

Introduction: The Persistence of Social Darwinism

I want to show here that two remarkable bodies of ideas, can, as it were, sometimes “cut both ways.” I’ll explain what this means gradually. The ideas are evolutionism, of which Darwinism and Lamarckianism are two schools—both “functionalist,” as Stephen Jay Gould puts it, of the theory of evolution. The other set of ideas belongs to anarcho-syndicalism, or Marxian trade union socialism. I am focusing on two “conjunctures” in the 19th and 20th century, at which Darwin looked like a Lamarkian as he struggled against social evolutionism; and the moments, before and after the first World War, when Marx’s principal “ambassador” in France, would use Darwinist evolutionism to combat progress doctrines in socialism, and then “economism” in Marxist theory. To work toward these two moments, let me first recount a surprising event in 1952, whose protagonist was Claude Lévi-Strauss. You will shortly see the relevance of this.

When Levi-Strauss presented his “Race et histoire” to UNESCO in 1952, he felt it urgent to distinguish—*again*—between Darwin’s theory of evolution and a multitude of strains of what he called “faux évolutionnisme” (RH in AS, 385). The latter consisted above all in “an attempt to suppress the diversity of cultures while feigning to recognize it fully” (345). How could false evolutionism claim to acknowledge cultural differences? What is the nature of the acknowledgement? False evolutionism proceeded in three ways: 1. rooting itself in a conception of human history as progressive, it would 2. assume this history as a sort of totality, a single development which, “starting from one and the same point [should then] have [the cultures] converge toward the same goal or end.” This vision of a humanity “une et identique à elle-même » (RH 386) would then allow for internal classifications, as so many stages or moments in a process that « hides a deeper reality or slows its manifestation » (RH 386).

The search for a deeper reality is characteristic of structuralist anthropology, too. What then was the deeper reality in social evolutionism? The doctrine was clearly older than Darwin's "working hypothesis" (RH 386). Levi-Strauss noted three of its avatars in passing: Vico's "three spirals"; the "three ages" of Comte that inaugurated his "three estates"; finally, Condorcet's "ladder" (RH 387). He added that Spencer and Tylor—the official founders of social evolutionism—had published their doctrines before Darwin's *Origin of Species* (RH 387). "This doctrine [of social evolution] was the falsely scientific make-up of an old philosophical problem"—more specifically, it was the problem of configuring space and time (387). In the larger scheme of ethnographic space-time constellations, the temptation to draw analogies between largely contemporary cultures, lacking extensive architecture, lacking writing, and possessing only rudimentary techniques—and cultures of the Neolithic age, in France or Spain—this temptation was the "empirical" outcome and legitimation for those "holistic," philosophical ladder theories of humanity (RH 388). "And yet this seductive game," added Lévi-Strauss, "to which we abandon ourselves irresistibly...(the Western traveler enjoying discovering the 'Middle-Ages' in China, the 'Century of Louis XIV' in pre-WWI Beijing, the 'Stone-age' among the natives of Australia or New Guinea... [this game] consists in taking the part for the whole, [amalgamating epochs, and] concluding, *from the fact that some aspects* of two civilizations (one current, the other vanished) resemble each other, that there is an analogy between *all* [of their] aspects" (388). Hence the time-space fallacy—readily shown for what it was, through the careful comparison of the respective cultures' technologies, or by dismantling the comparative syllogisms themselves (RH 389), which

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Levi-Strauss called a “pseudo-scientific cannibalism, little respectful of the integrity of human cultures” (RH 389).

As he also noted, Darwin’s observations nevertheless “provided a powerful impetus” to the social and cultural evolutionisms during and after his time. Three things contributed to this: 1. the debt Darwin owed Spencer for his motor of evolution: adaptation working *under* competitive selection; in short, the metaphoric fuel in Darwin’s functionalist evolution—and the principal difference with Lamarck’s earlier functionalism. 2. This carried with it the important corollary, for which Darwin was indebted to Malthus, of the survival of the fittest, which stood in direct tension with Lamarck’s theory of adaptation (still debated after 1900). 3. And Darwin’s own, subsequent determination to establish the unity of humanity—before and despite the emergence of “races,” and therefore, to set the principle of monogenesis into a secular, even atheist framework. The unity of humanity, as Lévi-Strauss pointed out, cuts both ways—in the direction of the theorists of human hierarchies and in direction of their opponents.

We must keep something important in mind about the history of Darwin’s research. Many readers of Darwin privileged his *The Origin of Species* to the neglect of *The Descent of Man*, published in 1871. Among those who did not examine *Descent* closely were Marx and Engels (DP, 47-48), and later on, the theoreticians of syndicalist socialism. But it was *The Descent of Man* that argued for a paradoxical thesis; a paradox indeed that Levi-Strauss must have appreciated. Natural selection operates in nature at all levels, assuring a Malthusian “survival of the fittest” up to the point at which *cultures* take on a specificity of their own (RC 343). Cultural evolution—unlike purely “natural” evolution—proceeds thanks to the “progressive instalment of an anti-selective functioning in human [social] institutions” (RC 343). As the Darwin scholar, Patrick Tort, put it: “Against the dying out

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and extinction of the weak, the ill, and the indigent are opposed individual or social behaviours of protection, of assistance, help and rehabilitation, which are indifferent to the idea of a decline in the quality of the hereditary **legacy**, which is inevitably connected to the reproduction of weaker beings” (RC 343).

This ostensible “break” with natural selection, favouring the emergence and extension of altruistic or “social” instincts, is not an *ontological break* for all that. What Patrick Tort calls the “reversive effect” (RC 343) in the direction of evolution represents a twist in the selection principle, favouring forms of purely social development. In this way, “natural selection applies to itself its own law, giving the advantage to assimilative and altruistic behaviours against dissimulative and egotistic rivalries” [found in Malthus and others] (RC 344). Note that the advantages obtained are no longer biological but social; selection has *become* social, and Darwin is, here at least, surprisingly closer to Lamarck than he is to Spencer and Tylor. The social evolutionists conceived the functioning of societies “according to the model of functioning in individual organisms” (RC 344), thereby moving between two homologous modes of organicism. For Spencer and Tylor, the social arises out of the biological, but without a reversive effect, and so, what is social simply mirrors a Malthusian biological sphere. Like socio-biology today their theory was continuist.

It must have been important to Darwin to attempt to forestall revisions to his reversive effect, notably those which could come from his polygeneticist readers. I mean that if the being called “man” arose from different roots or sources, the polygeneticists could keep hold of Darwin’s sociological arguments from *The Descent of Man*, even as they insisted that too much altruism in a given society would lead to social degeneracy. Or again, that degrees of civilization, and types of humans evinced different degrees of

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cultural superiority, notably in their practices and institutions—and in how readily they promoted (or restricted, depending on one's evaluation of altruism) the development of sentiments tied to sympathy (RC 343). For Darwin, this was a double-bind. He had a chance at least of sidestepping it, provided he could strengthen monogenesis. And what more effective path to that end than by demonstrating empirically that human facial expressions were basically universal across cultures? From there, what remained to be shown was that humans, of the most diverse cultures, could recognize with little error the principal expressions of humans from other cultures. *This* challenge could be taken up. The underlying, more speculative or philosophical, stake posed a harder task: to argue that human expressions constituted the most fundamental mode of communication between humans, prior to the extensive use of human language, being corporeal and biological in origin. To make good on a claim like this, Darwin would have to argue that the expression of emotions translated directly—epiphenomenally—the *experience* of emotions and states of mind, and that they were thus the 'inscription', the mirror of, and the entry-way into, the human mind itself.

Although Darwin never argued this explicitly, I believe it goes a ways toward explaining the publication of his *Expression of Emotion in Man and Animals* in 1872, just one year after the appearance of *Descent of Man*. In fact, he wrote the two projects simultaneously, we have evidence for that. In this way, Darwin could protect the variety and diversity of cultures from a social evolutionist hierarchy of cultures, even as he demonstrated the reality of a binding universal: human expression, or again, human affect, and by extension, a wide-ranging similarity among human minds in their sentient and emotional make-up. From there to showing that sympathy was both a human instinct, and

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that it extended the work of natural selection by unfolding effectively in virtually all social frameworks, it was a matter of a few more steps.

Darwin never completed his demonstration for reasons we can imagine, notably, given the attacks on Darwin and the furious debates within ‘schools’ or movements of evolutionism themselves. Nevertheless, the “reversive effect,” with the twist it imposed on Spencer’s natural selection of the fittest, also pulled Darwin in a Lamarckian direction. Recall that Lamarck and Lamarckians were materialist functionalists like Darwin; that is, they did *not* espouse the formalist claims in favour of immanent evolutionary principles, also known as “orthogenesis”; nor did they accept the biogenetic, or recapitulationist thesis that became popular in Germany with Ernst Haeckel. Lamarck explained the diversity of species by climatic factors, needs, and frequent and sustained use of an organ, which “gradually fortified [the latter] ...and gave it a power proportionate to the duration of its use.” These powers or the lack thereof were “preserved through the generation of new individuals...provided the changes were common to both sexes.”¹

Finally, Lamarck did not require a principle like the struggle for survival and its related criteria of fitness. His version of adaptability “developed” locally, through individual members of species, and supposed a macro force preserving a natural, and

¹ J.-B.-P.-A. Lamarck, *Philosophie zoologique, or exposition des considérations relatives à l’histoire naturelle des animaux* (Brussels : Culture et Civilisation, 1970; reproduction of the 1809 work, published by Dentu in Paris), vol. I, chapt. VII, p. 235. One of his many examples of adaptability concerned animals whose eyes were vestigial in environments deprived of light, p. 242. Habit, in individuals, was the greatest impetus to change, as it gradually became a second nature, p. 246ff. The importance of need, as a guide to the development and change of habits, was itself a function of *affect*: notably, of the state of the “sentiment intérieur”—a feeling of being alive or self-affection *subject to variations in emotion*—which directed the movement of the “fluide nerveux” influencing the musculature. Lamarck’s theory was rooted in that of neural irritation discharging itself through movement. However, in addition to the “sentiment intérieur,” also equated with “sensibilité,” he added “la sensibilité morale,” which resulted from “emotions produced by thought within the internal sentiment” (*Philosophie zoologique*, vol. II, chapt. IV “Du sentiment intérieur,” pp. 281-291 and *passim*. The conception resembled the Cartesian discussion of the body in the *Treatise on the Passions*. The role of affectivity and the body may not be underestimated in the formation of need, and consequently, of habit. No selective mechanism was necessary given the chiasm of environment and embodied affect.

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ascending cycle or “cercle éternel de mouvements et de changements”² Realizing this, and keeping in mind that the synthesis of genetics and Darwinism had to wait until 1918, when R. A. Fisher worked out a fusion of Mendel’s polygenic, particulate explanation of inheritance, with the continuous local variations that Darwin relied on against immanent “saltationist” or leap theories,³ let me turn to *The Expression of Emotions in Man and Animals*.

1. *The Expression of Emotions in Man and the Animals*.

Darwin began his research for *The Expression of Emotions* in the 1840s. The work was published in 1872, a year after *The Descent of Man* and about a year before the final revisions of the sixth and last edition (in Darwin’s lifetime) of *Origin of Species* (1872). The research for the book combined extensive correspondence with clergy and British landholders across the British Empire, from Asia to Malasia and North America, and finally to Africa, where the information grows a bit scanty. It consisted in the analysis of expression in paintings, photographs and members of Darwin’s extended family.

2. Naïve in its methods, it stands as something of a curiosity in Darwin’s investigations into adaptation and selection among simpler organisms.

Nevertheless, it confronted three important problems: 1) Lamarckian adaptation

² Lamarck, *Op. cit.*, vol. II, « Additions, » p. 465 : « La Nature, cet ensemble immense d’êtres et de corps divers, dans toutes les parties duquel subsiste un cercle éternel de mouvements et de changements que des lois régissent; ensemble seul immuable, tant qu’il plaira à son Sublime Auteur de le faire exister, doit être considérée comme un tout constitué par ses parties, dans un but que son Auteur seul connoit, et non pour aucune d’elles exclusivement. » Also see Stephen Jay Gould’s discussion of the Lamarck-Chambers theory, in *Structure of Evolutionary Theory*, (Cambridge, Mass.: Harvard University Press, 2002), p. 588-89.

³ This is what Gould argues is the first great « synthesis » in evolutionary biology, see *Op. cit.*, p. 506. He points out that while Mendelian genetics rejected Lamarckianism, Darwinism was not dearer to their hearts: “Darwinians before the synthesis had generally downplayed, ignored or actively rejected Mendelism” (Ibid., p. 507), because Mendelism appeared to embrace orthogenetic laws of internal development. Fisher’s essay was entitled “The Correlation between Relatives on the Supposition of Mendelian Inheritance,” in *Trans. Royal Society of Edinburgh*, 52: 399-433. By 1930, he had published his principal work, *The Genetical Theory of Natural Selection* (Oxford: Oxford University Press, revised in 1958).

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versus the survival of the fittest; and correlatively the meaning of “race” and of “instincts.” 2) Expression as communication *versus* expression as the spontaneous externalization, or iconisation, of mental states. 3) Science understood as hypothesis and observation *versus* science as ideology, notably sciences like physiognomy.

In the case of the first problem: reconciling Lamarck’s transmission of acquired characteristics with Spencer’s survival of the fittest, which Darwin calls “the *principle* of evolution,” there is nothing in this text to suggest that Darwin gave primary credence to the selection of the strongest over Lamarckian adaptation. Why? Because emotions were the product of two universal biological phenomena: circulation and respiration. That said, certain emotions were both “innate” yet had to be learned by infants. Innate expressions must therefore have begun, at first, as habits. This was notably the case for the “antithetical” expressions of emotion. Darwin proposed the following developmental scheme here:⁴ significant actions that procure us benefits are iterative and, as they are repeated, they become habitual; habitual repetition becomes a second nature when it procures advantages to a population or group of individuals. Now, Darwin speculated that a second nature *could* be transmissible to future generations. The importation of Lamarck’s “soft heredity” is due in part to uncertainty about ‘genetic’ transmission and in part, to questions about the variability of cultural transmission of habits. After all, the bewildering multiplicity of human cultural and social structures militated against the universality of emotion and expression. “A man often wishes to make certain gestures conspicuous or demonstrative, and will raise his extended arms with widely opened

⁴ Which is strikingly comparable to what we find in Nietzsche’s *Human, All too Human*, published seven years after *Expression of Emotions* and twenty three years after Spencer’s *Principles of Psychology* (both men had read Spencer’s work carefully).

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fingers above his head, to show astonishment, or lift his shoulders to his ears, to show that he cannot or will not do something. *The tendency to such movements will be strengthened or increased by their being thus voluntarily and repeatedly performed; and the effects may be inherited,*” he wrote (EE 351).

Or again: “Every true or inherited movement of expression seems to have had some natural and independent origin....Some expressive movements may have arisen spontaneously, in association with certain states of the mind...and afterwards been inherited. But I know of no evidence rendering this view probable” (EE 350).

Nevertheless: “The far greater number of the movements of expression, *and all the more important ones*, are, as we have seen, innate or inherited; and such cannot be said to depend on the will of the individual” (EE 349).

The strongest claim for Lamarckianism comes, however, from *The Descent of Man*, published a year earlier:⁵ “There is not the least inherent improbability...in virtuous tendencies being more or less strongly inherited...[Moreover, e]xcept for the transmission of moral tendencies, we cannot understand the differences believed to exist in this respect between the various races of mankind” (DM 493).

Darwin will waffle, correspondingly, about the action—sustained or periodic—of natural selection in time and space; above all, in regard to the socialization of different “races” (here, it was Celts *versus* Saxons): “I have hitherto only considered the advancement of man from a semi-human condition to that of the modern savage. But some remarks on the action of natural selection on civilised nations may be worth adding (DM 501)...the action of natural selection apparently favours the better development of

⁵Charles Darwin, *The Origin of Species by Means of Natural Selection, or The Preservation of Favored Races in the Struggle for Life, and The Descent of Man and Selection in Relation to Sex* (New York: Modern Library/Random House, nd).

the body, by means of good food and freedom from hardships (DM 503)...natural selection acts only tentatively”—(this, stated in regard to the disappearance of the Greeks, who were “higher in intellect than any race that has ever existed”)” (DM 507).⁶

The indispensability of Lamarck is tied to two factors. First, Darwin’s embrace of the reality of “fundamental social instincts,” the most important of which was “sympathy,” which was “originally” selected, quite naturally, and then passed down (DM 504). The second factor was Darwin’s preference for monogenesis over polygenesis.⁷ In *The Expression of Emotion*, these convictions bring Darwin into conflict with himself, as he argues for his single origin of the creature man (EE 355) even as he plods through a symbolic universe of higher and lower “races,” from European nationalities all the way to the “savage races” of his day. In *The Expression of Emotion* his information on Africa is, he concedes, thinner than any other he has for the entire British Empire. He has good material on New Zealand, on Australia, India, the American continent, Malaysia (EE 27, 28). But, in “turning to Africa, I have been unfortunate with respect to the negroes...”

Concerning the second problem he faced: expression as a sign language used primarily for communication or to supplement it,⁸ *versus* expression as the

⁶ Darwin, Chapter V “Civilised Nations,” in *The Origin of Species...and The Descent of Man*, *Op. cit.*, pp. 501-507; the dialogue Darwin is holding here is with Herbert Spencer, “our great philosopher” (p. 492), but notably with Mr. Greg (on the fecundity of the poor) and Mr. Galton (on the “restless” in “Hereditary Genius,” 1870, p. 347); see Darwin, *Op. cit.*, p. 504n.17 and 505 nn. 19 and 20. Hereafter, *Descent of Man* is abbreviated as DM.

⁷ “I have endeavoured to show in considerable detail that *all the chief expressions exhibited by man are the same throughout the world*. This fact is interesting, as it affords *a new argument in favour of the several races being descended from a single parent-stock*, which must have been *almost completely human in structure*, and to a large extent *in mind*, before the period at which the races diverged from each other. No doubt similar structures, adapted for the same purpose, have often been independently acquired through variation and Natural Selection by distinct species; but this view *will not explain close similarity between distinct species in a multitude of unimportant details*” (p. 355, emphasis added).

⁸ Linguistic communication was, for Darwin, indispensable to human development and society, and physical expression “much aided” linguistic communication. However, “there are no grounds, as far as I can discover,” he wrote, “for believing that any muscle has been developed or even modified exclusively for the sake of expression....Nor can I discover grounds for believing that any inherited movement, which now serves as a means of expression, was at first voluntarily and consciously performed for this special

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spontaneous self-externalisation of emotion, which thereby provided direct access to *affective* states of mind.⁹ Darwin gave priority to emotions as the translation of states of mind. His three principles for the existence of expressions are: i. (physiological) utility: “to relieve or gratify certain sensations, desires, etc.; *and whenever the same state of mind is induced*” (EE 34).

ii. Antithesis: “certain states of the mind,” he wrote, “lead to certain habitual actions, [but] when a directly opposite state of mind is induced, there is a *strong and involuntary tendency* to the performance of movements of the directly opposite nature, [even] though *these are of no use...*” (EE 34).

iii. Finally and most importantly, expression translates the activity of the cerebro-spinal system. In important ways the student of François Broussais (1772-1838) and Guillaume Duchenne de Boulogne (1806-1875), Darwin thought in terms of “nerve-force,” with its analogy to electrical currents. “When the sensorium is strongly excited, nerve-force is generated in excess, and is transmitted in certain definite directions, depending on the connection of the nerve-cells...Effects are thus produced which we recognize as expressive. This third principle may...be called that of the direct action of the nervous system” (EE 34).

Expression is thus the simultaneous iconic translation of a state of mind-body. Habit plays an important role. But Darwin does not seem to foresee what would later be the

purpose—like some of the gestures and the finger language used by the deaf and dumb....every true or inherited movement of expression *seems to have had some natural and independent origin*. But once acquired, such movements may be voluntarily and consciously employed as a means of communication” (p. 351).

⁹ For example, from Chapter X “Hatred and Anger”: “Most of our emotions are so closely connected with their expression, that they hardly exist if the body remains passive—the nature of the expression depending in chief part on the nature of the actions which have been habitually performed under this particular state of the mind. A man, for instance, may know that his life is in the extremest peril, and may strongly desire to save it, yet may exclaim as did Louis XVI, when surrounded by a fierce mob, ‘Am I afraid? Feel my pulse’” (p. 234). Or again, in his “Concluding Remarks”: “Some expressive movements may have arisen spontaneously, in association with certain states of the mind, like the tricks lately referred to, and afterwards been inherited. But I know of no evidence rendering this view probable.”

violent debate with cultural anthropology, notably with Margaret Mead and Gregory Bateson; viz., that expression is *culturally* variable because it simply facilitates linguistic communication. For Darwin, communication was a secondary aspect of expression, with a definite place in his theory. Yet it would be inadmissible to suppose that expression varied somehow in accordance with the variation of languages from culture to culture, thereby becoming as unpredictable—as illegible—as vocabularies, accents, or even syntax.

In 1872, it would seem that Darwin was unfolding a philosophy of mind—of affective, sensuous mind and human *social* nature. Expression bears being qualified as the writing of the mind. For Darwin, this writing is universal; and its universality holds for at least five emotions: pleasure, fear, suffering or grief, rage, and disgust. All of these translate one fundamental point: “it is far more probable that the many points of close similarity in the various races are due to inheritance from a single parent-form, which had already assumed a human character” (EE 356). Cultural variations, while undeniable in minor forms, would nevertheless have opened the door to polygenesis, which was a cornerstone of racist science. Darwin was probably not entirely convinced of the equality of races, but if human races had emerged in different sites, then it would not only be easy to predicate lesser capacities for some, it would throw the importance of his social instincts into question. But Darwin’s evolutionary theory had dispensed with creationist arguments, and therefore opened an important door precisely to polygenesis (EE 131).¹⁰ He was, I believe, attempting to close that door. As such, his universal semiosis set expression as the outer side of the inner-outer dualism of sensibility-affectivity. Expression was therefore a

¹⁰ Paul Ekman, the psychobiologist, comments on Darwin’s work: “In Darwin’s time some who claimed that Caucasians were superior to other races had proposed that the different races had descended not from one, but from different progenitors—the Caucasians from more advanced progenitors than the negroid race. Darwin’s evidence that the expression of emotions is the same for all mankind was strong evidence for the opposite view...” (131)

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spontaneous, innate sign system that had likely preceded human spoken language. We see this clearly in the care he takes to integrate human expression with the expression of emotions in domesticated animals (cats and dogs) and in baboons and Old World monkeys (EE 135-136). He dedicated two full chapters to the study of animal affects.

The third challenge besetting the work concerned the nature of science, itself. Even in Darwin's time it was not clear where science ended and ideology began, or again, where social imaginaries secured and legitimated discourses. Darwin was sceptical of physiognomy. Yet he would venture, "whatever amount of truth the so-called science of physiognomy may contain, appears to depend...on different persons bringing into frequent use different facial muscles, according to their dispositions" (EE 359).¹¹

A peculiar twist in the physiognomy question was provided by the 1862 publication of Duchenne de Boulogne's *Mécanisme de la physiognomie humaine*, which provided Darwin with unsurpassed photographic evidence. The work was experimental; Duchenne induced expression in his subject with electrodes, but the work demonstrated clearly the legibility of expression. However, Duchenne's work also fed the movement for a scientific physiognomy. Now Darwin's other significant source, Charles Bell's *Anatomy and Philosophy of Expression* (1806-1844), argued that facial muscles were given to humans by the Creator for the sake of expression. This natural theological argument understandably secured monogenesis—albeit at a cost Darwin was unwilling to pay. And it too appeared support physiognomy. Attacking Bell thus brought the question of humanity's origins back, even as it allowed Darwin to redouble his arguments for evolution over creationism. For, it was evolution itself—in its tension between selection and 'mere' adaptation—that

¹¹ Darwin tended to laugh at the exaggerations of physiognomy, including the reactions against his own nose by the commander of the H.M.S. Beagle, who wanted to reject him as a seaman because his face suggested physical weakness (EE 10).

could not rule out physiognomy. If Darwin was arguing for the universality of expression, understood as dynamic and fleeting, he was also arguing for two levels of necessity. First, the necessary and proximate repetition of expressions, whose variability was determined by habit and nervous system functions, so that second), the legibility of emotions could be maintained for a high percentage of cases. And yet, even as he set facial expression prior to words in human communication,¹² physiognomy persisted like the statics or the product of universal affects. Physiognomy had inflected the thrust of works like Petrus Camper's *Sur le moyen de représenter les diverses passions* (1792) (EE 7), which also studied "man and animals."¹³ The reception of Camper's work led to the widespread use of what was called "Camper's angle," which became a standard measure for prognathism and so, the degree of savagery or civilisation readable in a given face. Cesare Lombroso, whose classic work *Genio e follia* (1864) preceded *Expression* by seven years, argued that the phenotype of a given face likewise represented "the mirror of the soul," showing its virtues and its vices (Schwarcz 194). Indeed, for Lombroso, that the criminal's type "was so predictable that it was possible to depict him in objective terms," the latter, being divisible into four major anatomical factors (Schwarcz 195). It is crucial to know that the criminal, for Lombroso, was simply one form of humans' "return to savagery" (Schwarcz 194). Therefore, for Lombroso, expressions could be superimposed on a physiognomic template, which however variable would never make the emotions unrecognizable. For the physiognomists and criminal anthropologists, the science of traits did not rule out evolutionary modifications, and physiognomy was, for them, the scientific "statics" that

¹² "The movements of expression give vividness and energy to our spoken words. They reveal the thoughts and intentions of others *more truly than do words, which may be falsified*" (p. 359). Darwin's near fetishism of a natural communication, from perceiver to perceiver—i.e., through direct intuition of a mental state—is so clear, here, as to displace the potential hypocrisy of words. An analogous structure is found in some comparisons between speech and writing.

¹³ Camper, *Sur le moyen de représenter les diverses passions qui se manifestent sur le visage; sur l'étonnante conformité qui existe entre les quadrupèdes, les oiseaux, les poissons et l'homme; et enfin sur le beau physique* (1791).

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stood as the counterpart to Darwin's "dynamics" of expression. Indeed, given the emphasis Darwin laid upon the connection between inward affect and outward expression, preceding all debates about communication, the difficulty of precisely how what is inward simultaneously determines what is outward, was unavoidable. Darwin's debt to Pierre Gratiolet and his *De la physiognomie et des mouvements d'expression* (1865) was considerable on this point. He cited Gratiolet to the effect that: "it follows...that the senses, the imagination and thought itself, however elevated, however abstract we suppose it to be, cannot be exercised without awaking a correlative sentiment, and that this sentiment is directly, sympathetically, symbolically or metaphorically translated in all the spheres of the external organs...as though each one of them had been directly affected" (EE 13).¹⁴ If each of the external organs were spontaneously affected, then the only remaining question was for how long, or how permanently they might be affected, by affects become habitual and thereby moulding a perceptible personality. To this, Darwin countered: "Gratiolet appears to overlook inherited habit, and even to some extent habit in the individual, and therefore he fails...to give the right explanation...of many gestures and expressions" (EE 14). In fact, if Gratiolet overlooked *inherited* habit, then this may be because habit and physiognomic inheritance did not fit together well *for him*, and therefore evolutionary expressionw should be held separate from physiognomic fixity. Suffice it to say, here, that Darwin's nascent science of expression, as long as it translated universal affects and passions, could hardly escape some of the suppositions of physiognomy—notably the terrible legibility of souls.

¹⁴ Darwin cited the French original, which I here translate: « il résulte... que les sens, l'imagination et la pensée elle-même, si élevée, si abstraite qu'on la suppose, ne peuvent s'exercer sans éveiller un sentiment corrélatif, et que ce sentiment se traduit directement, sympathiquement, symboliquement ou métaphoriquement, dans toutes les sphères des organes extérieurs... comme si chacun d'eux avait été directement affecté. »

4) Conclusion: The publication of *The Descent of Man* in 1871 redefined instincts in light of a paradoxical fact of natural selection: sympathy, and social instincts more generally, protected many weaker members of society. Yet *sympathy was itself selected*, naturally—against the more Malthusian jungle of struggle, which Darwin reserved for the other animal kingdoms (DP 50–55).¹⁵ This twist in selection, which had selection “selecting” virtually against itself, created both conflict in “man” and assured a certain hope of progress, because it forged a moral “conscience.” “[A]s man gradually advanced in intellectual power, he acquired sufficient knowledge to reject baneful customs and superstitions; as he regarded more and more, not only the welfare, but the happiness of his fellow men; as from habit, following on beneficial experience, instruction and example, his sympathies become more tender and widely diffused, extending to men of all races, to the imbecile, maimed, and other useless members of society, and finally to the lower animals, so would the standard of his morality rise higher and higher” (DM 493).

For moral advancement to be conceivable, however, habit had to be both transmissible and yet largely shaped by bodily functions: expression and affect belonged to a chain (as they also did in Lamarck) passing from perception and neural excitation, to expression,

¹⁵ The translator of *The Descent of Man* and author of *Darwin and the Science of Evolution* (2002), Patrick Tort, sums this up, in his *Darwin et la philosophie* (Paris : Éditions Kimé, 2004), as follows : « The motor of evolution is the mechanisms of natural selection of advantageous biological variations. This vast field of variations, giving rise to the transformative selective triage [*criblage sélectif transformateur*] extends to the domain of the instincts, faculties, and behaviours. Within human evolution, natural selection effectively favored the development of rational capacities at the same time as that—indissociable from it—of the *social instincts* at the origin of sympathy, interdependent behaviors [*conduits solidaires*], aid to the weak, assistance to the destitute—a host of behaviours that *are opposed* to the eliminatory mechanism of natural selection,” p. 53. Against this, readers like Marx and Engels, who had not examined *The Descent of Man*, would write that “...on the basis of the struggle for life in English society—the war of all against all, *bellum omnium contra omnes*— Darwin came to discover that the struggle for life was the dominant law of animal and vegetal life. However,” Marx added in his letter to Paul and Laura Lafargue (1869), “*the Darwinist movement sees therein a decisive reason for human society never to free itself from its animality.*” (Cited by Tort, *Op. cit.*, p. 52, Tort’s italics).

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which was common to all human beings. Concerning expression and emotion, local habits were thus secondary to our fundamental embodiment. Nevertheless, the adaptive habits had to be transmissible, and this, whatever the scope of selection's operation, because human morality, despite cultural variations, was a fundamental human possibility—even a basic animal possibility (“animals of many kinds are social; we find even distinct species living together...” [DM 473]). It is crucial to keep in mind that Lamarckianism, itself a functionalist theory of evolution, stood side by side with Darwinism until the second decade of the twentieth century. It even surfaced in the works of Herbert Spencer, the champion of the struggle doctrine. Darwin cites one of example of this in his friend's writing: “Our great philosopher, Herbert Spencer, has recently explained his views on the moral sense...I believe that the experiences of utility, organized and consolidated through all past generations of the human race, have been producing corresponding modifications, which, by continued transmission and accumulation, have become in us certain faculties of moral intuition—certain *emotions responding to right and wrong conduct, which have no apparent basis in the individual experiences of utility*” (DM 492). That is Darwin quoting Spencer.

Unlike Darwin, Spencer's evolutionism unfolded with no real distinction between *biological* struggle and selection, and *social* existence. Yet it is clear that Spencer ascribed a moral difference to humans—despite the lack of any basis for this in “individual experiences of utility.” These reserved struggle to individuals, at least in the passage Darwin cites. More striking is the recourse to a certain unaccredited Lamarckianism, consisting of “continued transmission and accumulation,” forging “faculties of moral intuition.” For Darwin, an effective way of illustrating the universality of the moral sense passed through the demonstration of the universality of pre-verbal communication, or a

universal semiosis and the simultaneity of expression and states of mind. This would legitimate *his* version of the social inflections set onto natural selection as survival, for which he argued strenuously in *The Descent of Man*.

Habits *become* bodily mechanisms, instinctive, and perhaps even inherited: “this does sometimes happen,” Darwin ventured (OOS 209). Now, while inheritance was informed by selection, selection could not determine whether adaptations could be inherited, since selection answered only the question of what responded to the imperatives of competition. Thus the Lamarckian conundrum remained.

The possibility of “slight modifications of instinct” as something “profitable to a species” nuances the habit-instinct question, because a slight modification could only be induced through changes in actions repeated over time. From there on, Darwin writes “I can see no difficulty in natural selection preserving and continually accumulating variations of instinct *to any extent that may be profitable*” (OOS 209). Clearly, natural selection *preserves* but does not directly *cause* adaptations. If habit, on the other hand, caused adaptations, while natural selection sorted and preserved them, then the transmission of some acquired characteristics was plausible.¹⁶ More important, there would have to be margins of variability according to the criterion of circumstantial welfare and utility. But emotions and their expression could not accumulate so many variations as to end with one group of human beings being completely unrecognizable to

¹⁶ Note also Darwin’s observation, repeated at various points throughout the book: “As most of the movements of expression must have been gradually acquired”—though there is no mention of what brought about the gradualist acquisition, i.e. no association is here made with natural selection—“afterwards becoming instinctive,” which is Lamarckian functionalism, “there seems to be some degree of *a priori* probability that their recognition would likewise have become instinctive” (p. 353).

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another in their respective expressions. Emotions and expressions could not be indefinitely elastic “under changed conditions of life”; neither would they be prone to change with “modifications of corporeal structures” (OOS 209).

As if he were recoiling before the implications of habit in relation to instinct, Darwin then corrects himself: “I believe that the effects of habit are of quite subordinate importance to the effects of natural selection of what may be called accidental variation of instincts” (OOS 209). It would then appear that natural selection had operated in terms of humanity as a whole—no matter where it lived—in the development of a homogeneous semiosis of affect. But the sign system of affect was supposed to correspond to a universality of some mental activity. When compared to *Origin of Species*, *The Expression of Emotions* seems to take *less* account—not more—of conditions of life and body structure; and it legitimates its approach thanks to the questionnaires that Darwin sent out across the British Empire. This is all the more striking that Darwin had already insisted, in *Origin*, that instinct and function both vary considerably (211) and even diverge from bodily structure for reasons that may be impossible to adduce. His examples are web-toed ducks that do not swim, woodpeckers that do not climb, petrels that behave like penguins, etc. (186).¹⁷

We can conclude that Darwin made a strong attempt to prioritize natural selection, having learned from Herbert Spencer a more compelling motor for species adaptation and

¹⁷ There is a hint of something like will to power in *OOS*, insofar as Darwin *does* take care to speak in terms of individuals varying with regard to their groups: “He who believes in the struggle for existence and in the principle of natural selection will acknowledge that every organic being is constantly endeavouring to increase in numbers; and that if any *one being* vary ever so little, either in habits or structure, and thus gain an advantage over some other inhabitant... it will seize on the place of that inhabitant, *however different it may be from its own place*” (186).

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transformation than the motor of mere adaptability or utility, but that selection and survival could not provide the link necessary for the passage from habit into instinct. This would be a passage from something like thin necessity to thick structural necessity. And we see a comparable conceptual negotiation in *Expression*. Habits of self-restraint—from shedding tears for example—lead to an oblique position of the eyebrows and a squinting of the eyes in suffering. But Darwin was quick to insist that shedding tears, like laughing, is found in “all the races of men,” because “our early progenitors” engaged in this behaviour (EE 215-216). By contrast, turning the eyes upward in feelings of devotion drifted more toward the circumstantially habitual and the non-innate: “I have not met with any evidence to this effect [of eyes turned upwards] with the various extra-European races of mankind” (EE 217).

Aftermath

There is no “final act” in the evolution story. Stephen Jay Gould reminds us that, before the synthesis of Darwinism and Mendelian genetics (resulting in a “population genetics”), Darwinism itself had faded to less than the triumphant success it had been in the time of Spencer and Huxley.

At the turn of the century Darwinism was still in competition with strains of Neo-Lamarckianism and with the structuralist, formalist schools that insisted upon “form” directing evolution from within—as against the externalism and undirected functionalism of “natural selection.” Immanentist evolutionism, guiding changes according to types, relied on undemonstrable, even *a priori*, types. It thus carried an idealistic dimension. Yet both Lamarckian functionalism and these orthogenetic models relied on a conception of

progress that could not be simply local. Lamarckianism proceeded according to two principles—one of local adaptations without “selection,” another concerning progress at a macro level. Formalism, in turn, worked with orthogenesis, where the possibilities of evolution were constrained by limits internal to species themselves. By the end of the 19th century, formalism had fragmented into several sub-schools, of which G. H. T. Eimer’s two volume treatise, *Orthogenesis der Schmetterlinge: ein Beweis bestimmt gerichteter Entwicklung und Ohnmacht der Natürlichen Zuchtwahl bei der Artbildung* (1888, translated into English in 1890 as “Organic Evolution as the Result of the Inheritance of Acquired Characters According to the Laws of Organic Growth”) (SJG 355), was the most flexible expression. Eimer was indebted to the “radical” German Darwinist Ernst Haeckel, whose recapitulation principle found its way into endogenous theories of evolution. In brief, this was ontogeny recapitulating the stages of phylum development or phylogeny. Eimer incorporated this principle into his immanentist, orthogenetic laws of evolution (SJG 362).

We should keep in mind that the usual depiction of Lamarck’s theory, as “soft inheritance” of acquired characteristics, was not really its primary emphasis (507), nor even that against which Darwin was reacting in the main. The direct production of adaptation by inheritance persisted into the 1920s and Darwin had already argued, in chapter VI of *Origin*, that “I think it can be shown that [habitual action becomes inherited]” (OS 209). Indeed, if this *could* be shown, then Lamarckianism and Darwinism could no longer be opposed to each other, and the principal task would simply be to determine the relative weight of selection *versus* inheritance of habitual actions. If selection did not massively trump inheritance, as Darwin would try to maintain, then, as he said: “the resemblance between what originally was a habit and an instinct becomes so

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close as not to be distinguished” (OS 209). This *rapprochement* of selection and Lamarckianism is most clearly visible in *Expression*. In fact, the real difficulty of Lamarckianism was that it was a two factor theory which, generated a series of “antinomies” as early as 1800, whereby macro evolution followed an unknown force that assured fairly regular progress, while the lateral evolutionary developments, or cladogenesis, amounted to mere diversification and bore no clear relation to the general progress of species (SJG 190ff). Beneath this dualism of principles lay the philosophical problem of reconciling ideal types (essentialism) with apparent randomness and adaptive diversification. Darwin solved the antinomy by having selection operate at every level on which adaptations occurred. At least, he attempted this in *The Origin of Species*. By contrast, the *Expression of Emotion* appeared to inch back toward an underlying dualism by arguing for the universalism (or idealism) of expressions *translating* states of mind, or at least extra-conceptual, non-representational states of mind. To the degree that a universal legibility of affects promoted evolutionary progress for humanity, Darwin was again playing in Lamarck’s functionalist court. Given his material, gleaned from correspondence with clergy in the British Empire, given his study of paintings and the photography of Duchenne, Darwin could hardly claim *to have shown* the universal legibility and “legality” of human expression. And this tension between the principle and the palpable, between what is empirically demonstrable *versus* what seems reasonable, also lies at the heart of Lamarck’s romance with the visible and the invisible. As Stephen Jay Gould put it, for Lamarck “the force of progress lies deeper within and operates at a higher level; the force of adaptation works palpably at the surface of things. One can, theoretically at least, observe climates getting colder and elephants growing thick coats of fur in direct response; but advance up the ladder lies hidden from our view in some

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abstract time, which also concerns the future.” Lamarck might have denied that the *causes* of progress posed a real problem to recognition and observation since, in his conceptual zoology, these forces “arose simply from the chemical nature of matter...But when Lamarck’s theory of physical causation collapsed, the force of progress became elusive—something operating so slowly, and at such high taxonomic levels, as to be effectively invisible in the here and now of testable science” (SJG 191).

But this was also a conundrum for Darwin’s universal theory of affects and passions, because the progress of human societies, thanks to moral sentiments, also concerned a macro level of evolution: selection selecting the weaker, and sympathy expanding to connect “man” to “the imbecile, the maimed, and other useless members of society.” *The Expression of Emotion* sets us at the macro level of “man and (selected) animals”; and Darwin does not attack Lamarckian dualism here. Instead, he reworks it: adaptation and diversification, for Darwin, were not so much opposed to a vaster force of progressive evolution as they might actually feed it—*provided we understand it in moral terms*. Diversification at all levels produced evolutionary progress, provided we accredit Lyell’s thesis of uninterrupted geological time, in which species developed unimpeded over millions of years, with no threat of global catastrophes (SJG 588). And yet, given *The Expression’s* sweep across different “races” of humans, from the “most savage” to the most “civilized” ones, one had to subscribe to a kind of stability, or stasis, in the expression of affects and passions. It would certainly be impossible to point to a chain of intermediary forms and modes for these expressions. *The Expression of Emotion* was thus an excentric work in Darwin’s *oeuvre*. And it had much to suggest that it was a response to the proponents of radical Darwinism, the Social evolutionists and polygeneticists, for whom progress among *specific* races could be shown to be operative in their respective cultural

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advancement. This would also intensify conceptions of human races being reciprocally, and structurally, irreducible to each other. When one adds to this, the recapitulationist arguments about the youth and senescence of certain races—which argued that as a race was dying out, infantile forms merged with degenerate senescent forms, truncating development still further—it becomes clear that *Expression* waged a battle on several fronts, and that it would stand as Darwin's most hesitant moment on "natural selection"—at least, so far as selection operated differentially among different races.

Moreover, it is not possible to say that Darwin's theory was concerned solely with species. It never opposed the idea that certain organisms might show greater adaptive potential than others, within a given species.

Politically and theoretically, Darwin's theory of expression probably cut both ways: as an argument for the family of humankind, and as an incentive to colonial implantation. Things would be easier if even "savages" recognized—and expressed similarly—pleasure, fear, grief, rage, and disgust. Yet the 1872 work had little impact on debates about races and evolution. By the twentieth century, Darwinism's value—to the political left as to the right—lay elsewhere. To take one example, Georges Sorel, the author of *Reflections on Violence* (1908) and *The Illusions of Progress* (1909), used Darwin in his struggle to revitalize Marxism during the third Republic. He is exemplary for his influence on syndicalists in the pre-World War I decades as also in the inter-war period. He is exemplary, too, for the emphasis he laid on culture—philosophy and art, notably—in the French reconceptualization of Marxism, along the lines of Proudhon.¹⁸ Central to

¹⁸ For a careful discussion of Sorel see Ze'ev Sternhell, "La révolution des moralistes" in *Ni droit ni gauche, l'idéologie fasciste en France* (Paris : Le Seuil, 1983), pp. 81-104. Sorel will argue, in the aftermath of the Dreyfus Affair and with the Commune in mind that the growth of parliamentary socialism promoted « the

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Sorel's theory was that we abandon simplistic notions of progress, out of faithfulness to Darwinian *evolution*, which meant adaptation under "*la concurrence vitale*" (IP, 173). This more modest argument in favour of selection as a *negative* process of elimination ("cette cause...ne ferait qu'en [les variations] éliminer," p. 173) allowed students of the history of jurisprudence to bring Darwinism into their "historic method" (IP, 173).¹⁹ Indeed, without a reconceptualization of law and tradition, Marxism itself would slide into economism, in

indefinite extension of the economic attributions of the State, » which would be prejudicial to all forms of private rights and justice. Citing Saverio Merlino's (1865-1930) *Formes et essence du socialisme* (1898), with distaste, Sorel argued that "according to the ideas of the current theoreticians of parliamentary socialism, private law is summoned progressively to lose its authority: these theoreticians say...that the State will continue to allow individual citizens [*particuliers*] to manage lower level enterprises; the small rural property, the small workshop, the small commerce are destined to disappear through the slow ruin that strikes the superannuated economic forms; [and] the prestige of private right would evidently follow the same declining route as the prestige of private production" (p. 198). The outcome of this, like the consequences of the neglect of art and religion, would be the continuation of what already exists "à l'heure présente," viz., "a general degeneration of law, which corresponds to the new directions of morays" (199). In this argument, which seems to have little to do with socialism as we conceive it today, Sorel was extending an argument developed in previous chapters of *The Illusions of Progress*: Marxism must be saved by shifting its concern away from economics and toward culture, broadly conceived. Further, a Darwinian conception of evolution should serve as a guide to the development of the history of law (173). However, this had to be done *properly*, and by remaining as close to Darwin's theory as possible. "Law is not less called to change as are living species. There is no great affair that does not make evident the existence of forces proper to modifying law: lawyers, judges and professors, in their pleadings, their decisions and their commentaries, always impact in some way the existing system...quite often as well, the general public intervenes to exert pressure on the professionals. In the midst of all these causes, which it would be absurd to want to analyze, there is produced a movement: this movement is the datum of history and it is that which allows us to know the juridical consciousness [*conscience juridique*] of the people" (172).

¹⁹ According to Sorel, it was the student of Lamarck, Savigny, who revolutionized the theory of history, by turning attention away from "the future [in which] one notes all the seeds of development supposed to furnish an complete explanation of events that come to pass," toward an examination of the past that focuses on "how adaptations come about [*se sont présentées*]" (IP, 171). "Savigny a changé l'esprit de l'histoire en introduisant cette nouvelle méthode; des difficultés inextricables se produisent dès qu'on mélange progrès et évolution" (IP, 171). However, Sorel would add, against Savigny's historicism (and that of Giard, who tried to reconcile Darwinism and Lamarckism), that any notion of society, and more specifically the juridical consciousness as resembling "a sort of vital force" amounted to a fantasmatic conception of the origin and evolution of law and traditions. Juridical consciousness had to be studied in light of struggles—notably, against the change in old legal systems or imposition of new laws: "For a long time, the peasants of the Midi of France opposed a determined resistance to the laws of succession of the Civil Code; we have therein a remarkable example of a struggle between traditions and new forms; all these elements can be observed quite easily." In this way, we can study, as sociologists of law, "the role of traditions in negative adaptation," the only authentic form of adaptation, because it neither violates the principle of selection, nor does it reify the forces of resistance in an "âme populaire" or a "sentiment juridique national" (p. 173). To this should be added the diversity of human relations with technology (IP, 188-192), wherein we find "in the capitalist world, a *real progress*, which [unfortunately] allows the managers [*dirigeants*] to give themselves fine time [*se donner du bon temps*], yet which is at the same time the necessary condition of the socialist revolution" (IP, 188).

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which socio-economic equality overshadowed the cultivation of art, philosophy and religion—in a word, the cultivation of a capacity for virtue and a sense of the sublime. Failing this, European civilization would follow paths of regression toward older, juvenile forms (IP, 216-219),²⁰ just as species and races had done, according to Hyatt and other metaphysical Darwinists.

There is not space here to elaborate on the work of Sorel. It bears emphasizing, however, that his erudite analyses of Durkheim, Bergson, Le Bon, Marx arrived at a time of crisis—in constitutions and laws; crisis in politics. An informed enemy of democracy as particularly vulnerable to the “law of apparent regression” (IP, 220), Sorel’s solution was a revitalized syndicalism and education toward the cultivation of virtue and the sentiment of the sublime in citizens. In this way, *and as I have argued about Darwin’s universality of expression, affect, and thus “soul,”* Sorel’s Proudhonian socialism also cut both ways. One of the complex reasons for this was his embrace of “evolution” via negative selection, over the out-dated and bourgeois concept of “progress.”

²⁰ “The transformations that Marxism has undergone illustrate well the theory of mediocrity. The writers of social democracy, who have claimed to explain, apply or extend the doctrine of their supposed master, were men of remarkable vulgarity; it appears, moreover, that Marx had no illusions about the talent of those who presented themselves as the authentic representatives of Marxism....The great error of Marx as not to have realized the enormous power inhering in mediocrity in history; he never doubted that the socialist sentiment (as he conceived it) is extremely artificial; today we witness a crisis that threatens to ruin all the movements that were attached ideologically to Marxism....This regression of socialist ideas, toward archaic chimeras, shows us once again, the victory of mediocrity over genius” (IP, p. 219).

Annexe: à lire ou à laisser...

Natural selection was seen as a negative force among orthogeneticists, those structuralist-formalists who deplored the anti-hierarchical operation of undirected natural selection. For Eimer, writing in the 1880s (published 1890), one of the formalists who did not wholly eliminate selection, the difficulty of Darwin and Spencer's "motor" of evolution was that it was uncreative: natural selection created nothing; it caused no new variations (361). Again, an immanent force had to do more than impose thin constraints on variations perpetuated by selection, and this could be better married to Lamarck's "use and disuse with inheritance of acquired characters" (SJG 360) as its environmental mechanism of adaptive change. Eimer was not a vitalist, however. The immanent principle was "prescribed by the material composition of the body" (SJG 361). In light of this, the entire theme of the expression of emotion could be locked into physiological imperatives, like respiration and circulation, but Darwin could also thereby avoid orthogenetic or formal immanent principles guiding the evolution of expression; a certain generality of human cultures, occasionally also linked to animal behaviours, permitted him to side step both vitalist and mechanistic discussions of invisible internal channelling. This was a better thing that we might suppose, as Eimer's list of laws for channelled variation included recapitulation, invariant changes in color markings—on lizards notably; the "law of wave-like evolution" whereby evolution starts from the back of the body and moves forward; to "the law of male preponderance" according to which males, which move uniquely beyond "terminal female stages in a common ontogenetic channel" would logically be first in evincing new features and corporeal modifications (SJG 363).

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They must, after all, engage in a privileged way, in the struggle for existence, and therefore “always be first to respond to new demands” (SJG 363).

La natura non fecit salta. The question of the rhythm of evolutionary development divided functionalists like Darwin and Lamarck against the orthogenetists and formalists, like Galton, Eimer, Hyatt. If natural selection was to operate over millions of years, as Darwin held, the development of the Earth had to be relatively stable and uniform—following Lyell’s arguments. More important still, a long-developing nature would need make no leaps—whose very possibility, for the functionalist position, would be hard to explain. For all that, Galton’s “polyhedron” (351) proved a compelling, and enduring, illustration of development guided not by selection but by internal constraints structured by immanent laws. On this logic, what might appear ‘phenomenally’ to be a leap of evolution was, in fact, one possible response to some stimulus or external irritation set on a population. The latter might then find itself shifted from one of its developmental points of stabilization to another. Occasional, ostensible leaps would thus amount to mere shifting “from one position of organic stability to another,” without which regressive forces, pulling organisms back toward the mean, could well wipe out any accumulated, micro-modifications or progress (as Darwin conceived these) (SJG, 347). This question concerns more than that of periodicity in change, it carries an entire ontology of the invisible—that is, of regulated potential for change, understood as a totality with facets. This ‘localized’ progress according to the faceted solid that was the ‘idiomorphic’ population in question. And it readily supported polygenesis or the plural ancestors of humans. Stephen Jay Gould argues that the Galtonian—and other—formalist positions better explained, in the time prior to Mendel’s ‘genetics’, the phenomenon of “species clumping”; or how it was that there were “spaces” or gaps between some phenotypes,

while there was clear proximity between others: lions, tigers and cats being closer, phenotypically, than lions and tigers, and wolves and dogs, for example. Together with orthogenetist “laws” of development, Galton’s polyhedron thus addressed the metaphoric “space” of evolutionary patterns, as well as the “solids” that filled, irregularly, that space. Moreover, experience learned from the breeding of sports animals argued in favour of leap-like modifications in species, which could not be the result of the accumulation of vast chains of generational succession and variation, as in Darwin’s theory (SJG, 346). Galton’s “facet-flipping” followed constraints that permitted the constitution of “sub-types” within populations (SJG, 345, fig. 1), which provided 19th century science with one, alternate conception of the origin of races. For his part, Darwin not only rejected the formalist-structuralist claims for immanent, governing mechanisms on development, he insisted, in a letter to Hyatt dating from 1872, that he did not understand this approach—although his own gradualism with selection should not be read as implying continuous progress.

If we suppose that these are relatively hermetic arguments between men of pure science, we must not lose sight of the uses made of the concept of neoteny in colonial and racist self-justifications; but also, in Europe itself, of the impact on political life of the structuralist phyletic life-cycle thesis. Hyatt would speak, in 1897, of his “old age theory” or phylogerontism with regard to the liberalisation of suffrage. Sexual divisions of labor, and sex-based divergence itself, were the clear products of the “progression among highly civilized races” (SJG, 372). However, as a population—here, species and populations prove rather indistinct—enters into senescence, gains of evolution like the division of aspect and activity between the sexes are lost. Votes for women “might lead to what we...now consider as intellectual advance, [but] this would not in any way alter the facts that

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women would be tending to become virified and men to become effeminized, and both would have, therefore, entered upon the retrogressive period of their evolution...The danger to women cannot be exaggerated” (SJG, 372, citing Hyatt, 1897).

So far as the criterion of differentiation between sexes denoted a crucial degree of evolutionary advancement, it might be observed that Hyatt was conferring greater evolutionary vigour on many non-European peoples, and just the contrary on Europeans. For Darwin, in any case, the structuralist position of senescent and simplified ontogenies (where species infancy joins species ‘old age’), should be explained by selective adaptation to conditions of existence (SJG, 373). The essential point, here, concerns the flexibility of application of the structuralist, orthogenetist “ontogeny”—which was, itself, an *ontology*—to all planes of existence, including the socio-political. Patrick Tort, the French compiler of *Dictionnaire du darwinisme et de l'évolution*, has shown how Darwin avoided this trap—explicitly, in his 1871 work, *The Descent of Man*. Unfortunately, that work was often either misunderstood or neglected in favour of *Origin*. Perhaps the best example of this is found in two impassioned readers of Darwin, Marx and Engels (DP, 44ff.).

