory of Evolution and Mutual Aid,” *The Nineteenth Century and After*, Jan. 1910; “The Direct Action of Environment on Plants,” *The Nineteenth Century and After*, July 1910; “The Response of the Animals to their Environment,” *The Nineteenth Century and After*, Nov. 1910; “The Response of the Animals to their Environment (continued),” *The Nineteenth Century and After*, Dec. 1910; “Inheritance of Acquired Characters: Theoretical Difficulties,” *The Nineteenth Century and After*, March 1912; “Inherited Variation in Plants,” *The Nineteenth Century and After*, Oct. 1914; “Inherited Variation in Animals,” *The Nineteenth Century and After*, Nov. 1915. Kropotkin also published four reviews in his “Recent Science” series on this topic in 1892, 1893, 1894, and 1901 with a final paper concluding this series in 1919, two years after returning to Russia. Kropotkin, P. “Recent Science,” *The Nineteenth Century*, December, 1892, pp. 1007-1014; April 1893, pp. 683-689; “Recent Science,” *The Nineteenth Century*, April 1894, pp. 684-691; “Recent Science,” Sept. 1901, *The Nineteenth Century and After*, pp. 423-438; “The Direct Action of Environment and Evolution,” *The Nineteenth Century and After*, Jan. 1919. Kropotkin’s seven articles published between 1910-1919 would also be translated into French by Renaud Garcia as *De Darwin à Lamarck* (Lyon: ENS Éditions, 2015).

<sup>759</sup> The twelve reviews in the *Evolution and Environment* series amounted to 177 pages, fifteen more than the original “Mutual Aid” papers that were collected into his 1902 book.

<sup>760</sup> See Daniel Todes, *Darwin Without Malthus: The Struggle for Existence in Russian Evolutionary Thought* (Oxford University Press: Oxford, 1989), pp. 136-142; Álvaro Girón, “Kropotkin Between Lamarck and Darwin: The Impossible Synthesis,” *Asclepio* 55, 2003, pp. 189-213; Mark Borrello, “‘Mutual Aid’ and ‘Animal Dispersion’: An Historical Analysis of Alternatives to Darwin,” *Perspectives in Biology and Medicine* 47(1), pp. 19-21; Graham Purchase, *Peter Kropotkin: Ecologist, Philosopher and Revolutionary*, PhD Thesis, University of New South Wales, 2003, pp. 163-178; Ruth Kinna,

that Kropotkin came down on the “wrong side” of a twentieth century scientific conflict whereas mutual aid continued to be a promising field of research.<sup>761</sup> However, Kropotkin’s work on the direct action of environment and evolution remains important for several reasons. Not only does this work represent one of the most detailed English-language arguments in support of phenotypic plasticity, nongenetic inheritance, and group selection in the early twentieth century – during the very period that genetics was becoming established as the sole scientific explanation of heredity – it also offers a window into Kropotkin’s transnational scientific perspective and his attempt to create a synthesis of often contradictory findings.<sup>762</sup>

The dominant position by contemporary historians is that Kropotkin “proceeded stubbornly to defend Lamarckian principles in the face of contrary scientific evidence” for political – not scientific – reasons.<sup>763</sup> Daniel Todes argues that Kropotkin had an “*a priori* attachment” to the inheritance of acquired characters that was “oscillating between certainty and desperation.”<sup>764</sup> Kropotkin had “lamented the limitations and anecdotal quality of the available evidence” but felt compelled to justify Lamarckian inheritance or the principle of mutual aid would not hold up as a factor of evolutionary change.<sup>765</sup> According to Todes, this was part of the larger “Russian national style” in science –

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“Kropotkin’s Theory of Mutual Aid in Historical Context,” *International Review of Social History* 40, 1995, pp. 276-7, 280; Ruth Kinna, *Anarchist Organization: Kropotkin’s Scientific Theory*, PhD Thesis, University of Oxford, 1991, pp. 258-62.

<sup>761</sup> The political uses of Lamarck in the Soviet Union during the 1930s and 40s by Trofim Lysenko, in which dissenting geneticists faced persecution, only added to the resistance.

<sup>762</sup> The French and German literature on this topic was significantly larger.

<sup>763</sup> Kinna, “Kropotkin’s Theory of Mutual Aid in Historical Context,” p. 277.

<sup>764</sup> Todes, *Darwin Without Malthus*, p. 138.

<sup>765</sup> *Ibid.*, pp. 137-8. Todes incorrectly cites the letter from Kropotkin to Marie Goldsmith to support that statement. On March 8, 1910 (not August 12) Kropotkin asked Goldsmith if she was aware of a followup on some of the studies by Viré that he had cited in his September 1901 edition of “Recent Science” in *The Nineteenth Century*. As will be shown later, I believe that Todes’ translation and interpretation of this letter is incorrect.

borne from ideological predisposition and environmental rationales – that sought to excise the Malthusian influence from Darwinian biology.<sup>766</sup> Following this, Alvaro Giron insists that Kropotkin’s “impossible synthesis” between the Darwinian and Lamarckian camps was doggedly pursued “in order to remove Malthus of the citadel of Darwinism” and was little more than “political anachronism.”<sup>767</sup> Ruth Kinna takes it a step further and argues that, for Kropotkin, “the direct action of the environment provides a basis on which he can finally justify the introduction of anarchy.”<sup>768</sup> Even Kropotkin’s defenders, such as Stephen Jay Gould, offered little more than to argue that, Lamarckian and wrongheaded he may have been, at least he was “no crackpot.”<sup>769</sup> In this way, the historical interpretation of *Evolution and Environment* by contemporary scholars is consistent with Lankester’s early twentieth-century view that Kropotkin’s “rejection of the laws of evidence and the methods of scientific investigation...is all very well as a rhetorical performance. But it does not carry conviction.”<sup>770</sup>

In contrast to the political explanation for Kropotkin’s view of inheritance, I will argue that a close reading of the *Evolution and Environment* papers – as well as the relevant correspondence on this topic – shows that Kropotkin’s disagreement with Weismann and the “Neo-Darwinists” was grounded in what Maienschein refers to as the “competing epistemologies” of evolutionary biology.<sup>771</sup> For Kropotkin, this involved 1)

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<sup>766</sup> Ibid., p. 169.

<sup>767</sup> Álvaro Girón, “Kropotkin Between Lamarck and Darwin: The Impossible Synthesis,” *Asclepio*: 55 (1), 2003, p. 209 & 212.

<sup>768</sup> Kinna, “Anarchist Organization,” p. 262. She goes on to write, “As Malatesta rightly points out, Kropotkin used scientific theory “to support his social aspirations.”

<sup>769</sup> Stephen Jay Gould, “Kropotkin Was No Crackpot,” *Natural History* 97(7), 1988.

<sup>770</sup> Lankester, “Hereditry,” p. 488.

<sup>771</sup> Jane Maienschein, “Competing Epistemologies and Developmental Biology,” In Richard Creath & Jane Maienschein (eds.), *Biology and Epistemology* (Cambridge: Cambridge University Press, 2000), pp. 122-137.

his philosophy of science that relied on the Baconian inductive – as opposed to a deductive – method in the construction of scientific theory, and 2) a robust defense of Darwin’s epigenetic framework in which both heredity and development were integrated in the process of evolutionary change.<sup>772</sup> These two principles led Kropotkin to reject Weismann’s preformationist theory of hereditary germ-plasm as well as the emerging field of eugenics in the early decades of the 20<sup>th</sup> century.

### **Beyond the Darwinian-Lamarckian Dichotomy**

Contemporary scientists and historians of science have documented the heated rhetoric that emerged soon after Darwin’s death between rival camps known as Neo-Darwinism (epitomized by Weismann) and Neo-Lamarckism (often utilized simply as Lamarckism). The first emphasized the “all-sufficiency,” or *Allmacht*, of natural selection and advocated genotypic variability and random mutation dictated by a fixed law of heredity.<sup>773</sup> The second camp had a variety of perspectives on Darwin’s primary factor of evolutionary change and the question of “hard” heredity but, in general, allowed room for the inheritance of phenotypic plasticity mediated by the direct action of environment.<sup>774</sup>

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<sup>772</sup> Though Darwin never used the term “epigenetics” himself, I follow Frederick Churchill in his recent biography of Weismann in applying the term to those figures that advocated hereditary particulates but also incorporated the generation of new structures over the course of development through interactions with their environment. See Frederick Churchill, *August Weismann* (Cambridge: Harvard University Press, 2015). Weismann himself was a champion of epigenetic development in his early career, but came to reject this interpretation and view his germ-plasm theory as its polar opposite.

<sup>773</sup> The term “all-sufficiency” was what Weismann’s translator adopted in his famous 1893 response to Herbert Spencer. However, a better translation would be “omnipotence” or “all-pervading power.” De Vries’ concept of mutation as the sole source of evolutionary “creativity,” or the introduction of novel traits, would not be integrated with Weismann’s theory until after Gregor Mendel’s work on heredity was rediscovered in the early years of the twentieth century.

<sup>774</sup> The Danish botanist Wilhelm Johanssen was the first to emphasize the phenotype-genotype dichotomy, though the terms had appeared earlier. However, Johanssen was adamant that the difference was one of language only; there can be obvious phenotypic differences where no difference in genotype is present, just as there may be genotypic differences where the phenotypes

However, despite being the categories that actors often chose to align themselves with, this division between Neo-Darwinism and Lamarckism is not useful historically since the categories conceal more than they explain.

There are three main problems with the categories of Neo-Darwinism and Lamarckism. The most obvious problem is that Darwin himself did not accept that natural selection was an all-sufficient factor to explain descent with modification and would, under this division, be necessarily categorized as Lamarckian. Phenotypic plasticity, the direct action of environment, and nongenetic inheritance were all part of Darwin's theoretical framework from the beginning and took on growing importance over the years.<sup>775</sup> This was especially true toward the end of his life when Darwin added an additional chapter to the sixth, and final, edition of *On the Origin of Species* devoted to these "Lamarckian" factors. This diversity of hereditary mechanisms housed under the canopy of Darwinism persisted until the late 1890s, such that T.H. Huxley embraced a mosaic approach to heredity in the preface to his 1893 book *Darwiniana*.

We still remain very much in the dark about the causes of variation; the apparent inheritance of acquired characters in some cases; and the struggle for existence within the organism, which probably lies at the bottom of both of these phenomena.<sup>776</sup>

The second problem is that there were prominent figures in the history of evolutionary biology who neither accepted natural selection as an explanation for the origin of species nor Weismann's hereditary germ-plasm theory but also rejected the inheritance of

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remain the same. "Gerade darum ist es von der größten Wichtigkeit, den Begriff Phaenotypus (Erscheinungstypus) von dem Begriff Genotypus (Anlagetypus könnte man sagen) klar zu trennen." [Precisely for this reason, it is of the greatest importance that the term phenotype (type of appearance) be clearly separated from the term genotype (type of predisposition, you could say). Wilhelm Johannsen, *Elemente der Exakten Erblchkeitslehre* (Gustav Fischer: Jena, 1909), p. 130.

<sup>775</sup> Darwin also maintained an important role for group selection, which would become the main theoretical target of Neo-Darwinists in the late-20<sup>th</sup> century.

<sup>776</sup> Thomas Henry Huxley, *Darwiniana: Essays* (London: Macmillan and Co., 1893), p. vi.

acquired characteristics – such as Hugo de Vries, Carl Correns, Wilhelm Johannsen, Francis Galton, Karl Pearson, Lewis Henry Morgan, and William Bateson.<sup>777</sup> Uncoupling these figures from the Darwin-Lamarck dichotomy reveals the underlying framework that better explains why this debate became so divisive. Finally, the third problem is that Lamarckism was a category that included figures with vastly different conceptions of evolutionary change. Even if Darwin were to be excluded from consideration as marking the end of a previous era, the category still included such divergent figures as Louis Agassiz with his divinely-inspired hierarchical development, Herbert Spencer's utilitarian use-inheritance, French botanical transformists (such as Gaston Bonnier and Pierre Lesage), Theodor Eimer's strictly materialist but internally-directed orthogenesis, as well as Henri Bergson's creative evolution operating under the mystical *élan vital*. As such, Lamarckism has become an all-inclusive category for any mechanism of inheritance that did not follow a "hard" hereditary framework.

### **Degeneration and the Debate Over Heredity**

E. Ray Lankester's fierce critique of Kropotkin was written during a particular historical context that makes his motivations relevant: the long economic and social decline that precipitated the First World War and the recent "rediscovery" of Gregor Mendel's research that launched the field of genetics. Both factors would likewise be central to the rise of eugenics in the late-nineteenth and early-twentieth centuries.

Lankester was a staunch atheist but a staid social conservative and "intellectual aristocrat" who opposed the vote for women and was suspicious of both democracy and popular movements, writing in 1901: "Germany did not acquire its admirable educational

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<sup>777</sup> Piers J. Hale, *Political Descent*, p. 307.

system by popular demand. . . The crowd cannot guide itself, cannot help itself in its blind impotence.”<sup>778</sup> Lankester’s book *Degeneration: A Chapter in Darwinism* had argued that species, as well as human society, would ultimately degrade if life became too easy and that progress was therefore not an inevitable law of nature.<sup>779</sup> However, one year after its publication, August Weismann posited a solution through his speculation that “immortality” could exist “pre-determined, and that it is potentially contained in the egg from which the individual develops [sic].”<sup>780</sup> This one-time student of Huxley would subsequently find a new teacher and, during Weismann’s first foray to the United Kingdom, Lankester chaired a meeting of the British Association for the Advancement of Science at which the German cytologist made his mark by addressing the question “Are Acquired Characters Hereditary?” to which his answer was fervently negative.<sup>781</sup> However, in his answer there was yet another connection that bound Lankester to his German counterpart. Weismann’s theory of *panmixia* asserted that the degeneration of a

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<sup>778</sup> E. Ray Lankester, “Darwinism and Statecraft,” *Nature* 63(1638), Supplement, March 21, 1901, p. iv. The remark was made in Lankester’s overall positive review of his former student Karl Pearson’s address “National Life from the Standpoint of Science” on November 19, 1900, in which the later Professor of Eugenics at University College London made the case for his field. According to his biographer, Lankester “did not believe that women should have the vote, and indeed that the fewer people who could vote the better.” See Joseph Lester, *E. Ray Lankester and the Making of Modern British Biology* (Oxford: British Society for the History of Science, 1995), p. 191; Letter from Lankester to Mrs. Wells, from Murren, July 8 (1914?) (Wells papers, University of Illinois). However, as Lester also points out, Lankester was not overly fond of capitalism either, writing in notes for a talk in 1905, “The capitalist wants cheap labour, and he would rather see the English people poor and ready to do his work for him, than better off. The country is bloodsucked and absolutely ruled; first by the Church, then by the King, then by the ‘governing class’, and now by this new terror the capitalist” (p. 190). If Lankester had a political ideology, it was likely that of a Baconian Republic ruled over by an intellectual, scientific elite.

<sup>779</sup> E. Ray Lankester, *Degeneration: A Chapter in Darwinism* (London, 1880).

<sup>780</sup> Frederick B. Churchill, *August Weismann: Development, Heredity, and Evolution* (Cambridge: Harvard University Press, 2015), p. 188. Lankester had also written an award-winning student paper on longevity and natural death in 1869, though his assessment relied closely on Spencer’s theories of heredity and only mentioned Darwin in a brief footnote.

<sup>781</sup> Frederick B. Churchill, *August Weismann: Development, Heredity, and Evolution* (Cambridge: Harvard University Press, 2015), p. 333.

biological trait could occur when there was no selective pressure to propel it forward.<sup>782</sup>

This theory supported Lankester's own views on degeneration that made the Lamarckian assumption of progress impossible, while, at the societal level, suggested that the rise of populist socialism would result in the further erosion of civilized society. Without inequality, and the resulting struggle for existence, species were likely to degrade. Lankester, whose dogged competitive disposition had prompted even Huxley to urge greater temperance, therefore saw an opportunity to challenge the anarchist theorist's reputation as a naturalist by revealing what he saw as an ideological bias toward Lamarckian heredity.

However, a reading of Kropotkin's earliest discussion of hereditary mechanisms does not suggest an "*a priori* attachment" to Lamarckism, but rather an unwillingness to discount it entirely. In *Mutual Aid* Kropotkin made little mention of inheritance, beyond acknowledging general consensus among naturalists "with Spencer, all the Lamarckians, and Darwin himself," concerning the modifying influence of the surroundings upon individual animals.<sup>783</sup> Kropotkin acknowledged that data on the hereditary transmission of phenotypic plasticity had thus far been inconclusive. As such, he later wrote, "the whole question of heredity is still in a state in which generalisations like Weismann's are premature."<sup>784</sup> Instead, Kropotkin endorsed a Darwinian theory of inheritance in which development was closely integrated with heredity, what was otherwise known as evolutionary epigenetics.

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<sup>782</sup> Stephen Jay Gould, *The Structure of Evolutionary Theory*, p. 205; Piers J. Hale, *Political Descent: Malthus, Mutualism, and the Politics of Evolution in Victorian England* (Chicago: University of Chicago Press, 2014), p. 302.

<sup>783</sup> Peter Kropotkin, 1904, *Mutual Aid: A Factor of Evolution* (London: William Heinemann), p. 65.

<sup>784</sup> Kropotkin, 1901, "Recent Science," p. 431; 438.

## Darwin and the “Provisional Hypothesis” of Pangenesis

The controversy over the mechanism of heredity had been a contentious topic from the first publication of Darwin’s *Origin*. At issue was the extent to which the direct action of environment influenced individual variation and whether such “acquired characters” were then passed by inheritance to their offspring.<sup>785</sup> Lamarck had presented these two factors as the First and Second Law respectively in his 1809 theory on the modification of species. Darwin never doubted that these “Lamarckian factors” played an important role in evolution. As he wrote at the end of his Introduction in the first edition of *Origin*, “I am convinced that natural selection has been the main, but not the exclusive means of modification.”<sup>786</sup> While Darwin always privileged natural selection as the primary mechanism of evolution, by the sixth edition he had come to the conclusion that it was modified “in an important manner by the inherited effects of the use and disuse of parts [and] the direct action of external conditions.”<sup>787</sup> He had earlier expanded on what he meant by the direct action of environment in the fifth edition of *Origin* and in *The Variation of Animals and Plants Under Domestication*, both published within a year of one other.

The direct action of changed conditions leads to definite or indefinite results. In the latter case the organisation seems to become plastic, and we have much fluctuating variability. In the former case the nature of the organism is such that it yields readily, when subjected to certain conditions, and all, or nearly all the individuals become modified in the same way.<sup>788</sup>

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<sup>785</sup> Both factors would often be combined and represented as the “inherited effects of use and disuse,” or simply “use-inheritance.” William Platt-Ball, *Are the Effects of Use and Disuse Inherited? An Examination of the View Held by Spencer and Darwin* (London: Richard Clay and Sons, 1890); George Romanes, “The Darwinism of Darwin, and of the Post-Darwinian Schools,” *The Monist*, Vol. 6, No. 1, 1895, p. 3.

<sup>786</sup> Charles Darwin, *On the Origin of Species*, 1<sup>st</sup> Edition (London: John Murray, 1859), p. 6.

<sup>787</sup> Charles Darwin, *The Origin of Species*, 6<sup>th</sup> Edition (London: John Murray, 1872), p. 421.

<sup>788</sup> Charles Darwin, *The Origin of Species*, 5<sup>th</sup> Edition (London: John Murray, 1869), p. 166.

By the term ‘definite action’ I mean an action of such a nature that when many individuals of the same variety are exposed during several generations to any change in their physical conditions of life, all, or nearly all the individuals are modified in the same manner. A new sub-variety would then be produced without the aid of selection.<sup>789</sup>

Darwin also utilized the term “direct adaptation” to the same end.<sup>790</sup> This limited role of natural selection would be a common theme in Darwin’s subsequent work and correspondence. In a letter written to Moritz Wagner on Oct. 13, 1876 he confessed that he had overemphasized the role of selection in the first edition of his book.

[T]he greatest error I have committed has been not allowing sufficient weight to the direct action of environment, i.e. food, climate, &c., independently of Natural Selection. . . . When I wrote the *Origin*, and some years afterwards, I could find little good evidence of the direct action of environment; now there is a large body of evidence.<sup>791</sup>

In the sixth, and final, edition of *Origin* he added an entirely new chapter that highlighted the important role that these other factors played in the modification of species.

[S]pecies have been modified, during a long course of descent . . . chiefly through the natural selection of numerous successive, slight, favorable variations; aided in an important manner by the inherited effects of the use and disuse of parts; and in an unimportant manner, that is, in relation to adaptive structures, whether past or present, by the direct action of external conditions, and by variations which seem to us in our ignorance to arise spontaneously.<sup>792</sup>

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<sup>789</sup> Charles Darwin, *The Variation of Animals and Plants Under Domestication*, Vol. 2 (London: John Murray, 1868), p. 271.

<sup>790</sup> In one of his early notebooks, Darwin wrote: “The condition of every animal is partly due to direct adaptation & partly to hereditary taint.” Charles Darwin, Notebook B: [Transmutation of species (1837-1838)]. CUL-DAR121, p. 46. Also see Notebook C: [Transmutation of species (1838.02-1838.07)]. CUL-DAR122, p. 238e; “On the Sexual Relations of the Three Forms of *Lythrum salicaria*,” *Journal of the Linnean Society of London (Botany)* 8, 1864, p. 186. Read before the Linnean Society on June 16, 1864; and in *Origin* in which Darwin argued: “The naked skin on the head of a vulture is generally looked at as a direct adaptation for wallowing in putridity,” but urged caution in drawing any firm inference. Darwin, *On the Origin of Species* (London: John Murray, 1859), p. 197.

<sup>791</sup> Darwin, *Life and Letters*, iii. 159

<sup>792</sup> Charles Darwin, *The Origin of Species*, 6<sup>th</sup> Edition (London: John Murray, 1872), p. 421

For Darwin, use-inheritance explained the way that individual variations could arise in response to a changed environment and natural selection explained why favorable variations were preserved. But exactly *how* those variations were transmitted from one generation to the next – and why certain hereditary characters remained constant – was a question that Darwin never had a satisfactory answer to.

Darwin's concern with the hereditary aspects of his theory dates to before his earliest publication as sole author.<sup>793</sup> In a printed questionnaire titled "Questions About the Breeding of Animals," dated to between March 13<sup>th</sup> and April 26<sup>th</sup>, 1839, Darwin presented twenty-one detailed queries about inheritance that he distributed to friends and breeders throughout England.<sup>794</sup> These questions fall into four broad categories: blending inheritance versus atavisms (1-5, 7, 9, 10, 13, 15, 19, 21), the strength of paternal versus maternal inheritance (6, 11, 12, 14), the fitness benefits of outcrossing (8, 16) and the inheritance of acquired characteristics (17, 18). These questions were intended for Darwin's "big book" on species that he never published, and subsequently were incorporated in *The Variation of Animals and Plants Under Domestication* where he presented his "provisional hypothesis" of pangenesis.

A chief problem facing Darwin's theory of natural selection was the mechanism by which modifications that were preserved could be retained from one generation to the next if individuals were also modified by habit and environment. Pangenesis was Darwin's attempt to integrate the multiple factors of modification and reconcile their

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<sup>793</sup> The publication of Darwin's *Journal of Researches into the Geology and Natural History of the Various Countries Visited by H.M.S. Beagle* (London: Colburn) is dated August 1839, though the manuscript was finished by June 1837. It would later be given the title *Voyage of the Beagle*.

<sup>794</sup> Answers to some of these questions were provided by R.S. Ford on May 6, 1839 and George Toilet on May 10, 1839. Peter J. Vorzimmer, "Darwin's 'Questions About the Breeding of Animals' (1839)," *Journal of the History of Biology*, Vol. 2, 1969, pp. 269-281; R. B. Freeman & P. J. Gautrey, "Darwin's Questions About the Breeding of Animals. With a Note on Queries About Expression," *Journal of the Society for the Bibliography of Natural History*, Vol. 5, 1969, pp. 220-225.

apparent contradiction under a single mechanism of evolutionary change.<sup>795</sup> Pangenesis sought to explain inheritance through a process of epigenetic development: particles known as *gemmules* carried hereditary characteristics from different tissues in the body and could be altered over the course of an organisms' lifespan before being transmitted to offspring through sexual reproduction. This epigenetic mechanism was one that allowed for the introduction of novel traits and habits as a result of environmental influences, traits that could then be passed on to offspring following the principle of natural selection. In this way, the development of individual organisms could influence the overall evolution of the species and helped to explain, for Darwin, why many individuals of a species often seemed to adapt in the same direction simultaneously. As Darwin wrote to Weismann on April 5<sup>th</sup>, 1872 in response to the latter's recent book, "In your remarks on crossing you do not, as it seems to me, lay nearly stress enough on the increased vigour of the offspring derived from parents which have been exposed to different conditions."<sup>796</sup>

Darwin's hypothesis of pangenesis came under increased criticism in England after Francis Galton conducted inter-transfusions of the blood between distinct varieties of rabbits and found no evidence of any hereditary transmission.<sup>797</sup> However, many of Darwin's German-language contemporaries were likewise thinking about the evolution of

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<sup>795</sup> Charles Darwin, *The Variation of Animals and Plants Under Domestication*, Vol. 2 (London: John Murray, 1868), pp. 357-404.

<sup>796</sup> Letter from Darwin to Weismann, April 5, 1872, Cambridge University, Darwin Correspondence Project, DCP-LETT-8275. Darwin was referring to the book *Ueber den Einfluss der Isolirung auf die Artbildung* (Leipzig: Wilhelm Engelmann, 1872).

<sup>797</sup> Francis Galton, "Experiments in Pangenesis, By Breeding From Rabbits of a Pure Variety, Into Whose Circulation Blood Taken From Other Varieties Had Previously Been Largely Transfused," *Proceedings of the Royal Society* 19, 1871, pp. 393-410. Darwin issued a rare response to Galton's study by writing, "I have not said one word about the blood, or about any fluid proper to any circulating system. It is, indeed, obvious that the presence of gemmules in the blood can form no necessary part of my hypothesis." Darwin, "Pangenesis," *Nature* 3, April 27, 1871, p. 502.

species as an epigenetic process in which heredity was integrated with individual development (e.g. Strasburger, de Vries, Driesch, Haacke, Hertwig, and Roux, among others) working in the field known as *Entwicklungsmechanik*.<sup>798</sup> This interplay between development and evolution was seen most clearly in the German debate over the mechanisms of heredity, a literature that Kropotkin knew intimately and drew from as he began to develop his own theory of heredity.

### ***Entwicklungsmechanik*, Epigenetics, and Preformationism**

In the April 1894 edition of his “Recent Science” column written for *The Nineteenth Century*, Kropotkin highlighted the emergence of “a new, rapidly growing branch of research – experimental morphology – in which the artificial production of new forms through the action of external agencies is studied,” and that there was now “a solid body of evidence [for] the mutual intercourse between organism and environment.”<sup>799</sup>

The field of experimental morphology, or as it was known in Germany, *Entwicklungsmechanik*, emerged under the direction of Wilhelm Roux with the first issue of *Archiv für Entwicklungsmechanik der Organismen* (popularly known as *Roux’s Archiv*) published in October 1894.<sup>800</sup> Kropotkin was fluent in both German and French, as were most Russian naturalists of the era, and he had lived for many years in Geneva prior to his expulsion as a radical agitator. His life as a multilingual transnational revolutionary and naturalist, regularly on the move between countries, offered him

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<sup>798</sup> Jane Maienschein, “The Origins of *Entwicklungsmechanik*,” in S.F. Gilbert (ed.), *A Conceptual History of Modern Embryology* (New York: Plenum Press, 1991), pp. 43-61.

<sup>799</sup> Kropotkin, 1894, “Recent Science,” p. 685

<sup>800</sup> Klaus Sander (ed.), *Landmarks in Developmental Biology, 1883-1924* (New York: Springer, 2012); Jane Maienschein, 1991, “The Origins of *Entwicklungsmechanik*,” in S.F. Gilbert (ed.), *A Conceptual History of Modern Embryology* (New York: Plenum Press), p. 43.

exposure to research currents in Europe earlier than many of his contemporaries in England.<sup>801</sup>

Ron Amundson, in his history of the embryo in evolutionary theory, writes, “*Entwicklungsmechanik* was the study of epigenetic causes.”<sup>802</sup> This focus of research was based primarily in Prussia and Germany in the late-nineteenth and early-twentieth centuries and had emerged from the epigenesis-preformationism debate of the 18<sup>th</sup> century.<sup>803</sup> The term was translated as *developmental mechanics* or, increasingly toward the end of the nineteenth-century, *evolutionary mechanics* – since the German word *Entwicklung* would be used interchangeably in the scientific literature of the period.<sup>804</sup> This research methodology emphasized experimental morphology and the concept of heredity as the passing on of a developmental process, not merely distinct traits, from parent to offspring. The German embryologist Wilhelm Roux defined epigenetic development [*epigenetische Entwicklung*] as “not merely the building up of complicated form through the agency of a substratum...but, in the strictest sense of the term, the new

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<sup>801</sup> Lankester was a rare exception as he was likewise fluent in German and spent many years working with the biologist Anton Dohrn at Jena and the Stazione Zoologica in Naples.

<sup>802</sup> Ron Amundson, *The Changing Role of the Embryo in Evolutionary Thought: Roots of Evo-Devo* (Cambridge: Cambridge University Press, 2005), p. 147. Weismann’s theory differed in that it “postulated powers of the hereditary particles to control traits of body parts.”

<sup>803</sup> “[T]he evolutionary history of vertebrates from a scientific foundation, i.e. epigenetic ontogeny, was founded solely in German and developed almost exclusively by Germans, it was also Germans who in the first half of this century established the epigenetic history of development in the field of invertebrate animals and plants.” [*Wie nun die Entwicklungsgeschichte der Wirbelthiere als die Grundlage der wissenschaftlichen, d.h. epigenetischen Ontogenie, allein von Deutschen begründet und fast allein von Deutschen entwickelt wurde, so waren es auch Deutsche, welche in der ersten Hälfte dieses Jahrhunderts die epigenetische Entwicklungsgeschichte im Gebiete der wirbellosen Thiere und der Pflanzen begründeten.*] Ernst Haeckel, *Generelle Morphologie der Organismen, Vol 2. Allgemeine Entwicklungsgeschichte der Organismen* (Berlin: Georg Reimer, 1866), p. 14.

<sup>804</sup> See Peter J. Bowler, “The Changing Meaning of ‘Evolution,’” *Journal of the History of Ideas* 36(1), 1975, p. 111. As Lynn Nyhart writes, “the term *Entwicklung* did not have two different meanings, evolution and individual development. Instead, it had one meaning, development, which could be manifested in two ways, by species and by individuals.” Lynn K. Nyhart, *Biology Takes Form: Animal Morphology and the German Universities, 1800-1900* (Chicago: University of Chicago Press, 1995), p. 139.

formation of complexity, an actual increase of complexity.”<sup>805</sup> Wilhelm Haacke further explained that epigenetics was “a reciprocal interaction... the organs are interdependent and therefore can not adapt themselves to the external world in any arbitrary way.”<sup>806</sup>

Under this framework, what was inherited was a developmental process that, with influence from the environment, would ultimately give rise to individual traits. This direct action of the environment could, in turn, influence the developmental process passed on to the next generation. In this way, the epigenetic theory of inheritance was a mutual interaction, or co-evolutionary process, between the internal and external worlds.

An example that demonstrates the distinction between Lamarckism and epigenetic inheritance can be seen in the case of the co-discoverer of natural selection, Alfred Russel Wallace, and his earlier epigenetic theory of inheritance prior to his falling under the influence of Weismann. In an October 1889 issue of *Nature*, Wallace responded to critiques from J.T. Cunningham and E. Ray Lankester that his recent book *Darwinism* was guilty of “pure Lamarckism.”<sup>807</sup> At issue was Wallace’s evolutionary explanation of a peculiar fish species – the *Pleuronectidae*, or “righteye flounder” – that created a theoretical problem given that the species had evolved to lie on their left side with their left eye having migrated completely to join the other eye on its right flank. Wallace’s critics took exception to his explanation that the anatomical migration had occurred after “the constant repetition of this effort causes the eye gradually to move round the head till

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<sup>805</sup> Wilhelm Roux, “Zur Orientierung über einige Probleme der embryonalen Entwicklung,” *Zeitschrift für Biologie* 21, 1885, pp. 411-526. Roux republished this paper in his *Gesammelte Abhandlungen über Entwicklungsmechanik der Organismen* (Leipzig: Wilhelm Englemann, 1895), 2:1-23, pp. 144-255.

<sup>806</sup> Wilhelm Haacke, *Gestaltung und Vererbung; eine Entwicklungsmechanik der Organismen* (Leipzig: O. Weigel Nachfolger, 1893), p. 27. “Epigenetische setzen Wechselwirkung, Korrelation voraus, und wo Korrelation herrscht, sind die Organe voneinander abhängig und können sich deshalb nicht in beliebiger Weise an die Aussenwelt anpassen.”

<sup>807</sup> Alfred Russel Wallace, “Lamarck versus Weismann,” *Nature* 40, Oct. 24, 1889, p. 619; J.T. Cunningham, “Lamarck versus Weismann,” *Nature* 40, July 25, 1889, p. 297.

it comes to the upper side.” In his own defense, Wallace insisted that this was not Lamarckism because it was not a result of the effort *alone* that had caused the trait to be inherited but, rather, those individuals born with a variation that allowed their effort to “take place earlier and earlier in the development of the individual,” which was then acted upon by natural selection.

[I]n all cases selection produces changes which are useful and whose use is often indicated by effort. The giraffe uses effort in stretching its neck to obtain food during a drought; the antelope exerts itself to the utmost to escape from the leopard; but it is not recognized that it is not the individual change produced by this effort that is inherited, but the favourable constitution which renders extreme effort unnecessary.<sup>808</sup>

What had been inherited was a developmental process that allowed the results of effort to occur earlier and, quoting Darwin, “the *tendency to distortion* would no doubt be increased through the principle of inheritance (emphasis in original).”<sup>809</sup> This was not Lamarckian heredity; it was the interplay of heredity and development, or epigenetics.

In contrast, the Neo-Darwinists (epitomized by Weismann) rejected this epigenetic approach and emphasized the “all-sufficiency,” or *Allmacht*, of natural selection. Under Weismann’s theory of inheritance, no new complexity was generated as a result of the environment, but followed a pre-existing pattern that unfolded according to a fixed law of heredity.<sup>810</sup> “I finally came to the realization that there can be no epigenetic development at all” (*ich zuletzt zu der Einsicht, dass es eine epigenetische Entwicklung*

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<sup>808</sup> Ibid.

<sup>809</sup> Ibid. Darwin had also written, beginning with the fifth edition of *Origin*, “In such cases, if the varying individual did not actually transmit to its offspring its newly acquired character, it would undoubtedly transmit to them, as long as the existing conditions remained the same, a still stronger tendency to vary in the same manner: There can also be little doubt that the tendency to vary in the same manner has often been so strong that all the individuals of the same species have been similarly modified without the aid of any form of selection.” Darwin, *The Origin of Species*, 5<sup>th</sup> Edition (London: John Murray, 1869), p. 105; Darwin, *The Origin of Species*, 6<sup>th</sup> Edition (London: John Murray, 1872), p. 72.

<sup>810</sup> The term “all-sufficiency” was what Weismann’s translator adopted in his famous 1893 response to Herbert Spencer. However, a better translation would be “omnipotence” or “all-pervading power.”

*überhaupt nicht geben kann*).<sup>811</sup> From this perspective, development was irrelevant for understanding heredity and all that mattered was determining how the units of heredity gave rise to distinct traits in subsequent generations. The Neo-Darwinists, including Weismann himself, often referred to their position as “preformationist,” a reference to the 18<sup>th</sup> century theory in which embryological development involved the unfolding of a preordained pattern, as opposed to epigenesis in which the embryo developed in concert with their environment. As Weismann defined his position at the Romanes lecture in 1894: “Those are right who agree with Darwin, Galton, de Vries, and myself in believing in a preformative arrangement of the germ-substance—that is, in a germ-substance composed of primary constituents (*Anlagen*).”<sup>812</sup> Of course, Weismann failed to mention that Darwin allowed for the inheritance of acquired characters, but it was common practice for Darwin to be called in as a supporter on both sides of a given issue.

One of Weismann’s most consistent critics in Germany was Oscar Hertwig whose book *Zeit- und Streitfragen der Biologie: Präformation oder Epigenese?* characterized Weismann’s theory as a recapitulation of the eighteenth-century framework of preformation.<sup>813</sup> Central to Weismann’s theory was a strict separation between the germ-cells involved in heredity versus the somatic-cells involved in function and development. These somatic-cells were adapted to function in highly specific ways and this required that the hereditary instructions within the cells contain only what was required for each. “As the thousands of cells which constitute an organism possess very different properties,

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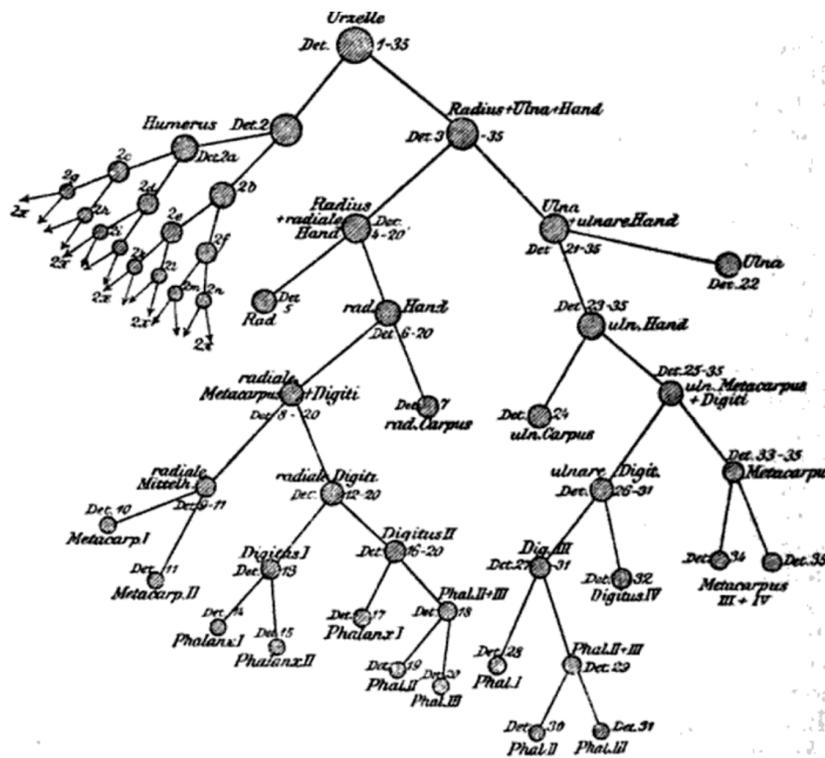
<sup>811</sup> August Weismann, *Das Keimplasma: Eine Theorie der Vererbung* (Jena: Gustav Fischer, 1892), p. xiv.

<sup>812</sup> August Weismann, *The Effect of External Influences Upon Development*, (Oxford: Clarendon Press, 1894). Romanes Lecture given May 2, 1894.

<sup>813</sup> Oscar Hertwig, *Zeit- und Streitfragen der Biologie: Präformation oder Epigenese?* (Jena: Gustav Fischer, 1894). This would be later translated into English as P. Chalmers Mitchell (trans.) *The Biological Problem of To-Day: Preformation or Epigenesis?* (London: William Heinemann, 1896).

the chromatin which controls them cannot be uniform; it must be different in each kind of cell.”<sup>814</sup> For Weismann, this required a hierarchy of division in which the precise hereditary substance be delivered to the corresponding cell in much the same way that an army corps would be divided into regiments and battalions for specific missions.<sup>815</sup>

The whole army may be taken to represent the nucleoplasm of the germ-cell: the earliest cell-division . . . may be represented by the separation of the two corps, similarly formed but with different duties; and the following cell-divisions by the successive detachment of divisions, brigades, regiments, battalions, companies, etc.; and as the groups become simpler so does their sphere of action become limited.



**Fig. 27. Schema der Zerlegung des Idioplasmas einer Urknochenzelle der vorderen Extremität. Nach WEISMANN.**

Figure 5.1. Scheme of the dissection of the idioplasm of a frontal bone cell. After Weismann. Reproduced from Oscar Hertwig's (1893) *Die Zelle und die Gewebe* [The Cell and the Tissues]<sup>816</sup>

<sup>814</sup> August Weismann, *The Germ-Plasm: A Theory of Heredity* (London, 1893), p. 32.

<sup>815</sup> Frederick Churchill, "August Weismann and a Break from Tradition," 1968, p. 104

<sup>816</sup> Oscar Hertwig, *Die Zelle und die Gewebe* (Jena: Gustav Fischer, 1893), Chapter 6, p. 60.

Hertwig, in contrast, argued that every cell received the same hereditary information but, depending on the location and surroundings, would manifest as different characters depending on the needs for that cell. This had been demonstrated, Hertwig pointed out, by himself using frog eggs and by Hans Driesch using echinoderm eggs. In the latter example, by carefully isolating fertilized eggs and separating the first sixteen cells that divided, Driesch had shown that all had developed into normal larvae demonstrating that each cell had the full complement of hereditary material necessary.<sup>817</sup> The Dutch botanist Hugo de Vries had likewise challenged Weismann's argument since, in many plant species, a single stem or leaf was all that was required to grow an entirely new individual. This evidence of every cell containing the full complement of hereditary information meant that context was key and, rather than preformed hereditary material existing only in specific cells, external influences were required so that the hereditary information could unfold through a process of epigenetic development. Hertwig noted that he, Swiss botanist Carl Nägeli, De Vries, and Driesch all regarded heredity as dependant upon forces external to the germplasm.

My theory may be called evolutionary, because it assumes the existence of a specific and highly-organised initial plasm as the basis of the process of development. It may be called epigenetic, because the rudiments grow and become elaborated, from stage to stage, only in the presence of numerous external conditions and stimuli.”<sup>818</sup>

In a similar way, the Dutch botanist Wilhelm Johannsen held an epigenetic view of heredity in which the egg did not contain preformed germs of later traits but “at most certain decisive dispositions (*Anlæg*) with respect to the earliest steps of development.”

This meant that differences in the germ cells could be “expressed through diverging

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<sup>817</sup> Hertwig, *The Biological Problem of Today: Preformation or Epigenesis*, p. 55.

<sup>818</sup> Hertwig, *The Biological Problem of Today: Preformation or Epigenesis*, p. 103.

reactions . . . to conditions of development introduced at an earlier or later stage.”<sup>819</sup>

Johannsen likewise parted from Weismann on the topic of the inheritance of acquired characters, in which he held that certain experiments (such as Brown-Sequard’s hereditary epilepsy in guinea pigs) offered strong evidence that acquired characters could influence heredity directly. “Probably we come closest to the truth by assuming that both natural selection and direct adaptation is causing transformation.”<sup>820</sup>

Finally, while most histories tend to ally Wilhelm Roux with Weismann as an experimental physiologist who supported the theoretical views of the immortal germ-plasm theory, Roux’s own views diverged from Weismann in significant ways.<sup>821</sup> As Hans Driesch pointed out, the Roux-Weismann theory was the most widely cited theory of development (*Entwicklung*) “despite the differences between the researchers whose name it bears” (*trotz Abweichungen der Forscher, deren Namen sie trägt*).<sup>822</sup> In 1885, Roux published the results of his study of a dividing frog embryo under his series “Beiträge zur Entwicklungsmechanik des Embryo” [Contributions to the Developmental

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<sup>819</sup> Wilhelm Johannsen, *Om Arvelighed og Variabilitet* [On Heredity and Variability.] (Copenhagen: Det Schubothekske, 1896), p. 75; cited in Nils Roll-Hansen, “Sources of Johannsen’s Genotype Theory,” *A Cultural History of Heredity III: 19<sup>th</sup> and Early 20<sup>th</sup> Centuries* (Berlin: Max Planck Institute for the History of Science, 2005), p. 45. “Antage vi derfor ikke i Ægget særligt eksisterende Smaakim til alle mulige senere Egenskaber hos det voksne Individ, men i det højeste visse afgørende Anlæg med hensyn til de allerførste Trin af Udviklingen, saa vil ikke desto mindre Forskjelligheder mellem Kønscellerne dog kunne yttre sig ved forskjelligartede reaktioner – I dette Ords videste forstand – overfor Udviklingsfaktorene, være sig paa et tidligere eller senere Trin i Udviklingen.” See also Nils Roll-Hansen, “Wilhelm Johannsen and the Problem of Heredity at the Turn of the 19th Century,” *International Journal of Epidemiology* 43(4), 2014, pp. 1007-1013.

<sup>820</sup> Eugenius Warming and Wilhelm Johannsen, *Den Almindelige Botanikk*, 2nd edition (Copenhagen, 1895), p. 507; cited in Nils Roll-Hansen, “Sources of Johannsen’s Genotype Theory,” *A Cultural History of Heredity III: 19<sup>th</sup> and Early 20<sup>th</sup> Centuries* (Berlin: Max Planck Institute for the History of Science, 2005), p. 46.

<sup>821</sup> For example, Sander refers to the “neo-preformationist ideas of Weismann and Roux,” in Klaus Sander, “Entelechy and the ontogenetic machine - work and views of Hans Driesch from 1895 to 1910,” *Landmarks in Developmental Biology 1883-1924: Historical Essays from Roux's Archives* (Berlin: Springer, 1997), p. 39.

<sup>822</sup> Hans Driesch, *Analytische Theorie der Organischen Entwicklung* (Leipzig: Wilhelm Engelmann, 1894), p. 3.

Mechanics of the Embryo] in which he posited that, following cell division, the nuclear material would be “qualitatively unequal” (*qualitativ ungleich theilt*) in subsequent cells.<sup>823</sup> Weismann, who did not conduct microscopic research of his own on account of his failing eyesight, seized upon Roux’s research in support of his theory of a hierarchical series of preformed germ-plasm published that same year.<sup>824</sup> However, Roux did not accept Weismann’s extreme position but would rather, as he wrote in 1894, “assume a middle position” between Weismann’s preformationism and Hertwig’s epigenetics.<sup>825</sup> Roux believed that “an epigenetic theory can be reconciled with a deeper understanding of evolutionary theory” and defined his own position as that of “evolutionary epigenetics” (*epigenetisch-evolutionistischen*).<sup>826</sup> An ongoing problem, according to Roux, was that of the inheritance of “characters acquired by the individual” (*vom Individuum erworbener Eigenschaften*). While still unproven, this problem was more explicable when adopting an epigenetic framework.

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<sup>823</sup> Wilhelm Roux, “Beiträge zur Entwicklungsmechanik des Embryo III: Über die Bestimmung der Haupttrichtungen des Froschembryo im Ei und über die erste Theilung des Froscheies,” *Breslauer ärztliche Zeitschrift* 6-9, March 1885, republished in *Gesammelte Abhandlungen über Entwicklungsmechanik der Organismen* (Leipzig: Wilhelm Engelmann, 1895), p. 337.

<sup>824</sup> Weismann utilized Roux’s research on this as an integral component of his germ-plasm theory beginning in *Die Continuität des Keimplasmas als Grundlage einer Theorie der Vererbung* (Jena: Fischer, 1885). See Frederick Churchill, *August Weismann: Development, Heredity, and Evolution* (Cambridge: Harvard University Press, 2015), p. 411. Also see, John A. Moore, *Science as a Way of Knowing: The Foundations of Modern Biology* (Cambridge: Harvard University Press, 1999), pp. 446-450.

<sup>825</sup> Wilhelm Roux, “Die Methoden zur Hervorbringung halber Frosch-embryonen und zum Nachweis der Beziehung der ersten Furchungsebenen des Froscheies zur Medianebene des Embryo,” *Anatomischer Anzeiger* 9, February 1894, reproduced in *Entwicklungsmechanik des Embryo* (Leipzig: Wilhelm Engelmann, 1895), p. 959. “Ich nehme daher eine Mittelstellung zwischen Weismann, dem reinen Evolutionisten, und O. Hertwig, dem reinen Epigenetiker, ein. O. Hertwig hat übrigens bereits eine Schwenkung nach meiner Seite hin gemacht; allerdings wieder ohne meiner dabei entsprechende Erwähnung zu thun. Die jetzt von ihm ausgesprochene Ansicht, dass eine epigenetische Theorie sich mit einer tieferen Auffassung der Evolutionslehre wohl vereinbaren lässt, ist bereits in der Einleitung meiner Beiträge zur Entwicklungsmechanik im Jahre 1885 ausführlich begründet worden.”

<sup>826</sup> Wilhelm Roux, “Zu H. Driesch’s Analytischer Theorie der organischen Entwicklung,” *Archiv für Entwicklungsmechanik der Organismen* 4, 1897, p. 478.

According to my evolutionary epigenetic concept this problem should be broken down into the implication, the conversion of the explicitly complicated back into simpler components, and in the translation or transfer of these implicit characteristics from the individual to the germ substance.<sup>827</sup>

In other words, the inherited characteristic (genotype) of a given trait becomes “explicitly complicated” (phenotype) after interacting with the environment. There would then be a “translation” of this back into hereditary information to be passed on through inheritance.

When Kropotkin entered the debate in 1910, Mendel’s rediscovered laws and Weismann’s Neo-Darwinism had become firmly established in England as the leading interpretation by which individuals passed traits on to subsequent generations. However, Kropotkin believed that research currents in Europe demonstrated how Darwin had been on the right track all along and that a large number of facts now revealed the interplay of internal and external factors in heredity, “facts which Roux and his co-workers precisely are studying now at his laboratory for the study of ‘the mechanics of evolution,’ and of which the *Archiv fur Entwicklungsmechanik* is the organ.”<sup>828</sup>

### **The Development of Kropotkin’s Theory of Heredity**

Kropotkin first began writing about heredity in a serious way once he took over Thomas Henry Huxley’s position as scientific editor for *The Nineteenth Century*, a position he would hold during the final decade of the nineteenth century.<sup>829</sup> The inaugural

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<sup>827</sup> Wilhelm Roux, *Entwicklungsmechanik des Embryo* (Leipzig: Wilhelm Engelmann, 1895), p. 1023. “Dieses Problem wäre bei meiner epigenetisch-evolutionistischen Auffassung zu zerlegen in die Implication, in die Zurückverwandlung des Explizirten, Complicirten in einfachere Componenten und in die Translation, in die Uebertragung dieser implicirten Eigenschaften vom Individuum auf den Keimstoff.”

<sup>828</sup> Peter Kropotkin, “The Inheritance of Acquired Characteristics: Theoretical Difficulties,” *The Nineteenth Century*, March 1912, p. 529.

<sup>829</sup> As discussed in Chapter 4, Kropotkin made no mention of heredity in his mutual aid articles and only a single statement upon their republication as a book in 1902. “It hardly need be added that if

entry of his ongoing column “Recent Science,” in May 1892, took a notably Humboldtian approach as he began with the latest research describing the dynamics of cosmic evolution in galactic nebulae, before moving inwards to studies revealing the shifting poles and variation of latitudes on Earth documented by physical geographers, to the experiments by Maxwell and Hertz showing the transmission of energy through electricity, magnetism, and light, before finally diving to the infinitesimal regions of inner space with the new investigations of protoplasm and what such knowledge could reveal about the mechanisms of inheritance.

Weismann’s theory of heredity had made some impact in England three years earlier when a collection of his essays were translated and collected into an edited volume, but in Germany his newest book *Das Keimplasma: Eine Theorie der Vererbung* [Germ-Plasm: A Theory of Heredity] was being hotly debated in the scientific literature and Kropotkin had clearly been following discussions that wouldn’t make a similar impression on the English scientific world until the following year.<sup>830</sup> At issue, was the extent to which the hereditary material bound up in the “nuclear plasm,” or nucleus, was isolated from the protoplasm that composed the rest of the internal material inside the cell walls. What was certainly clear, as Kropotkin summarized the process of “karyokinesis” as described in Strasburger’s 1888 work *Ueber Kern- und Zell-Theilung im*

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we admit, with Spencer, all the Lamarckians, and Darwin himself, the modifying influence of the surroundings upon the species, there remains still less necessity for the extermination of the intermediate forms.” Kropotkin, *Mutual Aid: A Factor of Evolution* (New York: McClure Phillips & Co., 1902), p. 65.

<sup>830</sup> In his review of Weismann’s *Essays Upon Heredity for Nature*, Oxford botanist and later President of the Linnean Society, Sydney Howard Vines, noted that Weismann’s theory of heredity had been “met with such general acceptance that I feel it to be presumptuous on my part to attempt any criticism of them.” However, he managed to do so at length and concluded that Weismann had offered “no evidence to prove the continuity of the germ-plasm” nor did he provide coherent arguments but, rather, “his statements of opinion are so fluctuating that it is difficult to determine what his position exactly is.” Sydney H. Vines, “An Examination of Some Points in Prof. Weismann’s Theory of Heredity,” *Nature* 40(1043), Oct. 24, 1889, pp. 621-26.

*Pflanzenreiche* [On Nuclear and Cellular Division in the Vegetable Kingdom], was that the nucleus “plays a most prominent part in all the phenomena of subdivision of the cells and those of reproduction.”<sup>831</sup> But if there was no interaction between this material and the protoplasm of the cell, as some researchers were suggesting, this “would give further weight to his restrictions as regards Weismann’s [sic] theory of heredity.” However, Kropotkin believed that the evidence on this question was far too recent and the professional opinions so much at odds “that further research is wanted, and eagerly expected by specialists.”<sup>832</sup>

Kropotkin was significantly more direct in his criticisms of Weismann later that year when he returned to the subject of biological heredity in his second edition of

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<sup>831</sup> Kropotkin describes the process as follows: “It consists of a nuclear plasm, surrounded by a very thin membrane; it contains very often a still smaller nucleolus; and within the nuclear plasm the microscope discovers extremely thin threads, or fibres, consisting in their turn of extremely thin minute granules, or spherules – the whole appearing as a ball of thread coiled up somewhat roughly. This being the usual aspect of the nucleus, a series of modifications begin within it, when the moment comes for a cell to subdivide. The nucleolus disappears; the beaded threads, or fibres, shorten and become thicker. They take the shape of minute hooks, and these hooks join together (by the tops of the bendings) in one point, the pole. By the same time the membrane of the nucleus is reabsorbed, and the surrounding protoplasm of the cell penetrates within the nucleus; thus mixing up together with the nuclear plasm. Thereupon a most important change follows. Each of the thickened nuclein fibres, or threads, splits in its length, and the number of the threads being thus doubled, one half of them is attracted towards a radiated spindle-figure in one part of the cell, while the other half arranges in the same way in its opposite part. The two radiated figures thus separate, and only then (if the nucleus subdivides in giving origin to two new cells) a membrane, or parts of a membrane, grow between the two. After the separation, the fibres either coalesce with their ends, or return to the shape of a ball of thread.” Kropotkin, “Recent Science,” *The Nineteenth Century*, May 1892, p. 757. Strasburger would be credited with identifying the process of mitosis in cell division. See František Baluška, Dieter Volkmann, Diedrik Menze, and Peter Barlow, “Strasburger’s Legacy to Mitosis and Cytokinesis and its Relevance for the Cell Theory,” *Protoplasma* 249(4), pp. 1151-1162. Strasburger sent Darwin a copy of his 1876 paper “Ueber Zellbildung und Zelltheilung” in French translation, to which Darwin thanked him “for I find that I am too old to improve so as to read German quickly.” Darwin to E.A. Strasburger, March 9, 1876, Darwin Correspondence Project, 10416F.

<sup>832</sup> *Ibid.*, p. 758. Kropotkin cited both Strasburger and the French botanist Léon Guignard as taking the position that, in plants, the centers of movement are located in the protoplasm rather than in the nucleus. Guignard would later be credited as the co-discoverer, with Russian botanist Sergei Navashin, of double fertilization in flowering plants. See C. Dumas, “Reproduction and development in flowering plants,” *Comptes Rendus de l’Académie des Sciences* 324(6), pp. 517-21.

“Recent Science” in December.<sup>833</sup> He highlighted the critiques by Hertwig, De Vries, and many others that noted the lack of evidence for any firm division between germ-cells and somatic-cells, as well as Weismann’s assumption about the “immortal” germ-plasm.<sup>834</sup> He likewise noted the epigenetic theory posited by De Vries in which “[h]eridity . . . is a function of the nucleus, and evolution is a function of the cytoplasm, the two taking their own separate lines of development.” Kropotkin pointed out that Weismann’s demonstration of clipping the tails off of mice for five generations had not generated tailless mice and confirmed that superficial mutilations were rarely inherited. However, in general, “discovery goes on so rapidly in this domain that we certainly are not yet in possession of a theory of heredity which could have serious bearing upon researches in evolution” and he maintained that this question was best resolved, not by theory, but through experimental research by physiologists.<sup>835</sup> Kropotkin touched on topics related to epigenetic development on two additional occasions, in 1893 and 1894, when he discussed phenotypic plasticity in animal coloration and the direct action of environment in plants, but he did not mention Weismann’s name again (in print or correspondence) until 1901 when he began to examine the German theorist in much greater detail and, in so doing, revealed the incommensurable divide between their philosophies of science.<sup>836</sup>

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<sup>833</sup> This time the critique composed two of the four sections. Kropotkin, “Recent Science,” *The Nineteenth Century*, December 1892, pp. 1007-14.

<sup>834</sup> Kropotkin, “Recent Science,” *The Nineteenth Century*, December 1892, p. 1011.

<sup>835</sup> Kropotkin, “Recent Science,” *The Nineteenth Century*, December 1892, p. 1014.

<sup>836</sup> The sole exception is a passing reference in his *Memoirs of a Revolutionist* in which he wrote about the early discussions he would have with his brother about ongoing questions related to evolution and heredity, “questions which have been raised quite lately in the Weismann-Spencer controversy, in Galton’s researches, and in the works of the modern Neo-Lamarckians.” Kropotkin, *Memoirs of a Revolutionist*, Vol. 1 (London: Smith, Elder & Co., 1899), p. 114.

## Kropotkin, Weismann, and the Inductive versus Deductive Method

Kropotkin was acutely aware of the strong orientation that existed toward Weismann's theory in England since at least 1892 and, as a result, he was determined to approach his subject methodically.<sup>837</sup> While preparing another review of research on heredity for "Recent Science" in the summer of 1901, Kropotkin wrote to Marie Goldsmith in Paris to request research by Armand Viré on the apparent loss of eyesight among crustaceans living in subterranean caves.<sup>838</sup> He wrote that he had been researching the debates over Weismannism in the work of De Vries, Hertwig, and the British biologist Edward Poulton. From this, Kropotkin concluded that Weismann was "the Karl Marx of biology, just as superficial, making grandiose generalizations on a handful of facts [and] metaphysics on a foundation that does not stand up."<sup>839</sup> The article was published the following month in which he began with an introduction based on the grand history of scientific discoveries – Mendeleev's periodic table, Kepler's laws of planetary movement, or Boyle-Marriot's law of gases – that sought first to limit certain variables in order to study the "first approximation" of a given phenomenon.

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<sup>837</sup> "Weismann's work has exercised a considerable influence on biologists, especially in this country; he has fervent admirers in England." Kropotkin, "Recent Science," *The Nineteenth Century*, December 1892, p. 1011.

<sup>838</sup> Letters from Kropotkin to Marie Goldsmith, July 27, July 31, and August 2<sup>nd</sup>, 1901 in Confino, *Anarchistes en Exil*. Viré had created an underground laboratory in the quarries beneath the Jardin des Plantes and coined the scientific field of *biospéologie*, or the study of cave-living organisms. His book *La Faune Souterraine de France* had just been published the previous year.

<sup>839</sup> Letter from Kropotkin to Marie Goldsmith, August 2<sup>nd</sup>, 1901 in Confino, *Anarchistes en Exil*. "Weismann, le Karl Marx de la biologie, tout aussi superficiel, faisant grandissimes généralisations sur une poignée de faits – métaphysique sur un fondement qui ne tient pas debout."

Later on, after all the effects of the main cause have been studied in detail and verified upon thousands of applications, and when it appears that the main cause is not sufficient to explain all the phenomena, then a generation or two of explorers apply their energies towards disentangling the effects of all those causes which were neglected at the outset, but some of which may entirely alter the aspect of phenomena.<sup>840</sup>

It was in this grand tradition that biologists were now seeking to understand “not how species *may* have originated, but how they *do* originate in reality.”<sup>841</sup>

According to Kropotkin, recent studies in “experimental morphology” had begun to reveal further details overlooked by the “first approximation” laid out by Darwin. For example, Chamberland and Roux found that a new species of bacteria had evolved after adapting to an anti-septic medium. Likewise, Errara’s 1899 study of fungi found that they had adapted to a new medium and transmitted this adaptation to the next generation (results that were supported by Edwin Klebs). Kropotkin asserted that these studies on lower organisms were considered to be conclusive by biologists and were applicable to higher organisms, however “they do not very much appeal to those who are not specialists in these branches.”<sup>842</sup> This concern of Kropotkin’s that the specialty literature might be inaccessible for non-scientists was something he would return to later. In March 1910 he wrote to Goldsmith that he had collected about 200 studies in the French and German literature, reporting that, “there are already some good convincing cases” [*несколько хороших убедительных случаев*]. However, he noted that individual studies that would “speak persuasively to the lay reader were very few” [*сильно говорили бы даже не очень сведущему читателю — очень мало*].<sup>843</sup> Since Kropotkin was attempting to make a persuasive case to a non-scientific audience he therefore built his

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<sup>840</sup> Peter Kropotkin, “Recent Science,” Sept. 1901, *The Nineteenth Century*, p. 426.

<sup>841</sup> Ibid.

<sup>842</sup> Peter Kropotkin, “Recent Science,” Sept. 1901, *The Nineteenth Century*, p. 426.

<sup>843</sup> Kropotkin to Marie Goldsmith, March 11, 1910 in Confino, *Anarchistes en Exil*.

case slowly and methodically, through an inductive process of laying out the known facts and building toward a hypothesis to incorporate them, first on the direct action of environment in plants, then in animals, followed by a paper on the theoretical difficulties that faced the inheritance of acquired characteristics, then three heavily sourced papers reviewing the results of experimental morphology in plants and animals. In doing so, Kropotkin was consciously following the same inductive method as Darwin did in his own investigations.

In presenting pangenesis, Darwin was aware that his view was “merely a provisional hypothesis or speculation,” but he saw value in developing a framework that may be incorrect in certain particulars because of its utility in the “inductive sciences.” To support his position he cited William Whewell’s (1840) *Philosophy of the Inductive Sciences*: “Hypotheses may often be of service to science, when they involve a certain portion of incompleteness, and even of error.”<sup>844</sup> Darwin had read Whewell as early as 1838, referenced it often in his notes while developing his theory of natural selection, and praised it with colleagues.<sup>845</sup> As Darwin explained his method, he worked “by bringing together a multitude of facts which are at present left disconnected by any efficient cause.”<sup>846</sup> As he reflected in his Autobiography: “I worked on true Baconian principles, and without any theory collected facts on a wholesale scale.”<sup>847</sup> He first assembled all of

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<sup>844</sup> Ibid, p. 357. Darwin does not specify the title, but the line can be found in the same form, without the capitalization of ‘hypotheses’ in William Whewell, *The Philosophy of the Inductive Sciences*, Vol. 2 (London: John W. Parker, 1840), p. 225.

<sup>845</sup> Charles Darwin, ‘Books to be read’ and ‘Books read’ notebook, CUL-DAR119, June 1, 1838, pp. 4-5; *Notebook D*, CUL-DAR123, July, 1838, p. 26; *Notebook N*, CUL-DAR126, Oct. 4, 1838, p. 14; *Notebook E*, CUL-DAR124, Dec. 16, 1838, p. 69; “Recollections of the development of my mind & character” [written 1876-1882], CUL-DAR26.1-121, p. 78.

<sup>846</sup> Charles Darwin, *Animals and Plants Under Domestication*, Vol. II, 2<sup>nd</sup> Edition, (London: John Murray, 1875), p. 350.

<sup>847</sup> Francis Darwin, *Charles Darwin: His Life Told in An Autobiographical Chapter, and in a Selected Series of his Published Letters* (London: John Murray, 1892), p. 40.

the relevant evidence touching on the mechanism of heredity and only then sought an interpretation that explained them. As a result, “the hypothesis of Pangenesis, as applied to the several great classes of facts just discussed, no doubt is extremely complex, but so are the facts.”<sup>848</sup>

Kropotkin’s dedication to the same Baconian method of inductive science can be seen throughout his work. In his 1899 memoir he described how he made his greatest contribution to science, his discovery that the mountains of Asia formed a plateau created by glacial activity, in just this way. Kropotkin wrote that he carried out his research “in a purely inductive way.”

I collected all the barometrical observations of previous travellers, and from them calculated hundreds of altitudes; I marked on a large-scale map all the geological and physical observations that had been made by different travellers – the facts, not the hypotheses – and I tried to find out what structural lines would answer best to the observed realities.”<sup>849</sup>

In his 1898 book *Fields, Factories and Workshops* Kropotkin wrote that “none can be a good worker in science unless he is in possession of good methods of scientific research; unless he has learned to observe, to describe with exactitude, to discover mutual relations between facts seemingly disconnected, to make inductive hypotheses and to verify them.”<sup>850</sup> And later, “in the English thinker and experimenter, Francis Bacon (of Verulam) science found, not only a continuator of the bold investigations of Copernicus, Kepler, and Galileo, but also the founder of a new method of scientific investigation – the inductive method, based on the careful study of the facts of nature and the drawing of conclusions from these facts, as against the deductive interpretation of nature, i.e. on the

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<sup>848</sup> Charles Darwin, *Animals and Plants Under Domestication*, Vol. II, 2<sup>nd</sup> Edition (London: John Murray, 1875), p. 396.

<sup>849</sup> Kropotkin, 1899, *Memoirs of a Revolutionist*, Vol. 2, p. 5.

<sup>850</sup> Peter Kropotkin, *Fields, Factories and Workshops*, Revised Edition (London: G.P. Putnam’s Sons, 1913), pp. 387-8.

basis of previously assumed abstract principles.” Kropotkin felt that, during the previous twenty years, there had been too many discussions about theories of heredity – “too far-fetched, in the opinion of prominent anatomists, for the modest anatomical basis upon which they were built; and the result was that mere dialectics began too often to take the place of scientific generalization and empiric research... even in the fatherland of Bacon and Darwin, a painful neglect of experimental study in this field.”<sup>851</sup>

August Weismann, however, came from a different scientific tradition and employed a deductive method to arrive at conclusions logically based on first principles in the spirit of Hegelian dialectics. Weismann wrote in his 1892 work *Das Keimplasma*, that something “other than experimental methods may lead us to fundamental views, and an experiment may not always be the safest guide.” He then glossed over contradictory experiments by Wilhelm Roux by stating, “It seems to me that careful conclusions, drawn from the general facts of heredity, are far more reliable in this case than the results of experiments.”<sup>852</sup> He therefore asked his readers to recall the theory of determinants he elucidated in his first chapter and encouraged them to logically deduce from this foundation “the conviction that ontogeny can only be explained by evolution, and not by epigenesis.”<sup>853</sup> It is also worth noting that the word “evolution” in this case meant

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<sup>851</sup> Kropotkin, “The Response of the Animals to Their Environment Part 2,” p. 1058.

<sup>852</sup> Weismann, *The Germplasm*, pp. 137-8, cited in Hertwig, O., 1896, *The Biological Problem of Today: Preformation or Epigenesis?* p. 12

<sup>853</sup> Weismann, *The Germplasm*, pp. 137-8. Original German: “Es giebt eben noch andere Wege, um zu principiellen Anschauungen zu gelangen, als den Versuch, und nicht immer ist der Versuch die sicherste Entscheidung, wenn er auch zuerst völlig beweisend erscheint. . . Mir scheint, dass uns vorsichtige Schlüsse aus den allgemeinen Vererbungsthatsachen hier sicherer leiten, als die Ergebnisse solcher nie ganz reinen und unzweifelhaften Versuche, so höchst werthvoll dieselben auch sind, und so sehr sie mit in die Waagschale zu legen sind. Wenn man sich dessen erinnert, was in dem Abschnitt über die Architektur des Keimplasma’s zur Begründung der Determinantenlehre gesagt wurde, so wird man wohl mit mir die Überzeugung gewinnen, dass die Ontogenese nur durch Evolution, nicht durch Epigenese erklärt werden kann.” August Weismann, *Das Keimplasma. Eine Theorie der Vererbung*, Jena, 1892, p. 184.

something very different for Weismann than it did for English naturalists at the time. In the preface to the English edition of *Das Keimplasma* the translator helpfully made clear in a footnote that “the theory of ‘evolution’ or ‘preformation’ of the early physiologists supposed that all parts of the fully-formed animals or plant were present, in a minute form, in the germ. . . It will be seen that the word ‘evolution,’ as here used, has no connection with the doctrine of descent with which it is usually connected.”<sup>854</sup> That footnote does not appear in the original German edition, however what does appear in both translations is Weismann’s contention that “I became convinced that an epigenetic development [*epigenetische Entwicklung*] is an impossibility. Moreover, I found an actual proof of the reality of evolution [read ‘preformation’], which will be explained in the chapter on the structure of the germ-plasm.”<sup>855</sup> Time and time again Weismann emphasized his methodology as one of deductions from first principles. Experimental evidence was interchangeably used to support his deductions and dismissed when it did not.

Kropotkin found this methodology profoundly disturbing. To cite just one example, in his 1910 paper “The Response of the Animals to Their Environment,” Kropotkin referenced the oft-debated issue of inherited blindness in cave animals. He first cited Darwin’s interpretation from the 6<sup>th</sup> edition of *Origin* that, according to one study, blind cave rats exposed to graduated light over the course of a month were able to regain some use of their eyes. Based on this evidence Darwin suggested that, after many generations in the dark, “disuse will on this view have more or less perfectly obliterated

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<sup>854</sup> Ibid., pp. xiii-xiv, n. 1.

<sup>855</sup> Ibid. p. xiv. Original German: “kam ich zuletzt zu der Einsicht, dass es eine epigenetische Entwicklung überhaupt nicht geben kann. Im ersten Capitel dieses Buches wird man einen förmlichen Beweis für die Wirklichkeit der Evolution finden.” August Weismann, *Das Keimplasma. Eine Theorie der Vererbung*, Jena, 1892, p. 20.

its eyes, and natural selection will often have effected other changes.”<sup>856</sup> However, on the same topic of blind cave animals, Weismann asserted that “on this hypothesis [of natural selection], and on this only is it possible to explain the wonderful adaptations of the minutest detail of structure.” Rather than presenting evidence, Weismann deduced a “just so” story to explain how natural selection *could* result in ocular degeneration. Because there would be no selection pressure on eyesight in deep caves, reproduction would take place between individuals with strong and weak eyes equally, resulting in “retrogressive development” in that species. Weismann then extended this deduction, insisting, “the same simple explanation suffices for all cases of retrogressive development.” The hereditary transmission of acquired characters, such as those produced by use and disuse as Darwin suggested, is “incapable of explanation.”<sup>857</sup> Kropotkin concluded this overview by stating, “Note here the striking contrast between the treatment of the same question by Darwin and by Weismann, and the prevalence of the deductive method over the inductive in the reasonings of the German naturalist.”<sup>858</sup>

### **Kropotkin, Lankester, and a “Flagrant Misquotation of Records”**

Lankester’s fiery critique was a provocative blow to Kropotkin and, though he responded with calm authority, behind the scenes he felt that his credibility had been called into question. Lankester claimed that Kropotkin had falsified results suggesting the inheritance of phenotypic plasticity in Gaston Bonnier’s experiments with Alpine plants. Immediately, Kropotkin wrote to his close confidant in Paris, the Russian biologist and

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<sup>856</sup> Charles Darwin, 1876, *On the Origin of Species*, 6<sup>th</sup> Ed., p. 111.

<sup>857</sup> August Weismann, “Retrogressive Development in Nature,” in *Essays Upon Heredity and Kindred Biological Problems*, Vol. II (Oxford: Clarendon Press, 1892), pp. 16-17; cited in Kropotkin, “Response of the Animals to Their Environment,” pp. 863-4.

<sup>858</sup> Kropotkin, “Response of the Animals to Their Environment,” p. 864.

anarchist Marie Goldsmith, with a request that she get in touch with Bonnier to clarify a point of interpretation. As Kropotkin had written in his review, Bonnier raised several identical species of plants in an Alpine environment as well as in the valley and documented significant phenotypic changes as a result of the different environments. These changes were so distinct that, had a botanist encountered them growing naturally, they would have been classified as separate species. Further, according to Kropotkin, Bonnier found that the different features were more strongly represented in the second generation, suggesting, “the characters acquired in the first generation being thus transmitted by heredity to the next, to be further increased.”<sup>859</sup> However, Lankester had gone through Bonnier’s papers and found no discussion of a first and second *generation*, but only of a first and second *year*, and that this was “the basis on which Prince Kropotkin makes his completely unwarranted statement.”<sup>860</sup> In the letter Kropotkin sent to Paris, he wanted to confirm with Bonnier that these results had indeed referred to different generations. “Plants in the high Alps do not breed from seeds, but from underground stems,” he explained to Goldsmith with an accompanying drawing.<sup>861</sup>



Figure 5.2. Drawing by Kropotkin sent to Marie Goldsmith, September 7, 1910. Plant A (left) sends an underground stem to produce Plant B (right).

<sup>859</sup> Peter Kropotkin, “The Direct Action of Environment on Plants,” *The Nineteenth Century*, July 1910, p. 65.

<sup>860</sup> E. Ray Lankester, “Heredity and the Direct Action of Environment,” p. 487.

<sup>861</sup> Kropotkin to Marie Goldsmith, September 7, 1910 in Confino, *Anarchistes en Exil*. “Растения, в высоких Альпах, не размножаются из семян, а от подземных стеблей.”

Because, Kropotkin wrote, Plant A will die during the harsh winter, the second year would represent the growth of Plant B that had still been underground. This would be a new generation. For example, he went on, when gardeners take a clipping of one plant to grow another, or through the process of “*marcottage*” (or layering, in which a portion of the branch is sent underground to take root), a new individual is thus obtained. Therefore, “since these new generations represent signs of a new variety, I have the right to talk about the hereditary transmission of traits.”<sup>862</sup> However, he noted, that this was an interpretation of Bonnier’s research and it was “very important for me to clarify this point” [*Мне очень важно разъяснить этот пункт*].<sup>863</sup> The accompanying letter to Bonnier was not included in the archived correspondence, suggesting that Goldsmith attempted to honor Kropotkin’s request. However, there is also no evidence that Bonnier ever received the letter or responded to it.<sup>864</sup>

Whether Kropotkin was correct in this specific interpretation or not, there is little doubt that he understood Bonnier’s conclusions accurately. In 1907 Bonnier published *Le Monde Végétal* (The Vegetable World) that synthesized his life’s work and placed it in the context of the major theories of evolution. Given Lankester’s insistence that Kropotkin had manufactured evidence to justify Lamarckian inheritance, Bonnier’s conclusions on this matter should be quoted at length.

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<sup>862</sup> Ibid. “А так как эти новые поколения представляют признаки новой разновидности, то я имею право говорить об наследственной передаче признаков.”

<sup>863</sup> Ibid.

<sup>864</sup> Kropotkin wrote another letter to Goldsmith about Bonnier on October 27, stating only “Bonnier did not reply. Did he say anything in *Revue General de Botanique*?” [A Bonnier ничего не ответил. Не ответил ли он чего-нибудь в своей *Revue generale de botanique*?] Kropotkin to Marie Goldsmith, October 27, 1910 in Confino, *Anarchistes en Exil*.

Two main causes are to be considered: adaptation and mutation. The first, adaptation, is explained in a very simple way, and it was the only way Lamarck allowed for the formation of species. If one manages to maintain a being for a very long time under new conditions, their form and structure change and adapt to conditions that were not usual for them; they acquire new characters, lose others, and these changes may become hereditary. This is what I experienced experimentally, for example, by growing plants for more than twenty years in the plains and at altitudes of more than 2,000 meters, in the Alps or in the Pyrenees; I have thus obtained, for certain forms, modifications between plants on the plain and in the mountains that were sufficiently large to be identified under different names by experienced botanical describers. . . . These experiments show that their structure is closely dependent on their chemistry, which itself is influenced by external conditions. This is a new confirmation of the Lamarckian theory. We can now give a positive solution to the double question I asked at the beginning. Yes, variations of the external environment can really modify the beings who are subjected to it. Yes, these produced changes can become hereditary.<sup>865</sup>

In his published response to Lankester, Kropotkin stated simply that he would have been happy to discuss his interpretation of Bonnier's work had Lankester reached out in a collegial fashion rather than accuse him of scientific fraud.

I also might have discussed with Sir Ray Lankester the question, whether my interpretation of Bonnier's experiments was correct namely, whether aerial stems, leaves, and flower-stalks grown from the subterranean stem or the runner of a plant, two or three years after it has been transplanted, may be considered as new generations, as I believe they may, or must be treated as mere parts of the mother-plant.<sup>866</sup>

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<sup>865</sup> Gaston Bonnier, *Le Monde Végétal* (Paris: Ernest Flammarion, 1907), pp. 260; 330. "Deux causes principales sont à considérer: l'adaptation et la mutation. La première, l'adaptation, s'explique d'une manière très simple, et c'était l'unique manière dont Lamarck admettait la formation des espèces. Si l'on arrive à maintenir pendant très longtemps un être dans des conditions nouvelles, sa forme et sa structure se modifient, s'adaptent à ces conditions qui ne lui étaient pas habituelles; il acquiert des caractères nouveaux, il en perd d'autres, et ces changements peuvent devenir héréditaires. C'est ce que j'ai constaté expérimentalement, par exemple, en cultivant pendant plus de vingt ans des plants pris en plaine à des altitudes de plus de 2.000 mètres, dans les Alpes ou dans les Pyrénées; j'ai obtenu ainsi pour certaines formes des modifications assez grandes pour que les deux plants de plaine et de montagne fussent déterminés sous des noms différents par des botanistes descripteurs expérimentés. . . . Ces expériences font voir que leur structure est sous la dépendance étroite de leur chimisme, celui-ci étant lui-même influencé par les conditions extérieures. C'est donc une confirmation nouvelle apportée à la théorie Lamarckienne. Nous pouvons maintenant donner une solution positive à la double question que j'ai posée au début. Oui, la variation elu milieu extérieur peut modifier réellement les êtres qui y sont soumis. Oui, ces modifications produites peuvent devenir héréditaires."

However, it seemed clear to Kropotkin that his interlocutor was not interested in an honest discussion given the way he engaged in sloppy scholarship himself on the second claim of fraud.

Lankester next highlighted Kropotkin's review of the botanical experiment conducted by Pierre Lesage that demonstrated phenotypic changes when plants were grown using a high-saline solution, changes that Kropotkin said had also been enhanced in the second generation. But when Lankester looked up the research to verify this claim, he only found the phrase "*surtout dans la seconde année de culture.*"

Thereupon Prince Kropotkin jumps to the wished-for conclusion that by the words 'second year of culture' Lesage means a second generation raised from the seed of the first year's plants. . . [I]n consequence of the same astounding inability on his part to quote a very simple statement without altering it radically.<sup>867</sup>

However, as Kropotkin went on to point out, Lankester had not consulted the correct reference in support of his conclusion. Kropotkin had actually cited three separate sources by Lesage and, according to Lankester's own admission, he had only taken the time to look up an abbreviated summary. In the full paper that Kropotkin had quoted, Lesage clearly stated that he had observed what he believed was the inheritance of acquired characters after "sowing the seeds carefully gathered from the pots of the

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<sup>866</sup> Kropotkin, "The Response of the Animals to Their Environment," *The Nineteenth Century*, November 1910, p. 866. Kropotkin returned to this question of "bud propagation" at length in his 1914 article "Inherited Variation in Plants." He quoted Darwin as stating, "The law of analogous variation holds good with varieties produced by buds as with those produced by seed. The laws of inheritance seem to be nearly the same with seminal and bud varieties. Finally, the facts given in this chapter prove in how close and remarkable manner the germ of a fertilised seed and the small cellular mass forming a bud resemble each other in their functions." Darwin, *The Variation of Animals and Plants Under Domestication*, Vol. 1, 2<sup>nd</sup> Edition (London: John Murray, 1875), pp. 442; 444. (Kropotkin cites a 1905 edition with different page numbers, but I have utilized the final edition by the original publisher.)

<sup>867</sup> E. Ray Lankester, "Heredity and the Direct Action of Environment," p. 487.

preceding year.”<sup>868</sup> Lankester may have been justified in arguing that the evidence cited did not have adequate controls and should therefore not be considered definitive proof of such a bold claim. However, in his haste to expose what he thought was flawed research, Lankester was himself guilty of what Kropotkin called “the most elementary rule of every scientific discussion, which is – *Never accuse anyone of manufacturing evidence without having consulted the texts you are referred to*” (italics in original).<sup>869</sup>

### **Kropotkin’s Transition from Phenotypic Plasticity to Epigenetic Inheritance**

Lankester’s critique had initially generated some interest as a polemic.<sup>870</sup> However, Kropotkin’s response appeared to settle the conflict and Lankester let the issue drop entirely. The controversy did, however, have one significant impact: it was a fervent reminder of the passions that could be generated over the mechanism of heredity and the need to provide substantial evidence if he hoped to make his case. It is also likely that Lankester’s provocation encouraged Kropotkin to expand what he had originally planned to be two articles into seven. In his subsequent correspondence, Kropotkin clearly saw himself as the defender of Darwinism while figures such as Lankester and Weismann he considered to be “Anti-Darwinians.”<sup>871</sup> After Lankester’s accusation, Kropotkin made it a point to challenge their position using the best available evidence.

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<sup>868</sup> Kropotkin, “The Response of the Animals to Their Environment,” *The Nineteenth Century*, November 1910, p. 867.

<sup>869</sup> Kropotkin, “The Response of the Animals to Their Environment,” *The Nineteenth Century*, November 1910, p. 866.

<sup>870</sup> *The Times* noted Kropotkin’s response in which he “crosses swords” with Lankester. “Reviews and Magazines,” *The Times*, Nov. 1, 1910, Issue 39418, p. 12. News of Lankester’s critique was covered in the *Review of Reviews* and spread as far as Australia. See “The Reviews Reviewed,” *The Review of Reviews* 42 (249), September 1910, p. 281; “Heredity and Environment,” *The Argus* (Melbourne), October 22, 1910, p. 8.

<sup>871</sup> See the letter from Kropotkin to Canadian economist James Mavor, April 1, 1912 in James Slatter, “The Anarchist Prince in the New World: The Letters of P.A. Kropotkin to James Mavor, 1897–1901,”

In Kropotkin's extensive discussion on the evidence for the direct action of the environment in evolution, the influence of *Entwicklungsmechanik* was readily apparent. It was also clear that Kropotkin was interested in the epigenetic theories of heredity as he was carrying out his research. For example, in Part II of his article "The Response of the Animals to Their Environment," Kropotkin cited research by Roux and his student Emil Schepelmann on the possible inheritance of use and disuse in the gastrointestinal system of geese. For his part, Schepelmann noted that, in "Lamarckian terms" (*lamarckistische Ansichten*) the stomach and small intestine are changed "unmistakably in terms of size as a result of the nutrients absorbed" (*unmittelbarsten unter der Einwirkung der aufgenommenen Nahrungsstoffe*).<sup>872</sup> Kropotkin summarized that the development of organs should be understood as operating in "two different periods," the auto-differentiation of the cells that make up the organ based on its inherited properties and the characteristics that emerge as a result of the function it performs, a developmental process that might then feed back into inheritance.<sup>873</sup> Kropotkin likewise wrote to Marie Goldsmith to tell her of the research he had been conducting, mainly from studies in the *Archiv für die Entwicklungsmechanik*, where he had found valuable work by Roux, the Austrian zoologist Hans Przibram, and the French-Polish animal behaviorist Anna Drzewina.<sup>874</sup> He was also reading what he found to be an "interesting" (*интересно*) book

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British Journal of Canadian Studies (11)2, 1996, pp. 265–298; Kropotkin to Marie Goldsmith, July 10, 1912 in Confino, *Anarchistes en Exil*; Kropotkin to John Scott Keltie, September 26, 1913 in RGSA, J.S. Keltie Files, 1881-1910.

<sup>872</sup> Emil Schepelmann, "Über die gestaltende Wirkung verschiedener Ernährung auf die Organe der Gans, insbesondere über die funktionelle Anpassung an die Nahrung," *Archiv für Entwicklungsmechanik der Organismen* 23(2), March 1907, p. 189.

<sup>873</sup> Kropotkin, "The Response of the Animals to Their Environment," *The Nineteenth Century*, December 1910, p. 1057.

<sup>874</sup> He had also read *The Laws of Heredity* by the Scottish physician and socialist G. Archdall Reid, which Kropotkin referred to as "534 slim pages of pure mathematics, with contempt for empiricism –

by Italian philosopher Eugenio Rignano that advocated a hypothesis of heredity called “centro-epigenetics” as a critique of Weismann’s preformationism. However, Przibram was of far greater interest for Kropotkin.<sup>875</sup> He had founded the *Biologische Versuchsanstalt* (Institute for Experimental Biology) in Vienna in 1903, a state-of-the-art facility with climate controlled laboratories that employed more than 70 scientists for the purpose of carrying out experimental morphology with an emphasis on “epigenetic functional adaptation.”<sup>876</sup> Przibram’s “work program” (*Arbeitsprogramm*) published in Roux’s *Archiv* made no secret about the ambitious plans he had for his research team.

The question of the inheritance of acquired characteristics has entered a new stage. . . This has been answered in an affirmative way by experiments on almost all large groups of animals and plants. The only question now is about how this change in offspring has been brought about.<sup>877</sup>

Przibram’s program was to 1) determine the physical conditions of heredity, 2) explore how external environmental factors modified these hereditary traits to create an individual phenotype, and 3) determine to what extent these external factors contributed to “somatic induction” (*somatische Induktion*) and the change in genotype that would get passed on to the next generation. The evidence that Kropotkin brought to bear over the following six papers would be overwhelmingly in the field of *Entwicklungsmechanik*.

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protection of Weismannism. Pure Marxism in biology!” [534 убористых страницы чистой математики, с презрением к эмпирике — защита вейсманизма. Чистый марксизм в биологии!] Letter from Kropotkin to Marie Goldsmith, February 27, 1911 in Confino, *Anarchistes en Exil*.

<sup>875</sup> Kropotkin cited Rignano twice in subsequent papers and referred to his centro-epigenetic hypothesis as a “most valuable work.” However, Kropotkin cited Przibram 15 times and scientists at the *Biologische Versuchsanstalt* a total of 23 times.

<sup>876</sup> Cheryl Logan and Sabine Brauckmann, “Controlling and Culturing Diversity: Experimental Zoology Before World War II and Vienna’s *Biologische Versuchsanstalt*,” *Journal of Experimental Zoology* 323A, 2015, p. 217.

<sup>877</sup> Hans Przibram, “Die Umwelt des Keimplasmas. I. Das Arbeitsprogramm,” *Archiv für Entwicklungsmechanik der Organismen* 33(3-4), February 1912, p. 666. “Die Frage nach der Vererbung erworbener Eigenschaften ist in ein neues Stadium getreten. . . Dies ist durch Versuche an fast allen grosseren Gruppen der Tiere und Pflanzen in bejahendem Sinne beantwortet worden. Vielmehr ist jetzt nur die Frage offen, auf welchem Wege die Veränderung der Nachkommen zustande gebracht wird.”

However, one topic in particular best describes the evolutionary epigenetic framework he was communicating: his argument for “group variations” in plants through a process of physiological selection.

In August 1868, Darwin received a letter from the philosopher and physiologist George Henry Lewes that included a critique of Darwin’s theory from *The Fortnightly Review* about similarities between species being more about “a community of substance under similar conditions rather than to a community of kinship.”<sup>878</sup> As examples, Lewes pointed to similarities between spicula, setæ, spines, or hooks on various plants around the world even though they are widely dispersed. This would suggest that they were analogous structures, because they had adapted to similar environments, rather than homologous structures because they shared a recent common ancestor. In Darwin’s response, he praised Lewes for what he thought, overall, was “quite excellent” but felt it was important to clarify certain points. As far as thorns and spines were concerned, he was not prepared to admit that environment alone could cause the extreme sharpness and hardness of these structures but felt it was more likely that they were the result of fluctuating variability and “the survival of the fittest.” However, Darwin did acknowledge that the spines would likely have formed by “the abortion of various appendages” such that the “precise form, curvature & colour of the thorns I freely admit to be the result of the laws of growth of each particular plant, or of their conditions internal & external.”<sup>879</sup> In other words, Darwin considered that the initial transformation of leaves into thorns was based on a natural law of growth within the plant itself and that,

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<sup>878</sup> George Henry Lewes, “Mr. Darwin's Hypotheses,” *Fortnightly Review* 9, p. 625.

<sup>879</sup> Letter from Darwin to G.H. Lewes, August 7, 1868. DCP-LETT-6308.

in response to the environment, there emerged a variation upon which natural selection could operate.

Kropotkin found this acknowledgment to be extremely instructive.<sup>880</sup> What this suggested was an interplay between the internal and external conditions so that, for example, a change in weather to a period of extreme heat or dry air could then result in a developmental change in the plant. “The surroundings, by their direct action upon the plant, produce the beginnings of *adapted* organs – elementary spines and thorns, due to the abortion of the lobes of the leaves.” Natural selection would then take effect and eliminate those individuals unable to undergo the same transformation while also preferentially selecting those that were able to do so more effectively. Kropotkin considered this to be an example of a “group variation,” because the environmental conditions that began the developmental process of adaptation would apply to all individuals within the same locality.

While the group variation Kropotkin proposed was hypothetical, he pointed out that experimental work had demonstrated this process in action. The French botanist, Aimables Lothelier, had cut stocks from eighteen different plant species and planted the stems under glass bells. He divided each species into two groups: in one group he kept the air very dry, while the other was maintained wet, with results that were strikingly different. For example, in the moist air group of the species *Berberis vulgaris* the plants had grown strong leaves and fully developed blades, whereas in the group conditioned to dry air only the first leaves had their full development while the later leaves had no

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<sup>880</sup> Peter Kropotkin, “The Theory of Evolution and Mutual Aid,” *The Nineteenth Century*, January 1910, p. 98.

blades at all and their nerves had transformed into thorns.<sup>881</sup> According to Bonnier, Lhotelier's experiment had "managed to profoundly modify the constitution and even the seeds of a wet soil plant by cultivating it in dry soil, and vice versa."<sup>882</sup> In the opposite direction, the German agronomist Ewald Wollny had taken a common furze (*Ulex europaeus*) and converted the thorns into leaves by providing surplus moisture.<sup>883</sup>

In his interpretation of this research, Kropotkin was not asserting the standard Lamarckian line of organisms changing with the environment with no role for individual variation or selection. He was instead highlighting the potential for saplings at the beginning of their developmental growth to undergo phenotypic flexibility in novel environmental conditions that altered their physiology in such a way that it allowed natural selection to operate. To further emphasize this point, Kropotkin adopted the concept of "physiological selection" following the theory developed by George Romanes. As a continuation on the levels of selection that Darwin had proposed (i.e. at the level of the social group, at the level of sex, as well as at the level of the individual), Romanes argued for selection at the molecular level. This, he stated, would help to explain species characteristics that had no evolutionary purpose, the widespread fact of sterility between closely related species, and how speciation could still take place given the averaging out of traits in a stable population through *panmixia* (i.e random mating).

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<sup>881</sup> Kropotkin, "Recent Science," April 1894, p. 690. Kropotkin, "The Direct Action of Environment in Plants," *The Nineteenth Century*, July 1910, p. 69; Also see Patrick Geddes, *Chapters in Modern Botany* (New York: Charles Scribner's Sons, 1893), pp. 184-5.

<sup>882</sup> Gaston Bonnier, *Le Monde Végétal* (Paris: Ernest Flammarion, 1907), p. 311. "[Lhotelier] arrivé à modifier profondément la constitution et même les graines d'une plante de sol humide en la cultivant en sol sec, et réciproquement."

<sup>883</sup> Kropotkin, "Recent Science," *The Nineteenth Century*, September 1901, p. 428; Kropotkin, "The Direct Action of Environment in Plants," *The Nineteenth Century*, July 1910, p. 69.

When accidental variations of a non-useful kind occur in any of the other systems or parts of organisms, they are, as a rule, immediately extinguished by intercrossing. But whenever they happen to arise in the reproductive system in the way here suggested, they must inevitably tend to be preserved as new natural varieties, or incipient species. At first the difference would only be in respect of the reproductive system; but eventually, on account of independent variation, other differences would supervene, and the new variety would take rank as a true species.<sup>884</sup>

As Kropotkin utilized the concept, there would be “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.”<sup>885</sup> Kropotkin argued that this process would function as another form of isolation that would contribute to speciation.<sup>886</sup> Those individuals or groups that were able to be developmentally flexible in the most adaptive way would ultimately survive best and form an incipient species. “Impressionability, plasticity, become the subject of struggle.”<sup>887</sup> Kropotkin may have utilized the language of Lamarckian heredity, but the process he described was epigenetic.

### **Preformationism versus Epigenetics and the Struggle for Eugenics**

This debate over the modes of inheritance, and whether heredity operated through a preformationist or an epigenetic process, was particularly salient in the early twentieth century rise of eugenics. While eugenics was never explicitly stated in either Kropotkin’s or Weismann’s scientific or scholarly work, both were actively engaged on the issue

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<sup>884</sup> George Romanes, “Physiological Selection; An Additional Suggestion on the Origin of Species,” *The Journal of the Linnean Society: Zoology* 19, 1886, p. 353. Read before the Linnean Society on May 6<sup>th</sup>, 1886.

<sup>885</sup> Kropotkin, “The Direct Action of Environment in Plants,” 1910, p. 61.

<sup>886</sup> Kropotkin, “The Theory of Evolution and Mutual Aid,” *The Nineteenth Century*, January 1910, p. 101.

<sup>887</sup> *Ibid.*, p. 99.

behind the scenes. Weismann supported eugenic “improvement” and corresponded with the leading figures in the German *Rassen-Hygiene* movement, including Alfred Plötz, Otto Ammon, and Wilhelm Schallmayer. His Germplasm theory was featured regularly in the German eugenicists’ flagship journal *Archiv für Rassen- und Gesellschafts-Biologie* and the premiere issue in 1904 was dedicated to Weismann personally (along with Ernst Haeckel). He was also named an honorary chairman of the Society for Racial Hygiene in 1905 and many of his students became early leaders of the society: such as Eugen Fischer, Fritz Lenz, and Schallmayer.<sup>888</sup> In contrast, Kropotkin was focused on challenging the scientific legitimacy of eugenics as documented through contemporaneous accounts and personal correspondence. Kropotkin correctly saw Weismann’s preformationist theory of inheritance as a central pillar of the eugenicists’ argument and it was this social meaning embedded within the science of heredity that provided the backdrop for Kropotkin’s critique.

Francis Galton had doggedly pursued his eugenic research beginning in 1869 with *Hereditary Genius*, but his arguments had only limited impact until the rediscovery of Mendel’s work and the emergence of genetics at the turn of the century.<sup>889</sup> However, the increased attention to discrete units of heredity resulted in a wave of interest into how this science could be applied in society. The Eugenics Education Society of London was founded in 1907 (with the *Eugenics Review* established two years later) and a sister society was formed at Cambridge University by R.A. Fisher in 1911. Following his death that same year, Galton left the residuary estate under his will – amounting to £45,000 – to

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<sup>888</sup> Robert Proctor, *Racial Hygiene: Medicine Under the Nazis* (Cambridge: Harvard University Press, 1988), p. 34.

<sup>889</sup> Daniel J. Kevles, *In the Name of Eugenics: Genetics and the Uses of Human Heredity* (Cambridge: Harvard University Press, 1995), pp. 41-44.

the University of London for the creation of an endowed Professorship of Eugenics.<sup>890</sup>

The statistician and socialist Karl Pearson, who had worked with Galton on the creation of the journal *Biometrika* to provide legitimacy for the biometric statistics that eugenic research relied upon, was identified in Galton's will as the first to hold this position. The following year, in 1912, the First International Eugenics Congress was held at University College London chaired by then-President of the Eugenics Education Society, Major Leonard Darwin (Charles Darwin's son).

From the beginning, eugenics required both scientific and political justifications in order to establish its legitimacy. Galton and Weismann were often referenced together in the late 1890s and early 1900s by supporters of eugenics, since Galton's theory of *stirps* and Weismann's theory of *biophors* both maintained an "absolute refusal to accept any type of germ plasm derived from body plasma."<sup>891</sup> Weismann, in particular, was lauded due to the fact that his preformationist theory of inheritance was crucial for any eugenic argument that required a "fixity of type" in individuals and racial groups. Alfred Plötz made this argument explicit in his 1895 work *Grundlinien einer Rassen-Hygiene* [Basics of Race Hygiene] such that, because of Weismann's research, it was now known that "Germplasm (germinal matter) determines the physical and mental organization of the developing individual. . . With the fertilization of the egg, the entire individuality of the child is determined."<sup>892</sup> However, modern democracy – and the socialist demand for

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<sup>890</sup> Anonymous, "The Galton Bequest," *Nature* 86(92), March 16, 1911, p. 92; Anonymous, "Terms of the Galton Bequest," *American Breeders Magazine* 2(1), 1911, p. 76.

<sup>891</sup> Alfred Plötz, *Grundlinien einer Rassen-Hygiene* (Berlin: Fischer, 1895), p. 22. "Francis Galton und Weismann, sowie die zahlreichen Anhänger ihrer absoluten Weigerung, irgend eine Art der Abstammung von Keimplasma aus Körperplasma anzunehmen, stehen in diesem Streit gegen Darwin, Haeckel, Hertwig, Romanes, Spencer, Vries und andere."

<sup>892</sup> *Ibid.*, p. 9 "Die Art der Zusammensetzung des Keimplasmas (Keimstoffs) bedingt die körperliche und geistige Organisation des entstehenden Individuums. . . Mit der Befruchtung des Eies ist somit die ganze Individualität des Kindes bestimmt."

equality in particular – presented a “conflict between the humanitarian and socialist demands and the welfare of our race.”<sup>893</sup> Such demands were both useless and, ultimately, detrimental to the future of “racial welfare” (*Rassenwohl*). Therefore, as the Swiss-German psychiatrist, geneticist, and eugenicist Ernst Rüdin wrote in *Archiv für Rassen- und Gesellschafts-Biologie*: “Let the view of Weismann be upheld, so that a disappearance of transferred mutations may take place.”<sup>894</sup> From the perspective of eugenics, science and society were firmly integrated and was necessarily in conflict with the demands for equality pushed for by socialists.

Weismann never published explicitly on the subject of eugenics, but he was clear that his preformationist Germplasm resulted in a “fixity of type” and, therefore, a hierarchy of races. In his 1889 essay, “Gedanken über Musik bei Thieren und beim Menschen” [Thoughts Upon the Musical Sense in Animals and Man], Weismann maintained that there was a stark difference in the intellectual capacities between “civilized man” [*Culturmensch*] and the “savage” [*Wilden*].<sup>895</sup> Weismann’s assumption of progress in human evolution established by deduction that the highly developed musical sense in an artist such as Beethoven could only be found among the highest intellects. Because human mental evolution progressed in complexity over time, these traits were the sole inheritance of the superior societies and reflective of their greater powers of mind than primitive peoples who were assumed closer to our ape-like ancestors. “It is therefore

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<sup>893</sup> Ibid. “Das Christenthum und die moderne Demokratie mit ihren Gleichheitslehren und Forderungen haben in den Massen den Sinn für Rasse so abgeschwächt, dass der Conflict zwischen den humanitär-socialistischen Forderungen und dem Rassenwohl gar nicht mehr in ihr Bewusstsein dringt.”

<sup>894</sup> Ernst Rüdin, “Kritische Besprechungen und Referate,” *Archiv für Rassen- und Gesellschafts-Biologie* 5, 1908, p. 422. “Eher lasse sich also die Ansicht Weismanns aufrecht erhalten, dat eventuell ein Verschwinden übertragener Mutationen Platz greife.”

<sup>895</sup> August Weismann, “Gedanken über Musik bei Thieren und beim Menschen,” in *Aufsätze über Vererbung und verwandte biologische Fragen* (Jena, 1892), p. 596.

impossible that a lost Beethoven ever existed among primitive man, nay, I should even doubt whether one could be found among existing Australians or negroes.”<sup>896</sup>

Weismann added to his views on heredity and racial improvement in his 1902 book *Vorträge über Deszendenztheorie* (published in England as *The Evolution Theory* in 1905). After referencing his earlier speculations on the evolution of the musical sense, Weismann asserted that such a process “is probably the same with the rest of the special psychical endowments or talents” (to which Weismann lists cleverness, ingenuity, courage, endurance, power of combination, inventive power, imagination, desire for achievement, and industry). Each had undergone “hereditary improvements” (*aufsteigender Variationsrichtungen*) in the higher classes as a result of civilization because they had “selection value” (*Selektionswerth*) for that social environment.<sup>897</sup> “Throughout the long history of human civilization these mental qualities must have increased through the struggle for existence.”<sup>898</sup> At the same time, Weismann warned of the “race-deterioration” (*Rassen-Verschlechterung*) that had developed among the higher classes given that society “does not prevent the weaklings from multiplying” (*hindert nicht die Schwachlinge, sich zu vermehren*).<sup>899</sup> Degeneration in teeth, muscular strength, the mammary-glands and breasts (as well as women’s ability to breastfeed),<sup>900</sup> and a

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<sup>896</sup> August Weismann, “Gedanken über Musik bei Thieren und beim Menschen,” p. 633. “Aus diesem Grunde kann keine Rede davon sein, dass unter den Urmenschen etwa schon verkappte Beethoven enthalten waren, ja, ich zweifle sogar bedeutend daran, dass solche unter den heutigen Australiern oder Negern umherwandeln.”

<sup>897</sup> August Weismann, *Vorträge über Deszendenztheorie*, Vol. 2 (Jena: Gustav Fischer, 1902), p. 166; *The Evolution Theory*, Vol. 2 (London: Edward Arnold, 1905), p. 148.

<sup>898</sup> August Weismann, *Vorträge über Deszendenztheorie*, Vol. 2 (Jena: Gustav Fischer, 1902), pp. 166-7; *The Evolution Theory*, Vol. 2 (London: Edward Arnold, 1905), p. 148. “Diese geistigen Eigenschaften mussten sich steigern im Laufe der langen Culturgeschichte der Menschheit allein schon durch den Kampf ums Dasein.”

<sup>899</sup> August Weismann, *Vorträge über Deszendenztheorie*, Vol. 2 (Jena: Gustav Fischer, 1902), pp. 165-6; August Weismann, *The Evolution Theory*, Vol. 2 (London: Edward Arnold, 1905), p. 147.

<sup>900</sup> However, this tendency among wealthy women to develop lactational amenorrhea was more likely the cultural practice of wet-nursing. See Sarah Blaffer Hrdy, *Mother Nature: Maternal Instincts*

deterioration in eyesight had all occurred in the higher classes because prior generations with inferior traits had been allowed to reproduce and, through panmixia, degrade those traits in subsequent generations. Weismann never specifically advocated that society should prevent “weaklings” from reproducing; but, unlike Darwin, he never dissuaded his readers from coming to that conclusion either. However, he was not nearly so restrained in his personal correspondence.

In private, Weismann regularly expressed a desire to apply his science in a way that fit with his political opposition to universal suffrage and socialism.<sup>901</sup> Benjamin Kidd, while he was still developing his book *Social Evolution*, travelled to Freiburg in 1890 to talk with Weismann since his theory of societal degeneration under socialism was based on the German naturalist’s theory of panmixia. The English sociologist was received enthusiastically and, in an 1894 letter to his editor Gustav Fischer, Weismann wrote that he had just finished reading Kidd’s treatise and considered it “an important book” (*ein bedeutendes Buch ist*) and offered to write the forward of a German translation.<sup>902</sup> In a subsequent letter to anthropologist and eugenicist Otto Ammon, Weismann referred to his own “preformationist theories of inheritance” as being at odds

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*and How They Shape the Human Species* (New York: Ballantine Books, 1999), pp. 351-357; Londa Schiebinger, *Nature’s Body: Gender and the Making of Modern Science* (Boston: Beacon Press, 1993), pp. 40-74.

<sup>901</sup> Weismann was also frequently anti-Semitic in his correspondence. He rejected the appointment of the zoologist Oswald Seeliger and historian Richard Fester because they were Jewish and wrote of the physician, Gustav Wolff, “I know nothing personal about him, but conclude only from his manner of negative criticism and the animal name that he is a Jew.” [*Ich weiß nichts Persönliches von ihm, schließe nur aus der Art rein negativer Kritik u. dem Thiernamen, daß es ein Jude ist.*] See August Weismann, June 7, 1898 letter to Hermann Vochting; August Weismann, Oct. 23, 1905 letter to Heinrich Bulle; August Weismann, Nov. 5, 1894 letter to Wilhelm Roux in *August Weismann: Ausgewählte Briefe und Dokumente, Vol. 1*, Churchill, F. & Risler, H. (eds.) (Universitätsbibliothek Freiburg, 1999), pp. 295; 442; 224.

<sup>902</sup> August Weismann, May 16, 1894 letter to Gustav Fischer, in *August Weismann: Ausgewählte Briefe und Dokumente, Vol. 1*, Churchill, F. & Risler, H. (eds.) (Universitätsbibliothek Freiburg, 1999), p. 217. “Das Kidd'sche Buch lege ich ebenfalls bei. Ich habe es jetzt ganz gelesen und bin der Meinung, daß es ein bedeutendes Buch ist.”

with epigenetic ones and was enthusiastic about Kidd's application of his ideas.<sup>903</sup> "It is literally a relief to finally have a counterbalance to this foolish cajoling by Socialists, as our younger economists preach it. . . Now it is high time for this absurd universal suffrage to be eliminated."<sup>904</sup> In the Forward itself, Weismann asserted that socialism violated the law of natural selection.<sup>905</sup> He wrote to Alfred Plötz, President of the International Society for Race Hygiene and founder of the leading eugenics journal *Archiv für Rassen- und Gesellschafts-Biologie*, in which he complained that, "the fighters for the inheritance of 'acquired' characters do not die out!"<sup>906</sup> In a July 19, 1910 letter to the eugenicist Wilhelm Schallmayer about his book *Vererbung und Auslese* [Inheritance and Selection] Weismann made it clear what the application of his scientific views ultimately were.<sup>907</sup>

"Naturally, I am in complete agreement that eugenics can and should intervene within each race. But to me, it is also likely, if not certain, that the racial characteristics are very different, so that one can talk of higher and lower races."<sup>908</sup>

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<sup>903</sup> August Weismann, March 1, 1895 letter to Otto Ammon, in *August Weismann: Ausgewählte Briefe und Dokumente, Vol. 1*, Churchill, F. & Risler, H. (eds.) (Universitätsbibliothek Freiburg, 1999), p. 451. "Dieselbe hängt mit meiner allerdings präformistischen Vererbungstheorie genau eben so wenig zusammen, als mit einer epigenetischen."

<sup>904</sup> August Weismann, March 25, 1895 letter to Otto Ammon, in *August Weismann: Ausgewählte Briefe und Dokumente, Vol. 1*, Churchill, F. & Risler, H. (eds.) (Universitätsbibliothek Freiburg, 1999), pp. 232-3. "Man ist ja förmlich erlöst endlich einmal ein Gegengewicht gegen dies unverständige Cajoling der Sozialisten zu haben, wie sie von unsern jüngeren Nationalökonomem gepredigt wird. . . Jetzt ist es höchste Zeit, daß das unsinnige allg. Stimmrecht beseitigt wird."

<sup>905</sup> Benjamin Kidd, *Soziale Evolution. Mit einem Vorwort von Dr. August Weismann* (Jena, 1895).

<sup>906</sup> August Weismann, March 21, 1906 letter to Alfred Plötz, in *August Weismann: Ausgewählte Briefe und Dokumente, Vol. 1*, Churchill, F. & Risler, H. (eds.) (Universitätsbibliothek Freiburg, 1999), p. 451. "Die Kämpfer für d. Vererb. 'erworbner' Charaktere sterben aber nicht aus!"

<sup>907</sup> For more on Schallmayer's eugenic views see Sheila Faith Weiss, *Race, Hygiene and National Efficiency: The Eugenics of Wilhelm Schallmayer* (Berkeley, University of California Press, 1987).

<sup>908</sup> August Weismann, July 19, 1910 letter to Schallmayer, in *August Weismann: Ausgewählte Briefe und Dokumente, Vol. 1*, Churchill, F. & Risler, H. (eds.) (Universitätsbibliothek Freiburg, 1999), p. 506. "Natürlich bin ich ganz einverstanden, dass Volks eugenik innerhalb jeder Rasse eingreifen kann und sollte, aber das ist mir doch auch wahrscheinlich, wenn nicht gewiß, daß die Rassen-Anlagen sehr verschieden sind, so daß man von höheren und niederen Rassen sprechen kann."

He congratulated Schallmayer for his book and wished his former student great success, not least “because the gradual selective breeding of mankind, especially as it relates to the eradication of hereditary diseases, is certainly a great and worthwhile goal.”<sup>909</sup> Two years later Weismann was listed as a Vice-President of the First International Eugenics Congress held in London, along with his German colleagues Alfred Plötz and Max von Gruber, President of the Society for Race Hygiene in Munich, and the American eugenicist Charles Davenport, then-Secretary of the American Breeders’ Association.<sup>910</sup>

Peter Kropotkin likewise attended the 1912 Eugenics Congress, but for very different reasons. As he wrote to Marie Goldsmith two weeks prior, he would not have time to take on Weismannism again for a few months. But he noted that there would likely be fights since “all the local Neo-Darwinists (that is, anti-Darwinists)” will be in attendance. “Maybe I will be there.”<sup>911</sup> In a speech that was reported in the London press the following day and later republished in the anarchist journals *Mother Earth* and *Freedom*, Kropotkin objected to basing any conclusions or legislative action on a scientific argument that had so little evidence to support it.<sup>912</sup>

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<sup>909</sup> “Jedenfalls wünsche ich Ihrem Buch auch weiterhin den besten Erfolg, denn die allmähliche Höherzüchtung der Menschheit, ganz besonders auch in Bezug auf die Ausmerzung der erblichen Seuchen ist sicherlich ein hohes und erstrebenswertes Ziel.”

<sup>910</sup> Eugenics Education Society, “President and Vice-Presidents,” *Report of the First International Eugenics Congress* (London: Eugenics Education Society, 1912), p. xi.

<sup>911</sup> Peter Kropotkin, Letter to Marie Goldsmith, July 10, 1912 in Confino, *Anarchistes en Exil*, p. 431.

“Раньше полутора–двух месяцев я за вейсманизм не возьмусь. 25-го июля здесь в Лондоне открывается конгресс Eugenics (больше насчет прекращения потомства всех ‘feeble-minded’ в числе коих, по проекту закона МакКенна должны попасть ‘неспособные зарабатывать себе на жизнь’ — кроме, конечно, коронованных особ, чиновников и ‘наследников.’ На этом конгрессе будет Kellogg (делегатом из Америки). Произойдут, верно, схватки м. ним и остальными: все здешние Нео-дарвинисты (сиречь анти-дарвинисты). Я может быть, буду там.”

<sup>912</sup> “Eugenics and Militarism,” *The Times*, Issue 39964, July 30, 1912, p. 4; “The International Eugenics Congress,” *The Lancet* 180(4640), August 3, 1912, p. 328. Kropotkin’s remarks were also recorded and reproduced more or less accurately in the Eugenic Education Society’s report on the Congress. See Eugenics Education Society, “Section III – Sociology and Eugenics, Monday, July 29<sup>th</sup>, Morning Session,” *Problems in Eugenics: Report of Proceedings of the First International Eugenics Congress*, Vol. 2 (London, 1913), p. 50.

Before science is enabled to give us any advice as to the measures to be taken for the improvement of the human race, it has to cover first with its researches a very wide field. Instead of that we have been asked to discuss not the foundations of a science which has still to be worked out, but a number of practical measures, some of which are of a legislative character. Conclusions were already drawn from a science before its very elements had been established.<sup>913</sup>

Kropotkin then went on to argue against the overemphasis on preformationism in the eugenics movement and advocated research on the direct action of environment as a factor in human inheritance.

I maintain that by systematically avoiding considerations about the influence of surroundings upon the soundness of what is transmitted by heredity, the Congress conveys an entirely false idea of both Genetics and Eugenics. To use the word *à la mode*, it risks the 'sterilization' of its own discussions.<sup>914</sup>

The following summer, Kropotkin was invited to address the issue of eugenics a second time during a session on medical sociology at the Annual Meeting of the British Medical Association. As he wrote to Jean Grave, French anarchist and editor of *Les Temps Nouveaux*, "I made a little noise. In the discussion on eugenics, I told them that there was not a single scientific word in everything they discussed."<sup>915</sup> The text of his statement has not been preserved, but the *British Medical Journal* reported on Kropotkin's speech the following week. In response to papers presented by Edgar Schuster (the first Galton Research Fellow), Dr. Harry Campbell, and J. Stewart Mackintosh on the need for eugenic sterilization, Kropotkin reportedly stated:

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<sup>913</sup> Peter Kropotkin, "The Sterillization of the Unfit," *Freedom. A Journal of Anarchist Communism* 35(282), 1912, pp. 76-77; "The Sterilization of the Unfit," *Mother Earth* 7(10), December 1912.

<sup>914</sup> Ibid.

<sup>915</sup> Kropotkin letter to Jean Grave, Aug. 8, 1913. Reproduced in *Пробуждение* 15, Feb. 1931, pp. 75-164. "Я наделал немножко шума. На дискуссии об евгенике я сказал им, что нет ни одного научного слова во всем том, что они толковали."

All that had been said in defence of eugenics was so unscientific. Natural selection was spoken of not as Darwin understood it, when, in his second great work, *The Descent of Man*, he considered it not as a struggle between all individuals of the same species, but as a struggle of the species against adverse surroundings (those species, he wrote, which contained the greatest number of mutually sympathetic individuals having the greatest chance of survival). Eugenists also said a good deal about ‘the elimination of the unfit,’ but no criterion of fitness was given. The two factors upon which the character of progeny depended were heredity and environment. To discuss the relative importance of these two factors would be useless.<sup>916</sup>

### **Conclusion: The Karl Marx of Biology**

Kropotkin ultimately rejected Weismann’s theory of a preformationist germplasm not for his conclusions *per se* but, as Frederick Churchill noted, because “like Naegeli, his argument rested on logic rather than facts.”<sup>917</sup> Weismann’s dialectical approach of beginning with first principles and negating his critics through deductive argument provoked Kropotkin to refer to him as “the Karl Marx of Biology” and his germplasm theory as little more than a “Hegelian creation.”<sup>918</sup> As Kropotkin wrote to Marie Goldsmith, he bemoaned what he saw as a rising interest in basing scientific arguments on rhetoric rather than evidence: “there is a whole new trend of Hegelian devilry, against whom we must fight strongly.” What remains clear is that Kropotkin did not oppose a particulate view of heredity, nor Mendelism specifically.<sup>919</sup> Neither was Kropotkin especially ideological on this question, as can be seen in his enthusiastic discussion of Francis Galton’s biometrical work – who advocated a preformationist heredity at least a decade prior to Weismann – and his rejection of Henri Bergson’s Neo-Lamarckian *élan*

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<sup>916</sup> Anonymous, “Discussion on ‘Eugenics,’” *The British Medical Journal*, Aug. 2, 1913, p. 230.

<sup>917</sup> Frederick Churchill, *August Weismann*, p. 306.

<sup>918</sup> Peter Kropotkin, Letter to Marie Goldsmith, April 2, 1915 in Confino, *Anarchistes en Exil*, p. 487.

<sup>919</sup> See Kropotkin, “The Direct Action of Environment in Plants,” 1910, p. 62, n. 6; “Inherited Variation in Plants,” 1914, p. 828 & 832.

*vital* despite the latter's emphasis on the evolution of morality (but through the rejection of a material explanation).<sup>920</sup> Science was central to Kropotkin's philosophical anarchism and he believed that building an edifice based on solid empirical evidence would offer the greatest benefit for the coming revolution.<sup>921</sup> He also believed that this "healthy materialism of the natural sciences" was the antidote to the decadence and degeneration of modern civilization.<sup>922</sup> Kropotkin's theory of heredity was partially motivated by the need to develop a mechanism by which mutual aid could act as a factor in evolution (much as it was for Darwin's own theory), but the opposition to Weismann was chiefly philosophical and, in this, Kropotkin closely followed Darwin's example. Kropotkin ultimately rejected the dichotomy between Neo-Darwinian and Lamarckian inheritance and sought to interpret the evidence through an inductive fashion under a single framework of evolutionary epigenetics.

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<sup>920</sup> For Galton see: See Kropotkin, "Recent Science," 1901, p. 425; "Evolution and Mutual Aid," 1910, p. 105. For Bergson see: Pierre Kropotkin, "La Croisade contre la Science de M. Bergson," *Les Temps Nouveaux*, Oct. 25, 1913, pp. 2-4.

<sup>921</sup> See Kropotkin, "The Ethical Need of the Present Day," *The Nineteenth Century*, 1904, p. 220. "Most certainly ideas are forces. . . they are ethical forces, if the ideas are correct and wide enough to represent the real life of Nature – not one of its sides only. The first step, therefore, towards the elaboration of a morality which should exercise a lasting influence is to base it upon an ascertained truth."

<sup>922</sup> Kropotkin, Letter to Marie Goldsmith, February 2, 1910, in Confino, *Anarchistes en Exil*, pp. 386-7; Todes, *Darwin Without Malthus*, p. 140.

## Conclusion

### Biology, Ideology, and the Social Applications of Darwinism

During the final years of his life, as the Russian Revolution and its aftermath swirled around him, Peter Kropotkin pursued a two-volume work on what he described as “empirical ethics.” This would be a continuation of *Mutual Aid* that would place moral philosophy on a naturalistic basis and provide an answer to the question posed by his late brother sixty years before: Why should we care about anyone else other than for self-interest or the fear of punishment? Kropotkin considered this question to be one of the most pressing concerns of his day.

Progress in moral philosophy since the dawn of the scientific revival in the fifteenth century had been one of “endeavoring to work out systems of ethics independent of the imperatives of religion.”<sup>923</sup> Thinkers such as Bacon, Hobbes, Rousseau, Descartes, Spinoza, Cudworth, Comte, Locke, Schopenhauer, Shaftesbury, Hutcheson, Hume, Paley, and Adam Smith had all struggled with this question. Finally, with Darwin’s theory of natural selection, the tools were available so that philosophy, like psychology, could be based on a new foundation. But this “universal acid,” as Darwin’s theory would later be called, also brought a philosophical problem that had to be reckoned with where it came to the origin of morality.<sup>924</sup>

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<sup>923</sup> Peter Kropotkin, *Ethics: Origin and Development*, p. 6.

<sup>924</sup> Daniel C. Dennet, *Darwin’s Dangerous Idea: Evolution and the Meanings of Life* (New York: Penguin Books, 1995), p. 521.

[I]f a scientist maintains that “the only lesson which Nature gives to man is one of evil” then he necessarily has to admit the existence of some other, extra-natural, or super-natural influence which inspires man with conceptions of “supreme good” and guides human development towards a higher goal. And in this way he nullifies his own attempt at explaining evolution by the action of natural forces only.<sup>925</sup>

This was the philosophy that emerged from T.H. Huxley and Alfred Russel Wallace, naturalists that saw only competitive struggle and self-interest in the natural world and which therefore required that they repudiate the morality of nature as a basis for human society.<sup>926</sup> This was likewise the philosophy that resulted in August Weismann’s abandonment of realist ethics with his teleological justification for an “immortal” germplasm because he believed that evolutionary history “must have been predetermined by a supreme power in accordance with a certain plan.”<sup>927</sup> This likewise provided the context for the popular embrace of Nietzsche’s philosophy of nihilism; for if competitive struggle and extermination of the weakest was a law of nature representing progress, the cessation of struggle and emergence of the “industrial state” that Comte and Spencer promised would signal the beginning of decadence and decay (E. Ray Lankester’s theory of degeneration in human society and the rise of eugenics as a response were two related outcomes). This, for Kropotkin, was the consequence when moral philosophy was based on an empirically flawed theoretical foundation.

In contrast, mutual aid was a “predominant fact of nature” and Darwin was correct when he considered “the instinct of ‘mutual sympathy’” as a trait that had become fixed in social animals and formed the basis of moral conscience in the ancestors of

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<sup>925</sup> Ibid., p. 13.

<sup>926</sup> Each would find their own explanation separate from natural selection in order to understand human morality: education, in the case of Huxley, and spirituality in the case of Wallace. See Chapter 3.

<sup>927</sup> Peter Kropotkin, “The Direct Action of Environment and Evolution,” *The Nineteenth Century*, January 1919, p. 75.

*Homo sapiens*.<sup>928</sup> Kropotkin therefore saw a need for establishing moral philosophy on an empirical foundation that would explain the origin and persistence of mutual aid in social animals, small-scale indigenous or stateless societies, industrial civilization, and as an ethical basis for the human future.

Most certainly, *ideas are forces*, as Fouillée puts it; and they are ethical forces, if the ideas are correct and wide enough to represent the real life of nature in its entirety, not one of its sides only. The first step, therefore, towards the elaboration of a morality which should exercise a lasting influence upon society, is to base this morality upon firmly established truths.<sup>929</sup>

This articulation of ideas as forces that can alter the social environment and direct human adaptation (what would later be a component of social ecology) was certainly true for religious moral philosophy throughout human history.<sup>930</sup> The ethical need that Kropotkin envisioned was a new philosophy that could replace the teleological ethics of humanity's superstitious past with one firmly grounded in empirical science that could also serve as a foundational moral compass for the world to come.

### **Kropotkin's Ideology versus Kropotkin's Biology**

Peter Kropotkin's theory of mutual aid has been accused from the beginning as representing political ideology positioning itself as biology. However, as this investigation has demonstrated, there were no prominent naturalists whose scientific theories were immune from inserting their political assumptions as scientific deductions. At the same time that scientists and historians of science have critiqued Kropotkin for

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<sup>928</sup> Peter Kropotkin, *Ethics: Origin and Development*, pp. 14-5.

<sup>929</sup> Here he cites Alfred Fouillée's *La Psychologie des Idées-Forces* (Paris, 1893). Peter Kropotkin, *Ethics: Origin and Development*, pp. 21-2.

<sup>930</sup> See Murray Bookchin, "What Is Social Ecology?" in M.E. Zimmerman (ed.) *Environmental Philosophy: From Animal Rights to Radical Ecology* (New Jersey: Prentice Hall, 1993).

what they perceive as ideological bias, anarchists and historians of radicalism have considered his commitment to science itself to be problematic. The Italian anarchist Errico Malatesta, for example, criticized his friend and comrade for holding to the “rigorously mechanistic” philosophy that prevailed among scientists in the nineteenth century. According to Kropotkin’s philosophy, Malatesta argued, everything in the universe from the path of the stars to a tyrant’s cruelty “must, and will occur as a result of an inevitable sequence of causes and effects of mechanical origin, which leaves no possibility of variety.”<sup>931</sup> Likewise, Matthew S. Adams in the journal *Anarchist Studies* reports that many modern commentators think, “Kropotkin’s attachment to evolutionary thinking undermines the revolutionary nature of his anarchist politics.”<sup>932</sup>

This tension that exists for scholars and historical actors in different domains of knowledge over Kropotkin’s seemingly idiosyncratic approach when observed from within their sphere of reference is indicative of the social ecology that I posit as a model to understand the development of Kropotkin’s life and work. Kropotkin’s scientific and political writing, as well as his Russian and transnational European identities, existed simultaneously as overlapping Venn diagrams with their own distinct communities and cultures that, altogether, encompass his unique perspective of evolutionary sociology. Different commentators may analyze Kropotkin’s work from their particular vantage but, as in the Indian parable of blind men placing their hands on different parts of the same elephant, each will be attempting to interpret the whole from a limited vantage point. In contrast, my methodology has been to trace the chronological development of

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<sup>931</sup> Errico Malatesta, “Peter Kropotkin – Recollections and Criticisms of an Old Friend,” *Studi Sociali*, April 15, 1931.

<sup>932</sup> Matthew S. Adams, “Kropotkin: Evolution, Revolutionary Change and the End of History,” *Anarchist Studies* 19(1), 2011, p. 56.

Kropotkin's thought and thereby shift to the appropriate domain of knowledge as he encountered it. This methodology offers a more holistic perspective by allowing the appropriate context for specific aspects of Kropotkin's life and work to be revealed when they became meaningful to him and allows for the observation of patterns that unfolded over time.

By interpreting Kropotkin's life and work through the lens of social ecology, there are three conclusions that can be drawn about his intellectual development and the wider social network with whom he engaged. This will be followed by six key ideas or points of contention concerning the development and interpretation of Darwinism in the late-nineteenth and early-twentieth centuries to which this dissertation offers unique insight.

A) Kropotkin's Darwinian theory of mutual aid was a project grounded first and foremost in science and where scientific concerns often preceded the political conclusions drawn from it. In Chapter One it was demonstrated that Kropotkin's identity as a naturalist came first and that his political interests emerged later. The lack of political commentary in Kropotkin's early correspondence and travel diaries (as well as his clear willingness to express such opinions when he had them) shows that Kropotkin's anarchism emerged slowly and was not fully realized until after 1872 when he travelled to the Jura Mountains. In Chapters Four and Five it was shown that Kropotkin's commitment to grounding his theory in the scientific literature was reflected in the wealth of citations he offered and his statements (both published and in private correspondence) about the importance of building scientific and political theories through an inductive methodology. Kropotkin believed it was important to accurately document evidence from

studies of the natural world and communicate these facts so that they would be widely available. This served a dual purpose of educating working people about the “healthy materialism of the natural sciences” and provided a solid basis of fact to build upon for the revolution to come.<sup>933</sup> Furthermore, as was also shown in Chapter One, Kropotkin’s anarchism may have been, and his anti-racist interpretation of evolutionary sociology certainly was, directly influenced by his experience with the indigenous societies of the Russian Far East. The fact that Kropotkin’s early ethnographic writing described egalitarian and cooperative societies in three regions characterized as Far East Zomias (and his observations that some of these societies had been disrupted by the intrusion of Russian and Chinese civilization) suggests that the earliest frame of reference Kropotkin had for free peoples engaging in systems of mutual aid without centralized control was among the indigenous communities he encountered. This presents the possibility that Kropotkin’s anarchism was, at least in part, inspired by his ethnographic experience in the Russian Far East.

B) Kropotkin’s Darwinian theory of mutual aid developed in the context of and in conversation with multiple related theories that can best be defined as Socialist Darwinism. What is commonly defined as Social Darwinism did not emerge out of Darwin’s work directly, but initially developed as a political response to Socialist Darwinism and then in continuing dialogue and polemics with the latter. Alongside the scientific developments of Darwinian biology, the widespread socialist movements that emerged in Russia, Europe, and England between 1860-1890 became intertwined with

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<sup>933</sup> Letter from Peter Kropotkin to Marie Goldsmith, February 2, 1910, in Confino, *Anarchistes en Exil*, pp. 386-7. This was also a commitment shared by Kropotkin’s friend, geographer, and fellow anarchist Élisée Reclus. See Federico Ferretti, “The Correspondence Between Élisée Reclus and Pëtr Kropotkin as a Source for the History of Geography,” *Journal of Historical Geography* 37, 2011, pp. 218-9.

Darwinian metaphors and meaning. As shown in Chapter Two, Darwin's theory was of immediate interest to members of the socialist movement for its challenge to the authority of the Church and its metaphor of struggling from the bottom-up to create social change. For many social commentators of all political orientations, Darwin's vision of species adapting to an environment in constant flux gave support to the growing workers' movement and challenged the stability of the status quo.<sup>934</sup> These views culminated in the Paris Commune, a workers' uprising that controlled the French capital from March to May 1871, beginning just one month after Darwin's publication of *The Descent of Man*. The advocates of Socialist Darwinism had various stances on issues of race and gender, the rate of social change, Malthusianism, and the mechanism of evolution, but one primary characteristic that all shared in common was an interpretation of evolutionary sociology that saw cooperative behavior as an outgrowth of moral instincts that helped individuals succeed in the "struggle for existence" by working together as a group.

As shown in Chapter Three, opponents of natural selection, such as St. George Mivart in London or Rudolf Virchow in Munich, saw the Commune as a breakdown in social stability that Darwin's theory was chiefly responsible for promoting.<sup>935</sup> In

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<sup>934</sup> On the political left see: David Stack, *The First Darwinian Left: Socialism and Darwinism, 1859-1914*, New Clarion Press, 2003; Pittenger, M. *American Socialists and Evolutionary Thought, 1870-1920*, University of Wisconsin Press, 1993. On the political right see: Paul Crook, *Darwinism, War, and History*, Cambridge University Press, 1994; Richard Hofstadter, *Social Darwinism in American Thought*, Beacon Press, 1944; Mike Hawkins, *Social Darwinism in European and American Thought, 1860-1945*, Cambridge University Press, 1997.

<sup>935</sup> Mivart's review of *Descent of Man* in July, 1871 claimed that Darwinism would lead to "horrors worse than the Paris Commune." Mivart, G. "The Descent of Man . . .," *Quarterly Review of Biology* 131: 47-90, 1871; Virchow took to the podium as the closing plenary of the fiftieth meeting of the Gesellschaft deutscher Naturforscher und Aerzte (Society of German Natural Scientists and Physicians) on 18 Sept., 1877 to condemn natural selection for causing "the tribulation...in our neighboring country." Rudolf Virchow, "Die Freiheit der Wissenschaft im modernen Staatsleben," in *Amtlicher Bericht der 50. Versammlung*, 69, 1877. In the popular press, the *Times* stated, "A man incurs a grave responsibility who, with the authority of a well-earned reputation, advances at such a time the disintegrating speculations of this book," while the *Family Herald* proclaimed, "Society must

response, leading advocates of Darwin's theory (most notably Thomas Henry Huxley in England and Ernst Haeckel in Germany) thought it necessary to reject any connection between Darwinian theory and socialist ideas.<sup>936</sup> What emerged in elite circles was a politically acceptable Darwinism, one that justified the status quo and promoted a competitive ethic of individual vs. individual and nation vs. nation with the most "fit" rising to the top of the hierarchy. In this way, the debate between Social Darwinism and Socialist Darwinism suggests that political crisis gave rise to scientific interpretations based on ideological rather than empirical grounds. Peter Kropotkin sat at the center of this debate as a gentleman naturalist and political radical who bridged the divide between Neo-Darwinism and Lamarckism, the natural and human spheres of scientific discourse, and who maintained direct engagement with the transnational circulation of texts, people, and ideas. This conclusion that Social Darwinism was not a unique formulation of evolutionary sociology but was rather a political interpretation that developed in opposition to and in dialogue with Socialist Darwinism suggests a reinterpretation of the historiography on this topic.

C) Kropotkin's science is directly relevant to contemporary scientific questions and his argument for the evolution of cooperation was ultimately closest to Darwin's than any of his contemporaries. Kropotkin was a committed Darwinian from his earliest

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fall to pieces if Darwinism be true." "Mr. Darwin on the Descent of Man," *Times*, April 8, 1871, p. 5, col. 5; *Family Herald*, May 20, 1871, p. 44.

<sup>936</sup> Haeckel would write, in direct response to Virchow, "The theory of descent proclaims more clearly than any other scientific theory that the equality of the individual striven for by socialism is an impossibility." Ernst Haeckel, *Freie Wissenschaft und freie Lehre: Eine Entgegnung auf Rudolf Virchow's Munchener Rede uber "Die Freiheit der Wissenschaft im modernen Staat,"* (Stuttgart: E. Schweizerbart'sche Verlagshandlung, 1878), p. 72. Huxley would write in the preface to the English translation of Haeckel's *Die Freiheit*, "Darwinism, I say, is anything rather than socialist! If this English hypothesis is to be compared to any definite political tendency—as is, no doubt, possible—that tendency can only be aristocratic, certainly not democratic, and least of all socialist." Thomas Henry Huxley, Preface to *Freedom in Science and Teaching*, by Ernst Haeckel (New York: D. Appleton, 1879), p. xviii.

encounter with *On the Origin of Species* and he was concerned about the impact to science from what he considered to be highly flawed interpretations from Neo-Darwinists like Thomas Henry Huxley and August Weismann. As demonstrated in Chapters 4 and 5, Kropotkin shared with Darwin a commitment to the Baconian inductive method in the construction of scientific theory and strongly opposed Weismann's deductive methodology for the same reason he opposed Marxist philosophy. Like Darwin, Kropotkin also employed an argument for the evolution of the moral sense based on multilevel selection as well as the unique articulation of *social selection* as an evolutionary mechanism to explain the evolution of within-group cooperative behavior. In contrast to most contemporary scholarship on this subject, this analysis shows that Kropotkin's theory of mutual aid did not rely on the Lamarckian mechanisms of the direct action of the environment nor the inheritance of acquired characteristics. In this sense, Kropotkin was even more committed to natural selection than Darwin was on the question of the moral sense. Finally, this dissertation demonstrates that Kropotkin's much-maligned twentieth-century work on Lamarckian inheritance is better interpreted as a robust defense of Darwin's epigenetic framework in which both heredity and development were integrated in the process of evolutionary change. Kropotkin's extensive discussion of the newly-emerging science of evolutionary mechanics in Germany, or *Entwicklungmechanik*, offers one of the earliest discussions of epigenetics and developmental genetics to have been written in English. Kropotkin's work on this topic has been misinterpreted by historians and biologists alike as a throwback to earlier nineteenth-century Lamarckian arguments and needs to be reexamined in context.

The last decade has seen a resurgence of interest in group selection, or multilevel

selection. While relegated to the backwaters of scientific discussion ever since the late 1960s, the idea never disappeared entirely. But in 2007 when Edward O. Wilson, previously a leading advocate for the gene-centered view of life, changed his position and endorsed the view of evolution operating at a higher level of selection, it offered permission for other biologists to take a second look.<sup>937</sup> This has led to bitter debates between advocates of inclusive fitness and group selection in the scientific literature.<sup>938</sup> However, the recent analyses suggest that the mathematical models of both approaches are functionally equivalent.<sup>939</sup>

Charles Darwin first introduced the concept of higher-level selection in *On the Origin of Species* as an explanation for neuter insects among the Hymenoptera. “[I]f such insects had been social and it had been profitable to the community that a number should have been annually born capable of work, but incapable of procreation, I can see no very great difficulty in this being effected by natural selection.”<sup>940</sup> This line of thought was subsequently taken up by Peter Kropotkin and the Russian scientist Theodosius Dobzhansky, the latter of whom coined the term “group selection” and stated that animal “interactions obey rules *sui generis*, rules of the physiology of populations, not those of

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<sup>937</sup> David Sloan Wilson and Edward O. Wilson, “Rethinking the Theoretical Foundation of Sociobiology,” *The Quarterly Review of Biology* 82(4), 2007, pp. 327–348.

<sup>938</sup> See Gardner, A. and Grafen, A. “Capturing the Superorganism: A Formal Theory of Group Adaptation,” *Journal of Evolutionary Biology* 22 (2), 2009, pp. 659–671; Nowak, M.A., Tarnita, C.E., Wilson, E.O. “The Evolution of Eusociality,” *Nature* 466(7310), 2010, pp. 1057–1062; Okasha, S. “Altruism Researchers Must Cooperate,” *Nature* 467(7316), 2010, pp. 653–655; Abbott, P. “Inclusive Fitness Theory Eusociality,” *Nature* 471(7339), 2011, pp. E1–E4; Boomsma, J.J., Beekman, M., Cornwallis, C.K., Griffin, C.K., Holman, L., Hughes, W.O.H., Keller, L., Oldroyd, B.P., Ratnieks, F.L.W. “Only Full-Sibling Families Evolved Eusociality,” *Nature* 471(7339), 2011, pp. E4–E5; Strassmann, J.E., Page, R.E., Robinson, G.E., Seeley, T.D. “Kin Selection and Eusociality,” *Nature* 471(7339), 2011, pp. E5–E6; Ferriere, R. and Michod, R.E. “Inclusive Fitness in Evolution,” *Nature* 471(7339), 2011, pp. E6–E8; Herre, E.A., Wcislo, W.T. “In Defence of Inclusive Fitness Theory,” *Nature* 471(7339), 2011, pp. E8–E9; Nowak M.A., Tarnita C.E., Wilson E.O. “Reply,” *Nature* 471(7339), 2011, pp. E9–E10.

<sup>939</sup> Traulsen, A. “Mathematics of Kin- and Group-Selection: Formally Equivalent? *Evolution* 64(2), 2010, pp. 316–323; Marshall, J.A.R. Group Selection and Kin Selection: Formally Equivalent Approaches,” *Trends in Ecology and Evolution* 28(7), pp. 325–332.

<sup>940</sup> Charles Darwin, *On the Origin of Species* (London: John Murray, 1859), p. 236.

the physiology of individuals.”<sup>941</sup> Dobzhansky’s influence on population genetics cannot be underestimated.

However, it was George Williams’ *Adaptation and Natural Selection* that inaugurated the modern Neo-Darwinist rejection of group selection. Williams set up his book as the culmination of a one hundred year struggle between those who emphasized natural selection as the primary creative force in evolution, opposed by those who minimized its role. The key for Williams was a distinction between “biotic adaptations,” traits that promote the success of a biota, versus “organic adaptations,” traits that promote reproductive success of individual organisms. “Any feature of the system that promotes group survival,” Williams wrote, “and cannot be explained as an organic adaptation can be called a biotic adaptation.” But he argued that biotic adaptations that promoted species survival were “merely an incidental effect” and “entirely explainable on the basis of adaptation for individual genetic survival.”

Given the homage that is regularly paid to Williams for rejecting group selection, it is perhaps surprising that he intended no such thing. In the Preface to the 30th Anniversary edition of *Adaptation and Natural Selection* Williams wrote that, in the years after his book’s publication in 1966, it “became fashionable to cite my work (sometimes, I suspect, by people who had not read it) as showing that effective selection above the group level can be ruled out.”

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<sup>941</sup> Theodosius Dobzhansky, *Genetics and the Origin of Species* (New York: Columbia University Press, 1937), p. 120.

My recollection, and my current interpretation of the text, especially Chapter 4, indicate that this is a misreading. I concluded merely that group selection was not strong enough to produce what I termed biotic adaptation. . . Even without its producing biotic adaptation, group selection can still have an important role in the evolution of Earth's biota.<sup>942</sup>

In fact, both Williams as well as W.D. Hamilton would later accept a role for group selection; a fact rarely alluded to by those who lionize their work as Darwinian “purists” and champions of selection solely at the level of the individual.<sup>943</sup>

The “contentious history of group selection,” as Mark Borrello has referred to it, is unlikely to end in the immediate future so long as ambiguity remains over which approach offers better predictions for a given aspect of social behavior. However, in line with Borrello's own conclusion on these debates, philosopher Samir Okasha wrote in *Nature* in 2010 that the argument over group selection had now descended into “tribalism” and, in so doing, biologists “risk causing serious damage to the field of social evolution, and potentially to evolutionary biology in general.”

I contend that there is little to argue about. Much of the current antagonism stems from the fact that different researchers are focusing on different aspects of the same phenomenon, and are using different methods. . . [K]in and multi-level selection are not alternative theories; they simply offer different takes on the question of how social behaviour evolved.<sup>944</sup>

In a way analogous to Okasha's conclusion, primatologist Richard Wrangham has come to a similar result when looking at the controversy over the Kropotkin and Huxley continuum in evolutionary theory. Wrangham places Kropotkin as a foil for Huxley's pessimism in much the same way that Jean-Jacques Rousseau countered that of Thomas

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<sup>942</sup> George C. Williams, *Adaptation and Natural Selection: A Critique of Some Current Evolutionary Thought*, (Princeton: Princeton University Press, 1966), p. xii.

<sup>943</sup> George C. Williams, *Natural Selection: Domains, Levels, Challenges* (Oxford: Oxford University Press, 1992); W.D. Hamilton, *Narrow Roads of Gene Land: The Collected Papers of W.D. Hamilton* (Oxford: W.H. Freeman, 1996).

<sup>944</sup> Samir Okasha, “Altruism Researchers Must Cooperate,” *Nature* 467(7316), 2010, pp. 653–655.

Hobbes. “In short, Rousseau–Kropotkin sees humans as a naturally peaceful species corrupted by society, while Hobbes–Huxley sees humans as a naturally aggressive species civilized by society.”<sup>945</sup> However, rather than labeling Kropotkin “utopian,” he instead considers him to have been interested in a valid scientific question but one that was looking at a different concern than what Huxley was focusing on. Wrangham frames this as the difference between reactive aggression, in which humans respond violently to factors within their group, and proactive aggression, in which humans plan violent actions between groups. According to Wrangham, the data on reactive aggression in humans is low whereas the data on proactive aggression is high. When looked at in this way, it suggests that both Kropotkin and Huxley “were accordingly each right in complementary ways.”<sup>946</sup>

## **1. Race and Racism (or Anti-Racism)**

As shown in Chapter One, Kropotkin’s anti-racist interpretation of evolutionary sociology was directly influenced by his ethnographic experiences and was unlikely a product of his political anarchism. The culture of scientific exploration in early-nineteenth century Germany and Russia, emphasizing overland journeys eastward in which demographic changes in physical appearance and sociocultural behavior would occur gradually, promoted the inclusion of ethnography as a core pillar of geographical practice (and the near-total exclusion of anthropometry as a useful tool for classifying races). This anti-racist culture was reflected in Kropotkin’s early ethnographic writing

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<sup>945</sup> Richard W. Wrangham, “Two Types of Aggression in Human Evolution,” *Proceedings of the National Academy of Sciences* 115(2), p. 245.

<sup>946</sup> *Ibid.*, p. 249.

and continued throughout his later work when describing race and indigeneity through an evolutionary lens. This same anti-racist sensibility was not shared by many of his fellow radicals unless, like in the case of Louis Dramard or Élisée Reclus, they had spent time outside of Western Europe living amongst non-white peoples. This demonstrates that an application of Darwin's ideas did not necessarily lead to racist social policy.

The assumptions of white supremacy were common across the political spectrum (in England and France in particular) and an evolutionary lens merely allowed these preexisting biases to be justified using the rhetoric of science. Darwin did not advocate the deliberate elimination of "lower" races, but he assumed this would happen naturally and that non-white races would gradually decline when confronted by invading white men.<sup>947</sup> As Adrian Desmond and John Moore have shown, Darwin remained a tireless campaigner against the institution of slavery throughout his life and regularly donated money to charitable organizations assisting emancipated slaves.<sup>948</sup> However, less sympathetic Darwinists, such as the English mathematician and socialist Karl Pearson, directly advocated the replacement of inferior races by white populations whenever possible.

It is a false view of human solidarity, a weak humanitarianism, not a true humanism, which regrets that a capable and stalwart race of white men should replace a dark-skinned tribe which can neither utilize its land for the full benefit of mankind, not contribute its quota to the common stock of human knowledge. The struggle of civilized man against uncivilized man and against nature produces a certain partial 'solidarity of humanity' which involves a prohibition against an individual community wasting the resources of mankind.<sup>949</sup>

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<sup>947</sup> Adrian Desmond and John Moore, *Darwin* (London: Michael Joeseeph, 1991), pp. 442-43.

<sup>948</sup> Desmond and Moore, *Darwin's Sacred Cause*; Browne, *The Power of Place*, p. 256.

<sup>949</sup> Karl Pearson, *The Grammar of Science* (2<sup>nd</sup> edn., London, 1900), p. 369; cited in Peter J. Bowler, *Biology and Social Thought* (Office for History of Science and Technology, University of California at Berkeley, 1993), p. 70.

Pearson represented an extreme position in the England of his day. Alfred Russel Wallace was more typical of naturalists where he discussed the hierarchy of races and his prediction for what nature had in store for the future. As the result of natural fitness differences, the “improved” races, namely white Europeans, would inevitably “displace the lower and more degraded races.” Because of this, Wallace argued, the civilized races would increase at the expense of the latter “just as the weeds of Europe overrun North America and Australia.”<sup>950</sup> A second common approach, endorsed by Huxley, was to appeal to the results of pre-Darwinian physical anthropology and to thereby integrate old answers for a new question. Thus Huxley argued that, “the difference in the volume of the cranial cavity of different races of mankind is far greater, absolutely, than that between the lowest Man and the highest Ape.”<sup>951</sup> Huxley would certainly have been aware of the German anatomist Friedrich Tiedemann’s results that found no such difference in cranial volume, but, like the prevalent ideology of racial progress, such findings seemed incompatible with what was a readily observable fact.<sup>952</sup> This underscores the fact that political ideology did not significantly influence the assumptions of white supremacy. However, the example of Peter Kropotkin demonstrates that it was possible for evolutionary sociology to be applied with an anti-racist orientation if a theorist had that perspective to begin with.

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<sup>950</sup> Browne, *The Power of Place*, p. 254.

<sup>951</sup> Thomas Henry Huxley, *Evidence as to Man’s Place in Nature* (Edinburgh: Williams and Norgate, 1863), p. 78. Cited in George W. Stocking, *Victorian Anthropology* (New York: The Free Press, 1987), p. 148.

<sup>952</sup> Robert Richards, *The Tragic Sense of Life: Ernst Haeckel and the Struggle Over Evolutionary Thought* (Chicago: University of Chicago Press, 2008), p. 158

## 2. Evolution or Revolution (“Punctuated Equilibrium”)

As shown in Chapter Two, the assumptions of progress were embedded in both the political and scientific theories of the late-19<sup>th</sup> and early-20<sup>th</sup> centuries.<sup>953</sup> As Alain de Benoist has stated, the idea of progress could be regarded as the real “religion of Western civilization.”<sup>954</sup> Laissez-faire capitalists trusted that the logic of the market would lead, as Adam Smith wrote, to “the natural progress of things towards improvement.”<sup>955</sup> Marxists (and socialists more generally, including anarchists) assumed that revolution was inevitable based on the laws of history and would lead toward progress in society.<sup>956</sup> The assumption of progress was foundational to the fields of evolutionary biology and anthropology (and, in fact, the theory of Malthus was originally proposed as a model of progress).<sup>957</sup> Herbert Spencer combined the assumptions of progress in laissez-faire

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<sup>953</sup> Robert Nisbet, *History of the Idea of Progress* (New York: Routledge, 1994).

<sup>954</sup> Alain de Benoist, “A Brief History of the Idea of Progress,” *The Occidental Quarterly* 8(1), Spring 2008, pp. 1-17.

<sup>955</sup> Adam Smith, *An Inquiry into the Nature and Causes of the Wealth of Nations* (Edinburgh: Thomas Nelson and Peter Brown, 1831), p. 141.

<sup>956</sup> A. Schaff, “The Marxist Theory of Social Development,” in S.N. Eisenstadt (ed.) *Readings in Social Evolution and Development* (Elsevier, 2013), pp. 71-94; Paresh Chattopadhyay, “Passage to Socialism: The Dialectic of Progress in Marx,” *Historical Materialism* 14(3), 2006, pp. 45-84; Gerald Allan Cohen, *Karl Marx’s Theory of History: A Defence* (Clarendon Press, 2000); Henry M. Pachter, “The Idea of Progress in Marxism,” *Social Research* 41(1), 1974, pp. 136-161. As Kropotkin wrote about progress in anarchism: “By taking for our watchword anarchy, in its sense of no-government, we intend to express a pronounced tendency of human society. In history we see that precisely those epochs when small parts of humanity broke down the power of their rulers and reassumed their freedom were epochs of the greatest progress, economical and intellectual. Be it the growth of the free cities, whose unrivalled monuments – free work of free associations of workers – still testify of the revival of mind and of the well-being of the citizen; be it the great movement which gave birth to the Reformation – those epochs witnessed the greatest progress when the individual recovered some part of his freedom.” Peter Kropotkin, “The Coming Anarchy,” *The Nineteenth Century*, August 1887, p. 153.

<sup>957</sup> For evolutionary biology see: Michael Ruse, *Monad to Man: The Concept of Progress in Evolutionary Biology* (Harvard University Press, 2009); Michael Ruse, “Evolution and the Idea of Social Progress,” In Denis Alexander & Ronald L. Numbers (eds.), *Biology and Ideology From Descartes to Dawkins* (University of Chicago Press, 2010); J. C. Greene, “Progress, Science, and Value: A Biological Dilemma,” *Biology and Philosophy* 6(1), 1991, pp. 99-106; Peter J. Bowler, *Evolution: The History of an Idea* (University of California Press, 1989), pp. 96-108. For anthropology see: Fred W. Voget, “Progress, Science, History and Evolution in Eighteenth- and Nineteenth-Century Anthropology,” *The History of the Behavioral Sciences* 3(2), April 1967, pp. 132-55; Lewis H. Morgan, *Ancient Society, or Researches in the Lines of Human Progress from Savagery through Barbarism to Civilization* (New

ideology and evolutionary biology to arrive at the conclusion that competitive struggle in society was the path toward progress in human affairs. Kropotkin followed Spencer in this regard but under the assumptions of socialist progress.<sup>958</sup>

However, the progress that Darwin articulated in *On the Origin of Species* was contingent on what was advantageous for individuals within a particular environment. If that environmental context was altered, the “progress” of evolutionary change for a given trait may change as well (or members of that species would be unable to adapt and the result would be extinction). It was to this concept of progress that Kropotkin discussed the evolution and future of human society. When looking at the diversity of social structures and subsistence strategies, it was clear to Kropotkin that human society was not the product of linear evolution as outlined by Lewis Henry Morgan (a theory of social evolution that Marx had adopted). As Kropotkin wrote, “We certainly must abandon the idea of representing human history as an uninterrupted chain of development from the pre-historic Stone Age to the present time.”<sup>959</sup> At the same time, the clear benefit that the “moral sense” had for promoting mutual aid in human societies suggested that future progress could be achieved by promoting an environment where that trait was more fully expressed. On the contrary, Kropotkin wrote that it “would be the extinction” (*serait l’extinction*) of the human species in a few generations if parents did not sacrifice for their

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York: Henry Holt and Company, 1877). For Malthus see: Samuel M. Levin, “Malthus and the Idea of Progress,” *Journal of the History of Ideas* 27(1), 1966, pp. 92-108.

<sup>958</sup> “In the practice of mutual aid, which we can retrace to the earliest beginnings of evolution, we thus find the positive and undoubted origin of our ethical conceptions; and we can affirm that in the ethical progress of man, mutual support – not mutual struggle – has had the leading part.” Peter Kropotkin, *Mutual Aid: A Factor of Evolution* (New York: McClure Phillips & Co., 1902), p. 300.

<sup>959</sup> Peter Kropotkin, “The Ethical Needs of the Present Day,” *The Nineteenth Century*, August 1904, pp. 217-8.

children or if people did not help others without expecting a reward.<sup>960</sup> It was likely for this reason that there were no documented societies anywhere in the world where these “faculties of sociality” were absent.

As shown in Chapter Three, the nineteenth-century argument from the standpoint of Social Darwinism was that socialism would interrupt the path of progress by eliminating the drive for competition. As E. Ray Lankester articulated, this could lead to “degeneration” in society because the natural law of competitive struggle was unable to eliminate the less “fit” individuals. However, from the perspective of Socialist Darwinism, it was the capitalist that stole the productivity of the workers and the State that forbade their free association and natural desire for cooperation that interrupted social progress. Only by leveling the playing field and preventing those born with power and privilege from asserting their influence on the powerless (as well as dismantling the structures that offered them unfair advantages) could natural selection have a chance to operate in human society. Among nineteenth-century socialists, the debate over social progress ebbed and flowed between gradual evolution and radical revolution, with the assumption being that the latter would lead to the same result but at a significantly faster rate.<sup>961</sup> As the geographer and anarchist Élisée Reclus described it:

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<sup>960</sup> Pierre Kropotkin, *La Conquête du Pain* (Paris: Tresse & Stock, 1892), p. 231. “Ce serait l’extinction de la race, si la mère n’usait sa vie pour conserver celles de ses enfants, si chaque homme ne donnait quelque chose, sans rien compter, si l’homme ne donnait surtout là où il n’attend aucune récompense.” Also see Peter Kropotkin, *The Conquest of Bread* (London: Chapman and Hall, 1913), p. 233.

<sup>961</sup> Federico Ferretti, “Evolution and Revolution: Anarchist Geographies, Modernity and Poststructuralism,” *Environment and Planning D: Society and Space* 35(5), 2017, pp. 893-912; Melvyn L. Fein, *Evolution Versus Revolution: The Paradoxes of Social Change* (New York: Routledge, 2015), pp. 61-90; Lawrence Krader, “Social Evolution and Social Revolution,” *Dialectical Anthropology* 1(2), February 1976, pp. 109-20.

Myriads and myriads of revolutions follow one another within the universal evolution; however minor they may be, they are part of this infinite movement. Thus, science sees no opposition in these two words – evolution and revolution – which are very similar, albeit used in a different sense in common language.<sup>962</sup>

Nineteenth-century advocates of Socialist Darwinism therefore understood revolution in the sense of “punctuated equilibrium” as developed by Stephen Jay Gould in 1977, as a variable rate of evolutionary change.<sup>963</sup> As outlined in Chapter Two, this debate over evolution versus revolution in the socialist movement occurred alongside the debate about the rate of evolutionary change among naturalists. While Darwin was a gradualist and argued that evolutionary change occurred “with slow and slight successive modifications,” he did not accept that all species were undergoing evolutionary change at the same rate.<sup>964</sup> In the context of the debate between Social Darwinism and Socialist Darwinism, the former advocated gradualism in the rate of social change while the latter were more likely to accept the necessity of revolution as a period of punctuated equilibrium.

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<sup>962</sup> Élisée Reclus, *Écrits Sociaux*, Alexandre Chollier and Federico Ferretti (eds). (Geneva: Héros-Limite, 2012), p. 10.

<sup>963</sup> Stephen Jay Gould and Niles Eldridge, “Punctuated Equilibria: The Tempo and Mode of Evolution Reconsidered,” *Paleobiology* 3(2), 1977, pp. 115-151; Stephen Jay Gould, “Punctuated Equilibrium in Face and Theory,” *Journal of Social and Biological Structures* 12, 1989, pp. 117-136; Stephen Jay Gould and Niles Eldridge, “Punctuated Equilibrium Comes of Age,” *Nature* 366, 1993, pp. 223-227.

<sup>964</sup> As Darwin wrote in the 4<sup>th</sup> Edition of *Origin*: “[T]he periods during which species have been undergoing modification, though very long as measured by years, have probably been short in comparison with the periods during which these same species remained without undergoing any change.” Charles Darwin, *On the Origin of Species By Means of Natural Selection* (London: John Murray, 1866), pp. 359-60. Also see Frank H.T. Rhodes, “Gradualism, Punctuated equilibrium and the *Origin of Species*,” *Nature* 305, 1983, pp. 269-272.

### 3. Malthusianism or Anti-Malthusianism

Thomas Malthus' political treatise on human population dynamics was a primary inspiration for Darwin's ideas.<sup>965</sup> Margaret Schabas has argued that Darwin's work was "a palatable tonic for economists" because his analysis could be readily understood as "classical economics applied to the natural realm."<sup>966</sup> In the twentieth-century discourse on Social Darwinism, historians have argued that Darwin constructed a theory of human nature based on an extant political economy. As Robert M. Young succinctly put it, "Darwinism was an extension of laissez-faire economic theory from social science to biology."<sup>967</sup> This "Malthusian engine" pitted animals against one another in a struggle for existence where slight competitive advantages allowed some individuals to leave more offspring than their rivals.

Darwin's transference of Malthusian competition from politics to animal populations gave rise to a piece of supposed "hard" science that was then reapplied to society in the *Descent of Man*, bolstered by the bigotry of the day.<sup>968</sup>

As a result of Darwin's incorporation of Malthus, according to these historians, the application of Darwinism from science to society would ultimately lead to a competitive vision and conservative social policy.

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<sup>965</sup> The passage from Malthus' *Essay on the Principles of Populations* that most inspired Darwin was as follows: "Through the animal and vegetable kingdoms Nature has scattered the seeds of life abroad with the most profuse and liberal hand; but has been comparatively sparing in the room and the nourishment necessary to rear them. . . Necessity, that imperious all-pervading law of nature, restrains them within the prescribed bounds. The race of plants and the race of animals shrink under this great restrictive law; and the race of man cannot by any efforts of reason escape from it." (Malthus 1803)

<sup>966</sup> Margaret Schabas, *The Natural Origins of Economics* (Chicago: University of Chicago Press, 2005), p. 144.

<sup>967</sup> Robert M. Young, "The Impact of Darwin on Conventional Thought," in A. Symondson, ed., *The Victorian Crisis of Faith* (London, 1970), pp. 13-36; cited in M.J.S. Hodge, "England," in Thomas F. Glick (ed.), *The Comparative Reception of Darwinism* (Austin: University of Texas Press, 1972), p. 16, n. 26.

<sup>968</sup> Adrian Desmond and James Moore, *Darwin's Sacred Cause* (New York: Houghton Mifflin Harcourt, 2009), p. 368.

However, as shown in Chapter Three, the advocates of Socialist Darwinism complicate the narrative that the Malthusian component of Darwin's theory would necessarily lead to biology recapitulating ideology when applied to society. The four leading perspectives on Malthus among advocates of Socialist Darwinism included 1) rejection, 2) attenuation through human sympathy, 3) inclusion as a metaphor, and 4) acceptance. While some proponents of Socialist Darwinism were fervently against Malthusianism on ideological grounds (such as Engels), others had no problem incorporating it into their theory of evolutionary sociology.<sup>969</sup> For example, Albert Lange and Ludwig Büchner considered that Malthusianism was attenuated in human society as a result of the human instinct for sympathy.<sup>970</sup> Other advocates of Socialist Darwinism talked about the "struggle for existence" in the large, metaphorical sense as Darwin explained it in *On the Origin of Species*. Edgar Quinet, for example, argued that morality had evolved as an adaptive trait that helped early humans survive in harsh and dangerous environments. Likewise, Serge Podolinski did not consider the Malthusian "struggle for existence" to be at odds with his argument for Socialist Darwinism because the feeling of sympathy for others helped promote an egalitarian ethic in "the continual struggle against nature."<sup>971</sup> There were also examples where Malthus was not considered problematic at all for the development of Socialist Darwinism. Annie Besant wrote that the Malthusian component of Darwin's theory "has been proved up to the hilt" and recommended that

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<sup>969</sup> Engels critiqued Darwin's incorporation of Malthus by stating that "in his theory of the struggle for existence he pursued unscientific semi-poetry, and that the whole of Darwinism, after deducting what had been borrowed from Lamarck, is a piece of brutality directed against humanity." See Friedrich Engels, *Anti-Dühring: Herr Eugen Dühring's Revolution in Science*, cited in Arthur M. Lewis, *Vital Problems in Social Evolution* (Chicago: Charles H. Kerr & Company, 1911), p. 115.

<sup>970</sup> See, for example, Albert Lange, *Die Arbeiterfrage in ihrer Bedeutung für Gegenwart und Zukunft* (Duisburg: W. Falk & Volmer, 1865), pp. 68-9.

<sup>971</sup> Serge Podolinski, "Le Socialisme et la Theorie de Darwin," *La Revue Socialiste*, Vol. 1, No. 3, March 20, 1880, p. 141.

families listen to the Neo-Malthusians “who advise early marriage and limitation of the family within the means of existence.”<sup>972</sup> In fact, the Neo-Malthusians (early advocates of birth control and family planning) were more likely to be found on the political left and were often concerned with issues of women’s suffrage and sexual liberation.<sup>973</sup>

As shown in Chapter Four, Kropotkin’s attitude toward Malthus fits into the third category in that the “struggle for existence” Darwin referenced was one that included competitive struggle but also cooperation against a harsh environment. Kropotkin’s position was further supported by his research on food production and what he considered to be the flawed arguments of Malthusian-inspired commentators. Food crises and famines, Malthus argued, were the natural correctives upon an excess population. Thomas Henry Huxley’s essay “Struggle for Existence in Human Societies” championed this Malthusian vision of human society and argued that the population of England had already outstripped food production, setting the conditions for an inevitable “war of each against all.”<sup>974</sup> Kropotkin challenged this interpretation and argued that England was actually intentionally under-producing its agricultural potential and that the crisis of hunger Malthus and Huxley wrote about was a systemic problem rather than a biological or demographic one.<sup>975</sup> He proposed that improvements in agricultural science, coupled with an emphasis on localized production, could prevent food shortages and overpopulation.

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<sup>972</sup> Annie Besant, “The Socialist Movement,” *The Westminster Review* 126 (139), July 1886, pp. 228-9.

<sup>973</sup> Rosanna Ledbetter, *A History of the Malthusian League, 1877-1927* (Ohio State University Press, 1976); Elinor A. Accampo, “The Gendered Nature of Contraception in France: Neo-Malthusianism, 1900–1920,” *Journal of Interdisciplinary History* 34(2), 2003 pp. 235-262.

<sup>974</sup> Thomas H. Huxley, *Evolution and Ethics, and Other Essays*, (London, 1894), pp. 202-218.

<sup>975</sup> See Peter Kropotkin, *Fields, Factories and Workshops* (London: Swan Sonnenschein & Co., 1901), pp. 83-125.

At nearly the same time that Huxley and Kropotkin engaged in their debate, history offered a test of these opposing prescriptions on agricultural policy. The Russian famine of 1891 was a watershed moment in the history of the Russian empire. Despite the agricultural productivity of the nation, the Tsar's food policy helped to make what would have been a temporary crisis into a national emergency. Kropotkin wrote specifically on this famine and employed his model to argue that institutional factors, not overpopulation or inefficient agricultural output, was the key determinant of the famine. In his piece for *The Nineteenth Century*, Kropotkin argued that the crisis occurred because of "a systematic annihilation of all the organs of local self-government" and blamed the famine on Russia's export of grain. In figures that found confirmation by the U.S. Minister to Russia at the time, Kropotkin demonstrated that Russia exported one-third of all crops, or "an average of 520 pounds of rye and wheat per head of population" during the peak year of the famine.<sup>976</sup>

In order to test Kropotkin's hypothesis, I utilized demographic data from the twelve Russian provinces affected by the 1891 famine and correlated this with agricultural production and labor migration statistics.<sup>977</sup> My analysis concluded that population was not a significant factor in the variance between mortality rates during the famine. Grain exports had increased in 1891, but an even larger increase in agricultural production that year meant that three million puds more rye was available for domestic consumption over the previous year. By utilizing the model of maximum food entitlements developed by Amartya Sen, it was shown that populations living in the

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<sup>976</sup> Charles Emory Smith, "The Famine in Russia," *The North American Review* 154(426), 1892, pp. 541-551; Peter Kropotkin, "The Present Condition in Russia," *The Nineteenth Century* 38, 1895, pp. 519-35.

<sup>977</sup> Eric M. Johnson, "Demographics, Inequality and Entitlements in the Russian Famine of 1891," *Slavonic and East European Review* 93(1), 2015, pp. 81-104.

affected regions were unable to afford the inflated price of grain after the famine because these provinces were too remote for off-season migratory labor to be an option. The Russian famine of 1891 was not a Malthusian crisis but rather exposed the fault lines of inequality in the Russian Empire.

#### **4. The Evolution of Morality**

As demonstrated in Chapters Two, Three, and Four the evolution of morality was the main point of contention between Social Darwinism and Socialist Darwinism. As early as 1868, Mikhail Bakunin had already incorporated Darwin's work into his theory of socialist revolution while other radicals were debating amongst themselves as to whether the socialist future would emerge through evolution or revolution. Following the Paris Commune and the rise of Socialist Darwinism in Germany and France, proponents of what would later be called Social Darwinism came forward to publicly reject socialism on scientific grounds. The popular perception of Darwin's work was that it offered license for immorality and the instability of social order. For those that had made their scientific careers through the promotion of Darwin's theory (most notably Ernst Haeckel, Herbert Spencer, and Thomas Henry Huxley), the rise of Socialist Darwinism represented a threat to their respectability and livelihood. Beginning in 1878 – more than a decade after the earliest documented works on Socialist Darwinism had been published – Haeckel advanced his perspective that Darwinism was aristocratic rather than socialist, a perspective that Huxley endorsed.<sup>978</sup> The same year, Oscar Schmidt attacked Socialist

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<sup>978</sup> These included Albert Lange's 1865 *Ueber die Arbeiterfrage* [On the Labor Question] as well as the physiologist Ludwig Büchner's 1868 *Sechs Vorlesungen über die Darwin'sche Theorie* [Six Lectures on Darwin's Theory] and 1869 *Die Stellung des Menschen in der Natur in Vergangenheit, Gegenwart und Zukunft* [The Position of Man in Nature in the Past, Present, and Future].

Darwinism by insisting that cooperation in social animals was merely a deceptive illusion that was masking the selfish motives of the individuals involved.<sup>979</sup> The reality, Schmidt insisted, was that “Darwinism is the scientific basis of inequality.”<sup>980</sup>

Almost without exception, advocates of Socialist Darwinism argued (particularly after 1871 and Darwin’s publication of *The Descent of Man*) that the evolution of morality was an instinct that promoted solidarity, equality, and social justice. Herbert Spencer, who had earlier championed a vision of human progressive evolution based on the “moral sense” and “mutual aid,” now backtracked in the mid-1880s and refused to admit that cooperative principles had any basis in Darwinian theory. Likewise, Thomas Henry Huxley was triggered by the socialist movement in England and wrote nine political essays (more than during his entire career up to that point) in the last four years of the decade challenging the theoretical basis for socialism. Like Spencer, Huxley also changed his position on moral instincts and disavowed any basis between evolution and cooperative behavior. Instead, Huxley advocated the position that nature was a “gladiator’s show” in which competitive struggle was the only moral conclusion. Peter Kropotkin’s theory of mutual aid was written in direct response to Huxley’s Hobbesian theory of nature but also to several prominent advocates of Socialist Darwinism.

Kropotkin’s argument for social behavior emerging out of the instinct for sympathy was ultimately closest to Darwin’s than any of his contemporaries. His theory was developed through an inductive method, much like his earlier work in physical geography, by outlining the known facts and then presenting a theory to explain them. The mechanisms he relied upon included natural selection and group selection – both

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<sup>979</sup> Oscar Schmidt, *Darwinismus und Socialdemokratie* (Bonn: Emil Strauss, 1878).

<sup>980</sup> Oscar Schmidt, “Darwinismus und Socialdemokratie,” *Deutsche Rundschau* 17, Oct.-Dec. 1878, p. 289.

approaches advanced by Darwin – as well as social selection in which the group itself operates as an environment to which certain traits undergo selection. Kropotkin’s theory of mutual aid did not rely on the Lamarckian mechanisms of the direct action of the environment nor the inheritance of acquired characteristics. While he assumed, along with Darwin, that these mechanisms operated in nature, Kropotkin’s theory did not rely on Lamarckian heredity and he was ultimately less reliant on the Lamarckian mechanism of inherited habit as an explanation for the moral sense than Darwin was. Up to this point, the prevailing theories of Socialist Darwinism – such as those by Alfred Espinas, Jean-Louis de Lanessan, and Ludwig Büchner – articulated a future socialist society as one mandated by nature and, in which, the interests of the individual would be subordinated to the will of society as a whole. Kropotkin’s theory of mutual aid was distinctly Darwinian in that groups assembled voluntarily under the influence of moral instincts and these traits were then selected based on adaptive utility.

## **5. Heredity (Neo-Darwinian, Lamarckian, and Epigenetic)**

Heredity was a highly political topic in the late-nineteenth and early-twentieth centuries and has been utilized as a central feature in the historiography on Social Darwinism. There is a special irony in that most of what has been labeled Social Darwinism was advocated by Herbert Spencer, who refused to accept the Darwinian mechanism of natural selection. Likewise, Ernst Haeckel’s biogenetic law, what was succinctly defined as “ontogeny recapitulates phylogeny,” represented a linear evolution based on the Lamarckian inheritance of acquired characteristics.<sup>981</sup> Consequently, a

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<sup>981</sup> Robert J. Richards, *The Tragic Sense of Life: Ernst Haeckel and the Struggle Over Evolutionary Thought* (Chicago: University of Chicago Press, 2008), p. 5.

common objection by scholars to the use of Social Darwinism is that they view it as a misattribution of Darwin's science to ideas that were already extant. Agreeing with these concerns, Mike Hawkins has instead advocated restricting the term Social Darwinism to only those figures that articulated a Darwinian mechanism of natural selection in their theory of evolutionary sociology.<sup>982</sup> In contrast, this dissertation takes the position that there was no "pure" Darwinism given that even Darwin himself utilized the Lamarckian mechanisms as secondary features in his theory. The category of Social Darwinism is illuminated in the light of its opposition to Socialist Darwinism and can be defined as a position *inspired* by Darwin's theory that made sociological applications that either promoted laissez-faire or anti-socialist policies. As such, unless the mechanism of inheritance was central to the debate in question (as it was in Chapters Four and Five) commentators could blur the lines between natural selection and Lamarckian mechanisms without this distinction warranting comment. However, given the attention this feature of evolution has received in the scholarly literature, it is necessary to offer some context to explain why this position was warranted.

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<sup>982</sup> For Hawkins, the "ideology of Darwinism" would therefore be based on four primary assumptions with Social Darwinism embedded within this category after the addition of a fifth assumption. These assumptions consist of: 1) Biological laws govern the whole of the organic world, both human and nonhuman; 2) Population growth generates a struggle for existence over resources; 3) Physical and mental traits confer an advantage on their possessors in this struggle, or in sexual competition, and can be spread through the population by inheritance; 4) Cumulative effects of selection and inheritance over time account for the emergence of new species and the elimination of others; and 5) Biological determinism extends beyond human physical traits to the psychological and behavioral attributes that play a fundamental role in social life (such as reason and morality). Hawkins states that there is a hierarchical relationship between these five assumptions, extending from the reality of biological laws to the mechanism of evolution to their applicability for human psychology and behavior. Like Hofstadter, he then concludes with a two-pronged definition that delimits this ideological category. According to Hawkins, Social Darwinists "endorse two fundamental facts about human nature: that it is continuous with animal psychology, and that it has evolved through natural selection." The problem with Hawkins' suggestion is that by defining Social Darwinism so narrowly it practically ensures that no historical actors would fit these criteria. See Mike Hawkins, *Social Darwinism in European and American Thought, 1860-1945* (Cambridge: Cambridge University Press, 1997), p. 31.

Much of the early historiography of Darwinism followed the actors categories presented in the post-Darwin years between the mid-1880s and 1920s that saw an ideological conflict between the forces of Neo-Darwinism and Lamarckism, with the latter group relegated to the wrong side of history. The tendency was to present Lamarckian heredity as utopian or idealistic while the advocates of natural selection were presented in terms reminiscent of hagiography. In fact, there was an opportunistic application of Darwinian or Lamarckian theories depending on the social context that represented a widespread feature of racial politics. For example, a common application of evolutionary ideas in Latin America was racial mixing that would lead, not to degeneration, but regeneration since it would produce a steady whitening of the population. For example, in Brazil, Darwinian biology and genetics were barely established fields even as late as the 1920s, and Brazilian elites utilized the scientific theory they had on hand. A Lamarckian framework therefore advocated the slow elimination of “the remaining ‘pure’ Negro and the indigenous Indian populations” and their “regressive influence of ethnic atavisms” by crossing with whites and promoting the biological predominance of the white race.<sup>983</sup> This was likewise the case in late-nineteenth-century American scientific racism, which was founded upon Lamarckian ideas of inheritance.<sup>984</sup> In the field of English sexual science, Henry Maudslley’s conservative arguments about women’s inferiority and their role in society were based on his strongly Lamarckian views.<sup>985</sup> Austrian biologist and Communist, Paul Kammerer,

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<sup>983</sup> Nancy Leys Stepan, “Eugenics in Brazil, 1917-1940,” in Mark B. Adams, ed., *The Wellborn Science: Eugenics in Germany, France, Brazil, and Russia* (New York: Oxford University Press, 1990), p. 128.

<sup>984</sup> *Ibid.*, p. 145.

<sup>985</sup> *Ibid.*, p. 145.

likewise saw social applications after his experiments with amphibians led him to believe that Lamarckian inheritance could be utilized for racial progress.

This wonderful new result, together with all those previously attained, opens an entirely new path for the improvement of our race, the purifying and strengthening of all humanity – a more beautiful and worthy method than that advanced by fanatic race enthusiasts, which is based upon the relentless struggle for existence, through race hatred and selection of races, which doubtless are thoroughly distasteful to many.<sup>986</sup>

As Peter Bowler observed, “The historical record shows that this theory [of Lamarckism] is just as capable of generating those harsher interpretations of humanity and society for which Darwinism itself is frequently blamed.”<sup>987</sup>

This was particularly true in the case of communist ideology and the intersection between evolution and national character. There was a profound contradiction in Karl Marx’s 1860 letter to Friedrich Engel’s that Darwin’s theory “contains the basis in natural history for our view.”<sup>988</sup> Marx saw in Darwin a confirmation of his own dialectical-materialist philosophy, but neither his theory of capitalism nor his vision of a communist future contained any application of Darwin’s ideas. The later communist regimes in the Soviet Union and China were enthusiastic Darwinians where it came to the evolution of life and the emergence of the human species, but both denied that natural selection played any role in modern human life.<sup>989</sup> “Marx’s investigation begins precisely where Darwin’s ends,” wrote the Marxist theoretician and founder of Russia’s Social-

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<sup>986</sup> Peter J. Bowler, *The Eclipse of Darwinism: Anti-Darwinian Evolution Theories in the Decades Around 1900* (Baltimore: Johns Hopkins University Press, 1983), pp. 94-5.

<sup>987</sup> *Ibid.*, p. 19.

<sup>988</sup> Karl Marx to Friedrich Engels, December 19, 1860; cited in Clifford D. Conner, *A People’s History of Science: Miners, Midwives, and “Low Mechanics”* (New York: Nation Books, 2005), p. 442.

<sup>989</sup> Alexander Vucinich, *Darwin in Russian Thought* (Berkeley: University of California Press, 1988); James Reeve Pusey, *China and Charles Darwin* (Cambridge: Harvard University Press, 1983).

Democratic movement Georgii Valentinovich Plekhanov.<sup>990</sup> This view followed directly from Engels who stated during his eulogy at Marx's funeral, "Just as Darwin had discovered the law of development in organic nature so Marx discovered the law of development of human history."<sup>991</sup>

Marx and Engels saw Darwin's theory as a vindication of the dialectical process and evidence that there was a natural law for their "principle of the transition of quantity into quality."<sup>992</sup> The process of natural selection, in which heritable variations resulted in different species developing from a common ancestor, was seen as the accumulation of quantitative changes resulting in a qualitative change (the latter occurring when the diverging groups could no longer interbreed). As a result, the defenders of Marxist orthodoxy embraced Darwinism more on ideological than scientific grounds; it was an effective argument against religious cosmogony and subjective epistemology but had no utility in the Marxist conception of social relations.

A rare exception to this norm was Alexander Alexandrovich Bogdanov, a medical doctor and member of the Bolshevik Party from its very beginning. In his *Knowledge from a Historical Standpoint* (1902), Bogdanov critiqued Marxist theorists for not recognizing how a Darwinian framework could be combined with Marxism and usefully applied to human sociology. There was no incompatibility, in his view, with applying Darwin's central concepts of selection and adaptation to both the biological and social realms. In both cases, "the environment-induced changes in old forms produce a

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<sup>990</sup> That Marx formed his theory before Darwin published his own Plekhanov acknowledges, but dismisses without explanation. "Marxism is Darwinism in its application to social science (we know that chronologically this is not so, but that is unimportant)." Cited in Vucinich, *Darwin in Russian Thought*, p. 357.

<sup>991</sup> Mike Hawkins, *Social Darwinism in European and American Thought, 1860-1945* (Cambridge: Cambridge University Press, 1997), p. 152.

<sup>992</sup> Loren R. Graham, *Science, Philosophy and Human Behavior in the Soviet Union* (New York: Columbia University Press, 1987), p. 50.

continuous line of new variations.”<sup>993</sup> Most of these variations would not be adaptive in the new environment and would be eliminated by selection. “The surviving minority is a product of selection that operates in the same way in nature and in society.” Bogdanov was notable for being one of the only Russian Marxists to seek sociological applications for Darwin’s biology. However, while Bogdanov demonstrated that there was nothing inherently incompatible with these two theoretical approaches, the field of Marxist Darwinism ended up not being adaptive itself. After Lenin wrote a scathing review of Bogdanov’s application of Darwinian “selection” he was expelled from the Bolshevik Party and went into exile, sending a clear message to others tempted toward similar “Marxist revisionism.”<sup>994</sup> As a result, Lamarckism became the officially proscribed theory of heredity in the Soviet Union. In much the same way that this dissertation has shown how the evolution of morality and cooperation was marginalized due to its association with socialism, a useful study could be made to investigate how scholarly discussions of Darwinism and Lamarckism were treated given the divisive politics of the Cold War.

Scientists and historians have pointed to Kropotkin’s discussion of what at the time was called Lamarckism as a reason to reject his scientific perspective. However, as Chapter Five demonstrates, the experimental epigenetic research that Kropotkin described was a newly emerging scientific literature with implications that even its practitioners had difficulty articulating. Kropotkin utilized existing scientific categories in order to highlight what he considered to be a promising field of scientific inquiry and recommended caution before rejecting the evidence out of hand. The implications of

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<sup>993</sup> Vucinich, *Darwin in Russian Thought*, p. 368.

<sup>994</sup> *Ibid.* p. 367.

epigenetics remain a hotly contested scientific question to this day and, if nothing else, Kropotkin's detailed exploration of this topic warrants further study beyond the limits of the Darwinism-Lamarckian dichotomy.

## **6. Eugenics**

August Weismann's commitment to eugenics is perhaps one of the most important but undiscussed topics in the history of evolutionary biology. What was here presented in summary as an addendum to the larger debate over the mechanisms of heredity is a subject that deserves greater scholarly attention. It is noteworthy that Weismann corresponded on a regular basis with many of the leading proponents of eugenics and racial hygiene in Germany while refraining from any public acknowledgement about what he saw as the social application of his scientific theory. Weismann is typically not included as a proponent of Social Darwinism given that he largely refrained from discussing human evolution or suggesting social applications of his evolutionary theory. However, given that he was active behind the scenes in the promotion of Benjamin Kidd's *Social Evolution*, was adamantly anti-socialist, trained many of the early leaders in the German Society for Racial Hygiene, and offered a private admission to his former student Wilhelm Schallmayer that, "Naturally, I am in complete agreement that eugenics can and should intervene within each race," it suggests that Weismann was just as much of a leading figure in the history of Social Darwinism as Herbert Spencer or Francis Galton (and arguably more so given his robust commitment to a strictly Darwinian framework that would apply even under Hawkins' rigorous criteria).

The intensity of debate surrounding the mechanisms of heredity in the late-nineteenth and early-twentieth centuries suggests that it was the social implications that were primarily under dispute. If this was the case, Kropotkin's *Evolution and Environment* series could be interpreted as an extended argument against the theoretical foundation for eugenics. The timing of the papers suggests this was the case, given that he was aware of the debates over Weismann's theory as early as 1892 (a year before Weismann's dispute with Spencer made him a *cause célèbre* among Neo-Darwinists) but Kropotkin instead waited twenty years before pursuing the issue. While the timing may have been a coincidence, the fact that Kropotkin began writing his first extended discussion of Weismannism just two years after the Eugenics Education Society of London was founded and during the same year that their flagship journal, *Eugenics Review*, began publishing, it suggests that when the science began to be applied Kropotkin was motivated to pursue this topic in his scholarship. However, given the lack of historical verification this remains an open question but points to the contested social meaning that evolutionary biology and theories of heredity had for scientific thinkers in the late-nineteenth and early-twentieth centuries.

### **Conclusion: The Struggle for Coexistence**

One of the unique contributions of this dissertation is that it presents a critique of the historiography of evolutionary biology that posits Social Darwinism as the necessary consequence when Darwin's theory is applied to human society. Rather, the rhetoric of Social Darwinism emerged as a response to, and in dialogue with, Socialist Darwinism that represent two ideological traditions in the history of evolutionary sociology. This

centers late-nineteenth and early-twentieth century evolutionary thought at the intersection between social and intellectual history while presenting a conceptual framework that allows for a transnational comparative analysis.

In conclusion, while Kropotkin saw the sociopolitical applications of Darwin's theory as a continuation of his scientific work, to his British contemporaries he was regarded as an articulate but ideologically motivated polymath who was manipulating an established scientific theory to fit a preexisting political commitment. In contrast, Kropotkin's theory of mutual aid was considerably more influential among scientific and social thinkers in France, Germany, and pre-Soviet Russia. Ultimately, the political and economic conditions in England, and the fear of socialist revolution, influenced naturalists against Kropotkin's theory – and Socialist Darwinism more generally – despite the fact that mutual aid rested on a widely accepted scientific foundation.

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