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From Speciation to Specialization

On the Origin of Species by Means of Natural Selection, Charles Darwin

FOR A SOCIAL SCIENTIST, READING DARWIN'S *ORIGIN OF SPECIES* (FROM HERE ON *Origin*,¹) is a simultaneously humbling and reassuring experience. What an achievement! Science and scientific writing at their best. A book that is the product of long thinking, such as we today, haunted by deadlines, can only dream of, and written in a clear, engaging language, immensely readable for even the (educated and interested) layperson. Everything is as simple as possible but no simpler, as allegedly demanded by none less than Albert Einstein himself. And profoundly honest: the open questions, the remaining mysteries carefully exposed, careful attention paid to the difficult spots, and the arguments of the opposition, both real and anticipated, treated with polite respect.

What can be reassuring here if we know all too well that we will most likely never match this unmatched masterpiece? Social scientists are too often marred by what has been called “physics envy”—a sense of inferiority over their theories’ inability to predict the future. Does what they have to offer really deserve to be called theory? While most physicists do not waste their time arguing with social scientists about whether what they are doing is “theory” or even “science,” it is economists—the modern, mainstream ones who insist that they are anything but social scientists—who keep claiming that a theory

that fails to yield predictions cannot qualify as one. Their theory, of course, predicts, if only in principle (principle aside, its predictions, although hawked with unlimited scientific self-confidence, normally turn out to be wrong, especially in times when true predictions would be particularly welcome). It takes a theory to beat a theory, economists keep telling social scientists. By “theory” they mean a Newtonian theory, like theirs, one that presupposes a Newtonian universe: naturally in equilibrium, governed by universal laws of motion, by constant forces like gravity that direct any movement of any object toward a predetermined, and therefore predictable, position, under an unchanging and unchangeable, clockwork-like natural order.²

Taking a fresh look at *Origin* seems like the ideal treatment for social scientists suffering from the physics envy instilled by their colleagues from the economics department. Darwin’s is clearly a theory: it subsumes a vast number of disparate facts under beautifully simple general principles that remain resolutely open to being challenged by empirical evidence. But equally clearly, it is not a Newtonian theory, as it neither aims at nor claims to be capable of prediction. Instead it is a historical theory: it undertakes to explain how the real world as it exists today has come to be what it is, without predicting what it will be like next. *Origin* is living proof that a theory that explains the present by its past while leaving the future open can be a respectable, “scientific,” bona fide theory—even though it is a historical one that depends on “storytelling,” just as is social science, which is precisely for this reason considered by many, even some of its producers, as lacking in scientific dignity.

What can Darwinian evolutionary biology, as developed in *Origin*, contribute to a social science no longer willing to deprive its object world of its historicity? In what sense can social science be encouraged by a close reading of biological Darwinism to cease being ashamed of itself and give up whatever Newtonian pretensions it may have adopted under pressure from a desocialized economics? And what, if anything, can social science learn from its homologies with Darwinian natural history? Compared to the divine clockwork

of Newtonian physics, there are intriguing ontological similarities between Darwinian evolutionary biology and a non-Newtonian social science that strongly suggest the possibility of concepts from the former inspiring empirical and theoretical progress in the latter. Just as in the social world, the world of living organisms as depicted in *Origin* is beset by an *intrinsic restlessness* that is a source of permanent instability and continuous change. Both biological and social life appear *inherently creative*—which is another way of saying that they are *historical*, which in turn implies that their emerging future is always an open one. Social theory, this suggests, can rely on evolutionary biology at least to reassure itself that it is not its fault if its objects as it represents them appear noisy, fuzzy, restive, eventful, transitory, temporary, surprising, and always more or less out of balance—and that there is no need for a theory of society to take their life out of them for social science to become possible.

There is no ambiguity in *Origin* as to where the restlessness of life on earth is rooted. Life, just as history, is all about reproduction. Reproduction is by descent: earlier generations are followed by later ones, in unending sequence, from the past to the present, and from there into the future. Reproduction by descent means renewal, in the sense of continuity and change at the same time, as descent is always *with modification*. Darwin didn't know what exactly caused that modification—genetic mutation was not yet known in his time. But empirical observation had convinced him that reproduction was never perfect and inevitably came with variation. Moreover, such variation seemed to him not directional or directed, not aimed at any particular end—in other words, not teleological—but accidental, randomly deviating from parent organisms and randomly distributed among their offspring.

Reproductive variation, then, operates like, in modern language, a stochastic source. But this does not make natural history chaotic. Variation from parent to offspring and between offspring, while random, is always gradual and typically minute. *Natura non facit saltus* (Nature does not make leaps) is a time-honored principle of

European scientific reason that goes back to Aristotle, one to which Darwin at strategic turns of his argument pledges his firm allegiance. Moreover, to account for the structuring—the orderliness—of natural history, *descent with modification* is complemented by two other key concepts of Darwinian theory, the *struggle for existence* and *natural selection*. Drawing on Malthus, Darwin posits that reproduction increases the number of organisms geometrically, outpacing any possible linear increase in the resources needed to sustain them. All living organisms, therefore, have to *struggle* for their survival with other living organisms, of the same or of different species, in what Darwin refers to as *the economy of nature*. Survival allows for and indeed consists in reproduction, death means exclusion from it. Which organisms survive the struggle depends on the endowment of physical properties and instinctive behaviors received, *with modification*, from progenitors; organisms that fit the current conditions of the struggle for existence better can reproduce while the others remain unselected by Nature³ and are expelled from natural history.

Natural history, then, proceeds through minimal differences generated by chance and through the favors bestowed by the external, “natural” conditions of their day on variants, or mutants, which happen to be better than their competition at coping with such conditions, including the presence of other classes of organisms equally subject to continuous change through natural selection. In selecting “favoured races,” “Nature” is limited to what is supplied to it by what it has inherited, with modification, from previous generations. Nature, in other words, can work only with material that it has itself produced in the past, and the changes it can make on it can only be gradual and incremental. In improving its creatures, in the sense of adjusting them better to contingent circumstances, Nature must be content with small steps, as major change can come about only by continuous accumulation of minor changes over many generations, normally meaning very long periods of time. There is never a new beginning, no reset button, no revolution, just evolution. Even when a meteorite radically disrupts the external conditions of life, Nature

must carry on with what the disaster has left, unable to go back to square one to start again with a radically new design of its productions.

TWO WORLDS, NOT ONE

So again, what can a curious social scientist learn from one of the model achievements of the modern scientific tradition? It seems to me that above all we must not be misled, impressed by Darwin's stunning demonstration of the power of theory, to biologize human action and human society, thereby desocializing it. We must not reconceptualize the social world as another biological world, for example by giving up the notion of meaning-oriented social action and replacing it with instinct-controlled behavior, in the belief that the lesson to be learned from Darwin is that society must be naturalized to be accessible to evolutionary theory. Rather, the task is to apply evolutionary theory to *society as society*, as a world of its own that, while grown out of and still rooted in the biological world, can and should not be reduced to it. The idea is to transport Darwinian evolutionism into social theory, to help understand a substance matter—social action and social institutions—for which it was not conceived, without thereby buying into biologism, i.e., disrespecting its particular nature. I suggest that this is both possible and far from dangerous to social science's theoretical and political health. In fact, I believe it can be extremely productive, not least in that it draws our attention to important *differences* between societal and natural history, and may even help us understand how society and biology, or humanity and nature, are related, not just systematically but also historically.

Social science, that is to say, should feel encouraged by the unquestionable scientific character of Darwinian evolutionism to do what it urgently should do; namely, to reintroduce history into social theory. Having worked as a social scientist on institutional change, I have become convinced that we need to restore history and historical development as central concepts of our discipline, or else we will forever be confined to a sterile, formalistic, essentially technocratic presentism that misses what is most important about society: its

boundedness in time and space (Streeck 2010).⁴ Of course we cannot and should not even try to revive the teleological determinism of the nineteenth century that informed sociological theory basically until the demise of modernization theory in the 1970s. But this does not dispense us from trying to understand the way history moves and is moved. It is from this perspective that I find Darwin's *Origin* so stimulating, as it offers a model of a theory of history as continuous, endogenous, self-driven incremental change regularly producing novel—in the sense of *a priori* unknowable—but never terminal, historical conditions, connecting novelty to continuity by emphasizing the gradual nature of change, i.e., the dependence of the future on the present, and of the present on the past.

To realize the full benefits Darwinian evolutionism holds in store for it, I believe social science must distance itself from a number of previous attempts, some of them quite prominent, to apply evolutionary theory, or whatever they have taken it for, to society. Some of these build on the Darwinian “struggle for existence” a Panglossian functionalism in which the empirical world is necessarily the best of all worlds, or would be if competitive “natural selection” were not frivolously interfered with by scientifically uninformed dogooders. Others draw on Darwin's treatment of the behavioral programs of organisms as being in the same way subject to variation and natural selection as physical properties, in an attempt to justify a biologicistic-reductionist conception of human nature and society that replaces action with behavior and norms with instincts. None of this, I suggest, is justified, let alone required, by the Darwin of *Origin*. The former confuses relative with absolute “perfection” of evolutionary outcomes, while the latter implies that the Darwinian combination of stochastic variation with systemic selection—which is what makes Darwinian evolutionism a theory of history with an open future—can be translated to social science only at the expense of adopting a biological-naturalistic, nonagentic definition of the human actor. I will briefly address both in turn.

Regarding organisms' functional perfection—the degree to which they are ideally adapted to the demands made of their “struggle for existence”—Darwin leaves no doubt, where he addresses the issue systemically, that his world is a historical and not a functionalist one:

As natural selection acts by competition, it adapts the inhabitants of each country only in relation to the degree of perfection of their associates ... Nor ought we to marvel if all the contrivances in nature, be not, as far as we can judge, absolutely perfect; and if some of them be abhorrent to our idea of fitness ... The wonder indeed is, on the theory of natural selection, that more cases of the want of absolute perfection have not been observed ... (Darwin [1859] 2004, 507f)⁵

Evolutionary fit is relative, not absolute—relative to location in time and space, to available biological material, and to environmental challenges. At the time an organism is observed, natural evolution may still be underway toward more “perfect” adaptation; or what “Nature” can do for it may be limited by its inherited properties; or what may have once been hard-gained “optimal” adjustment may have been rendered useless by changes in the external circumstances of the “struggle for life.” If external conditions are prone to change faster than the organisms struggling under them, perfect adaptation may indeed be no more than a moving target that is never fully reached—and if in exceptional cases it is, it may soon be undone by changed conditions in the organic or the inorganic world, or both.

Assuming less-than-perfect adaptive fit to be normal undermines the functionalist logic of explanation to which both biology and economics incline. A functionalist explanation treats effect as cause, via “backward induction,” which makes for an unambiguous solution only if the effect is assumed to be perfect. Moreover, backward induction entails a temptation to redefine cause as intention, and indeed as strategically rational and empirically effective intention. This seems

easier in social science, with human rather than nonhuman agents. Note, however, that social conditions can often be explained only as “unintended consequences” of social action (Merton 1957). This, if functionalism is to remain functionalism, requires theory to specify mechanisms that ensure that those consequences, even though unintended, aggregate into the right, functionally desirable condition at the level of the society as a whole. In biology, complicated and often nonintuitive accounts of random variation and historical selection are simplified, for convenience or for the benefit of the nitwits,⁶ by recourse to a language of strategic action attributing rational and strategically successful intentionality to organisms undergoing—or “in pursuit of”—adaptive change. Projecting intentionality into the natural world is the reverse side of subjecting the social world to biological reductionism—fake intentionality dressing up cause as reason while biologism turns reason into instinct. The female peacock selects her mate on the basis of the beauty of his tail because she strategically understands that a beautiful tail signals strong genes that will improve the prospects of her offspring to survive—while the male poet writes his poems, not in order to make a living or symbolize an aesthetic experience, but to get as many admiring women as possible to let him fertilize their eggs.

As to biological reductionism as such, it essentially assumes that human actors are endowed with hardwired behavioral dispositions “selected” by “evolution,” dispositions that are singlemindedly focused on physical reproduction. All human action is assumed to be controlled by them, regardless of the meanings actors attribute to it. In this view of the world, human actors are typically victims of false consciousness: while they believe they are serving cultural values or fulfilling moral obligations, actually they are driven by instincts established during and inherited from natural history, whose true purpose may remain entirely unknown to them. Human action is effectively controlled by instincts such that it is “rational” with respect to its “real” function, which is to secure reproduction. Ultimately this makes access to reproduction the secret but decisive, and

indeed the only “real,” ultimate motive driving agents and shaping their social relations. For example, a popular biologicistic-reductionist evolutionary model of social action explains sexually unfaithful behavior of human males in societies where faithfulness is a social value as an inherited “rational” desire on their part to spread their genes to “capture” as many eggs as possible. Female faithfulness, in turn, is explained as women taking into account, consciously or not, their more limited reproductive opportunities (15 children at most) and the dependence of their offspring on male protection. Faithful men and unfaithful women, as well as promiscuity without intention to reproduce (a quite frequent phenomenon among humans, one should say) or, to the contrary, a celibate way of life, appear as perversions and require complicated ad hoc explanations as “irrational” deviations from an otherwise biologically anchored “human nature,” unless an “adaptive story” can be devised showing it to be functional for reproductive success after all.⁷

AGENTIC EVOLUTIONISM

Looking back, I find in my own work on institutional change an example of a productive application of an evolutionary logic resembling that in *Origin* (Streeck and Thelen 2005). In an attempt to conceptualize gradual change as the normal condition of institutions—rather than as an exception interrupting “normal” institutional stasis—my coauthor and I hit on what we later called *imperfect reproduction* (Streeck 2010), which is easily recognized as just another name for Darwin’s *descent with modification*. No biological reductionism was involved; the world we dealt with was and remained one of social action and social norms, not instincts and food shortage. The location where continuous institutional change originated was the gap between general rules and their application to specific situations. (On the following, see Streeck and Thelen 2005, 12–16.) That application, we reasoned, must always be a creative act, as no rule can foresee all individual cases to which it is supposed to apply. Norms, in other words, must always be *interpreted* in relation to the conditions of the action they

are supposed to govern before they can be enacted. Enactment can be either faithful or in bad faith, but either way it is not entirely preordained by the norm.

Social structures, we pointed out, consist of norm-givers and norm-takers (who in a limiting case may be identical). Social norms are enforced by positive or negative sanctions dispensed by rulers, who may either be peers or specialized agents, like police, courts, or mafia thugs, commanding legal authority or superior means of violence, or both. (Rulers and ruled, connected as norm-givers and norm-takers, and as enforcers and appliers, together constitute what Max Weber calls a *Herrschaftsverband*, which may best be translated as “regime.”) As norms are creatively applied, their interpretation—what they in practice “mean”—is likely to drift. With time, norms are gradually refashioned through an evolving tradition, collective learning, and precedents with respect to the sanctions that “select” among legitimate and illegitimate interpretations, being modified in the everyday reproduction of social structure through social action. What practical applications norm-following gives rise to is unpredictable from the perspective of the norm; in this sense norm-following does operate as a stochastic source generating *variations* of and around a normatively coded practice, while sanctioning may appear as social *selection* of actions, comparable to natural selection of physical properties or instinctive behavior in biological as distinguished from social evolutionism.

Note that there is no biology here and, just as in Darwin, no genetics—only actors and actions with different power and perspectives. There are, however, variation and selection; variation originating in the open-ended need to bridge the inevitable gap between the general and the specific, selection consisting in the application of institutionalized sanctions, the two connected in a relationship of social control. Change is endogenous and continuous, and revised institutions grow out of inherited ones, with society drawing on and limited to institutional material inherited from the past. Institutional change, in other words, is “path-dependent.” That it is not a natural

environment that does the selection but a structure of formal or informal, legitimate or illegitimate power or authority points to an important difference between a human society and a biological species. Societies, unlike species, are organized, typically in classes, and such organization intervenes between human individuals and humanity as a whole. Individual responses to the need for interactive interpretation and enactment of institutionalized social order are selected, not by Nature improving the species to help it survive, but by ruling classes identifying the interests of society with their own interests. Class interests, however, unlike biological survival interests, can be contested, and to the extent that they relate to modes of material production, they affect also the relationship between the human species and nature, and indeed the chances of survival of the former in the latter.

DOES SOCIETY MAKE LEAPS?

An exciting question inspired by *Origin* is whether human history is really as continuous, and social development as incremental, as natural history is under the Darwinian paradigm. Is it true that in human life as well there is just evolution, and no revolution? Is the progress of humanity really dependent on random mutations in the actualization of inherited patterns of social order, on the imperfect reproduction of institutions, and on collective selection, however accomplished, from its results, within the confines of the historical material, what biologists call “phyletic constraints” (Gould and Lewontin 1979)? Can there not in human history be “pathbreaking” new ideas conceived in creative moral or technical reasoning, ideas enabling humanity to perform the very revolutionary leaps that nature, according to Darwin, can never and will never make? I cannot even try to answer these questions here. But I note that, interestingly, they are being asked also among evolutionary biologists, who try to make sense of the fact that there may have been periods in natural history when evolutionary gradualism was “punctuated” in that it was rapidly accelerated until it again slowed down (Eldredge and Gould 1972).⁸

I also suggest that whether or not the evolution of life proceeds in fits and spurts—and whether the possibility of revolution in social affairs ends the analogy between human and natural history—there is good reason not to underestimate the extent of continuity or overestimate the potential of disruption in social life, and to be careful not to give too much weight in social theory (and in social practice as well) to idealistic voluntarism. As none less than Alexis de Tocqueville argued in his book *The Old Regime and the French Revolution* ([1856] 1983), what during and immediately after a revolutionary moment may appear as an entirely new society, without historical precedent, may with some distance be recognized as an outcome of long-running trends of gradual social transformation. Moreover, revolutionaries who have come to power are more often than not shocked to learn that while they may have taken possession of some of their society's institutions—in modern times, in particular, of the state—other institutions have successfully resisted their attempts at conquering. Also, action on the ground, the repertoire of creative compliance with inevitably underdetermined institutions—the supply of imperfect norm enactments from which institutions must select—does not necessarily change in tune with new political power relations. As that supply cannot be completely controlled from above, not even with terrorist means, even revolutionary change is always embedded in tradition and historical continuity.⁹

Similar reasoning may be applied to the role of ideas in society and history, from cognitive images to normative precepts. Darwinian evolutionism suggests a conceptual framework in which societies store, replenish, update, and generate a wide range of different ideas for those in a position to select from. Is the production of ideas a process of stochastic mutation? Scientists and philosophers, who in modern societies occupy the high-culture tier of ideational discourse, will insist that their thinking at least is far from “wild” and is to the contrary strictly disciplined by logic and observation. From the perspective of a society's “ruling ideas,” however, the current production of new, competing ideas can only appear chaotic. To established “old

thinking,” any “new thinking” must seem eccentric, “radical,” and even ridiculous, and its evolution anarchic in the sense of both unpredictable and ungovernable (Kuhn 1962). While new ideas necessarily descend from a tradition and would in fact be literally inconceivable outside of it, here too descent always comes with modification, since the way tradition is interpreted and appropriated is never predetermined. Moreover, as ideas change faster than structures, and are less costly to produce than new institutions or new factories, society’s ideational endowment not only exceeds current institutional needs but will inevitably be internally diverse and contradictory. This is so in spite of continuous attempts by ruling classes to limit the provision of new ideas to ones that they consider as following logically and legitimately from the old, established ideas enforced and controlled by them. To this extent at least, the Darwinian model of endogenous random mutation and exogenous environmental selection seems quite applicable also to the world of evolving ideas and ideologies.

SPECIATION AND SPECIALIZATION: SMITH, DARWIN, DURKHEIM (AND MARX AS WELL)

Another intriguing question that comes up when reading *Origin* is what it is that corresponds among humans and human societies to biological speciation as conceived by Darwin. To wit, Darwin suggests that of the variations among an organism’s offspring, those that stand the best chance of survival—in the sense of successful reproduction—are most different from their parents and siblings, and therefore most likely to develop into new species. This is because speciation in Darwin is essentially niche-seeking: the more organisms differ, the less likely they are to depend on the same resource base. Variation, then, is a way of escaping from competition and thereby easing the “struggle for existence”; it is in this sense a “strategy” to prevail in that struggle by avoiding it.

Sociologists are aware, or should be, that this figure of thought strongly influenced none less than Émile Durkheim ([1893] 1964) in his attempt to understand what he, following Adam Smith ([1776]

1993), called the “division of labor”—in more modern language, the structural differentiation of complex societies. Rejecting economic-hedonistic explanations, Durkheim suggested that rather than the pursuit of happiness, it was the fear of a Hobbesian war of all against all that made people specialize, in search of ways to make a living that did not pitch them into head-to-head competition with others and thereby tear society apart ([1893] 1964, book II, chaps. I and II). Drawing explicitly on Darwin, Durkheim dissociates himself from the utilitarianism of economic theory by explaining the division of labor in society as a response to rising “dynamic density” in a social space, caused by either growing population or shrinking territory, with specialization serving to maintain social peace and for this reason becoming a moral obligation (1964, 208–9).

Comparing Durkheim to Darwin also reveals, in addition to the commonality of niche-seeking in search of protection from competitive pressure, important differences between social and natural life. What is *speciation* in nature is *specialization* in society—the former producing new species, the latter taking place within one and the same species, substituting for speciation and thereby allowing humanity to remain united. A corollary is that differentiation in society can progress incomparably faster than in nature, where it requires change, drawn out over generations, in biological substructures. Another is that variation within the human species—social rather than biological variation—can produce more, and more easily adaptable, diversity than variation within other species. This was noted already by Adam Smith in his comparison, in *Wealth of Nations* ([1776] 1993), between two dogs of different breeds and two humans in different occupations:

Many tribes of animals acknowledged to be all of the same species, derive from nature a much more remarkable distinction of genius, than what, antecedent to custom and education, appears to take place among men. By nature a philosopher is not in genius and disposition half so

different from a street porter, as a mastiff is from a greyhound, or a greyhound from a spaniel, or this last from a shepherd's dog. (Smith [1776] 1993, 24)

Although philosophers and street porters are more *physically* alike than mastiffs and greyhounds—which are so different, due to human rather than natural selection, that they, following Darwin, might under conditions of spatial separation evolve into different species—*functionally* they are equally different or even more so. Remarkably for his time, Smith concludes from this that social differentiation must be the result not of different physical capacities but of socialization, in particular of different opportunities for individuals from families with different positions in the social structure.¹⁰

Biological speciation and social specialization differ in yet another way, also commented upon by Smith. Dogs, Smith observes, cannot use their different biological capacities for mutual benefit, because they are unable to engage in exchange and cooperation. In fact, dogs, and animals generally, are essentially lonely: they must be capable of doing by themselves everything they need to do to survive and procreate¹¹—an idea found also in the anthropological reflections of the young Karl Marx. Humans, by comparison, acting on meaning rather than behaving by instinct, can set up far-flung networks of cooperative relations with other humans—social structures and normative orders that allow and encourage them to make themselves dependent on the cooperation of others by specializing far beyond what the need of animal organisms for individual autarky would permit. It is this capacity for other-reliant and other-dependent social identity formation by which the human actor becomes, so Marx following Aristotle, a *zoon politicón* (Marx [1857–8] 1953, 6)—a political animal, and indeed the only animal that is political.¹²

Of course, sociologists know about the profound fragility and vulnerability of social structures built on but not anchored in the generalist biological substructure of humanity; they are aware of the possibility of such structures becoming anomic, i.e., destructive of

the trust they require, or asymmetrical and exploitative of the human ability, and indeed need, for cooperation and social integration; and they concern themselves with how institutions in crisis may be repaired or replaced in and through politics—by insuring cooperation against exploitation—if catastrophic breakdowns of social order are to be avoided. It was not just Marx but also Durkheim who insisted that the institutionalization of the division of labor within the single human species, uniquely promising of human and material progress, may be fatally deficient if it is lacking, above all, in “justice” (Durkheim [1893] 1964, 322).

Darwin’s analysis of biological speciation in *Origin* teaches us by extension about the peculiarities of the human being, biologically a generalist who, through socialization and social organization, bests all biological specialists—the invincible super-decathlete of the natural universe. Humans, uniquely among complex organisms, are capable of surviving in the Arctic as well as the Kalahari, on the Amazon and in New York City, traveling faster, diving longer distances, and flying higher than any other animal, and all of this without having to split up into different, differently specialized species.¹³ Society and its institutions enable humans to live as “moral animals” (Darwin 1871; see Hodgson 2013), free from the dictates of instincts and the constraints of physical inheritance, both forced and empowered to make choices, and relieved of the need, when confronting new challenges, to hope for the creeping progress of biological mutation and selection. Of course, here we are faced with another daunting question—namely, how what surely seems a categorical difference between humans and other animals could possibly have come about through gradual and continuous change, without nature taking leaps, as it cannot under Darwin’s iron law of historical continuity. All we can do here is speculate about a very long and, at first, very slow, although later perhaps accelerating, evolutionary process in which the grip of biologically rooted instincts on the human species became progressively relaxed, freeing up general capacities available for specialization and making space for society to gradually take control of

increasingly biologically deregulated beings, to guide them out of natural history and into human history.¹⁴

THE “STRUGGLE FOR EXISTENCE” AND THE IMMORTALITY OF SOCIETY

The difference between speciation and specialization as responses to competition in the “struggle for existence” reflects also on the notion of “survival of the fittest.” For Darwin, survival meant survival into the next, always slightly modified generation—or in other words, successful reproduction. Natural selection in *Origin* was concerned with individuals, not with groups: what does or does not “survive” is not the species but its various members, some of them on the way to evolving into species of their own. In human life, there is also selection of individuals, but socially rather than biologically, with society and its institutions selecting, by positive or negative sanctions, among different performances of institutionalized expectations. Biological capacities do play a role, although not the only, and not even a dominant one: he or she who lacks the physical equipment needed to run the 10,000 meters at the Olympics can always try to be selected as a moral philosopher or, if this doesn’t work either, a street porter (or, today, a truck driver).

Social Darwinism, by comparison, is concerned also with group selection, i.e., with “peoples” that come, inevitably, organized as societies. In this nineteenth-century worldview, it is above all these among which there is “struggle for existence.”¹⁵ Most likely to prevail in that struggle, according to the Social Darwinist tradition, are societies that allow for and actively enforce rigorous Darwinian selection among their members, reproducing at their microlevel of social interaction the law of the stronger that they collectively face at the macrolevel of international relations—letting the weak fall by the wayside for the strong to survive, thereby enabling the society as a whole to do the same (Spencer [1882] 2003, vol. II, chaps. XVII, XVIII).

Among the many things that social scientists may have to say on this is that societies rarely die—apart from very small ones that

can be physically extinguished by genocide or natural disaster. Normally enough members survive, even in extreme circumstances, to make what may at first look like the end of a society appear from a distance as a step—however transformative—in a more or less continuous historical process (McAnany and Yoffee 2010). Beyond a certain size and complexity, societies, instead of dying, reform, reorganize, restructure—and not just as a result of defeat at the hands of other societies or because of resource shortages. Indeed, on what are death and survival for a society—what collapse and what structural adjustment—even its members may think differently, depending on their position in the social structure. Human societies have no single, unified, fixed purpose, as much as Social Darwinists, in alliance incidentally with standard economics, may try to convince us of the opposite. While death and survival are unambiguously defined for biological organisms, including human individuals, their definition is messy at best for human societies, which are organized around social meanings and social norms and can therefore be both differently defined as well as rapidly restructured. For example, what was the end of the Roman Empire for the senatorial class in Rome was nothing short of its glorious rebirth for a Germanic prince like Theodoric the Great, who in the sixth century AD assumed the Roman emperorship in addition to his Gothic kingship.

COMPLEXITY AS DESTINY?

Finally, reading *Origins* may prompt us to reflect on the notion of progress and what it could mean in both nature and society. As pointed out, evolutionary improvement in Darwin is fundamentally only relative: evolution means adjustment, *within the limits of the possible*, to an essentially unpredictably changing natural environment, inanimate and animate. What adjustment is possible is limited by the insuperable condition of gradualism and the phyletic constraints imposed by past natural history. This renders evolution a sequence of instant improvisations that serve their adaptive “function” as best they can while likely to be suboptimal in comparison to what, if possible,

could be newly designed “from scratch” for the purpose at hand. In some cases, such improvisations might appear to be regressive; an example being whales that have no need any more for the legs of their landed ancestors, which are as a consequence reduced to useless bones loosely attached to their pelvis and visible only to the anatomist. Consider also the human body and its many suboptimal features for a bipedal animal, resulting among other things in frequent back pain and headaches and an inordinate share of brainpower having to be devoted just to walking. It seems reasonable to see here a parallel to the path-dependency of human history and the constraints it imposes on institutional change.

But does this mean that there is no directionality at all in evolution, no general trend? Sometimes the Darwin of *Origin*, perhaps in an occasional slip of the pen, seems to be talking about something like *absolute* perfection, without being very explicit.¹⁶ What does come to mind here, at least for the modern reader, is the notion of complexity. Is the history of life not a history of the evolution of increasingly complex organisms, meaning internally differentiated as well as connected, from the single-cell amoeba to the human being with its unimaginably complex brain? And is the same not true for the history of human society and its evolution from roaming family bands to the networked global humanity of today? Is there, in other words, an inherent tendency, or even pressure, in both biological and social structures to grow ever more complex?

However we may tend to answer such questions, we may want to keep two insights in mind. One, the biggest share of the world’s biomass (still?) consists of single-cell organisms¹⁷ that seem to be quite comfortable with themselves, apparently lacking any desire to join together in pursuit of higher complexity. Perhaps a parallel at the human level could be “primitive” societies and subsistence economies that might have gone on as such for thousands more years had not the more “complex” societies of Europe made a continuation of their independent, distinct way of life impossible. In both cases, what a theory of complexity as the ultimate *telos* of natural and human

history would have to explain is what the German philosopher Ernst Bloch called, in a different context, *die Gleichzeitigkeit des Ungleichzeitigen* (the coexistence of past and present, within the present). And two, we may want to consider the possibility, at least at the level of human society, of the historical drive for complexity, to the extent that there is one, going too far and, as perhaps under global capitalism, becoming dangerous to humanity's health. In this case, "regression" to the reduced complexity of parallel, "segmental" societies—smaller and independently self-governed, related, in Durkheim's terms, through mechanic rather than organic solidarity, thus keeping themselves simple although, hopefully, not too simple—may be the real progress of humankind at this stage of human history. At least there is nothing in *Origin* to rule this out.

NOTES

1. Shorthand for the title of the first edition, *On the Origin of Species by Means of Natural Selection or, The Preservation of Favoured Races in the Struggle for Life*. Quotes are from Darwin [1859] 2004.
2. Remember that Adam Smith's favorite scientific discipline was Newtonian astronomy. Whether "the economy" in fact is a Newtonian universe cannot be a concern for an economic "science" that can regard itself as science only by attributing to its object world the properties it assumes are required for a truly scientific theory. To the extent that its world fails to display those properties, economic science will squeeze it into the Procrustean bed of its requisite ontology, regardless how much it hurts. In case "the economy" cannot be shown to be in equilibrium, a better theory is sought that can do the trick. Alternatively an economy out of equilibrium can be argued to be on its way back to one; or contingent disequilibrium can be attributed to human meddling insufficiently informed by economic science.
3. Where Darwin speaks of nature metaphorically as though it commanded an active capacity, he writes it with a capital letter.

I follow this usage here where it suggests itself in paraphrasing Darwin.

4. It is in this context that I first hit on Darwinian evolutionism as a theoretical model, in an effort to revive the possibility of a historical theory of capitalist development by freeing it from teleological implications. An initial outline of the argument, with a section on evolution, is found in Streeck 2010.
5. See also the example of the bug Darwin discovered on an island that contained almost no flying insects. Apparently its ancestors had been those mutants of a former species that were not very good at flying. The better fliers were regularly driven into the sea by the strong winds, and they became extinct. Fittest for the “struggle for existence” were those individuals that were least fit for flying.
6. And generally to overcome the fundamental counterintuitiveness of evolutionist explanations of extremely complex biological phenomena as results of chance—of apes randomly hitting the keys of typewriters—rather than rational design.
7. A special case of biological reductionism is the decomposition of societies as “cultures” into discrete nonorganic elements, called memes, following Richard Dawkins. Memes are imagined to be struggling with one another for existence and survival in host societies, like Dawkins’ *selfish genes* are struggling for control over host organisms (Dawkins 1989). Note the attribution of intentionality—“egoism”—to both genes and memes, which are thought to use organisms and societies, respectively, as carriers securing their replication. This allows for truly exotic theorems. For example, why do religions, conceived as “memplexes,” often include the “prohibition of aberrant sexual practices such as incest, adultery, homosexuality, bestiality, castration, and religious prostitution”? Because this increases the chance of “vertical transmission of the parent memplex” (Gottsch 2001).
8. This debate has entered into social-science theories of institutional change precisely where a way was sought to get out of the conservatism of path dependence and allow for creative interruptions in moments of spontaneous creation, with the equilibrium of

incremental adjustment being “punctuated” in “formative moments” at “critical junctures.” For an instructive application to a substantive problem of institutional analysis, see Krasner (1988).

9. Which is best recognized with hindsight. See the despair of the victorious Bolsheviks in the 1920s on the resilience of Russia’s agrarian hinterland, followed almost a century later by complaints after the end of communism about the “mentality” of the Russian people still being shaped by their Stalinist past (Alexievich 2016). See also the discussion in and outside Germany after 1945 on whether the West German Federal Republic was in fact a new state and society or just the same old Germany differently dressed. While there was change, there was certainly also a lot of continuity, which became a political cause in the 1950s and 1960s for the emerging intellectual Left.
10. “The difference of natural talents in different men is, in reality, much less than we are aware of.... The difference between the most dissimilar characters, between a philosopher and a common street porter, for example, seems to arise not so much from nature as from habit, custom, and education. When they came into the world, and for the first six or eight years of their existence, they were, perhaps, very much alike, and neither their parents nor playfellows could perceive any remarkable difference. About that age, or soon after, they come to be employed in very different occupations. The difference of talents comes then to be taken notice of, and widens by degrees, till at last the vanity of the philosopher is willing to acknowledge scarce any resemblance” (Smith [1776] 1993, 23–24).
11. “The effects of those different geniuses and talents, for want of the power and disposition to barter and exchange, cannot be brought into a common stock.... Each animal is still obliged to support and defend itself, separately and independently, and derives no sort of advantage from that variety of talents with which nature has distinguished its fellows” (Smith [1776] 1993, 24).
12. “The human being is in the most literal sense a ζῷον πολιτικόν, not merely a gregarious animal, but an animal which can individuate

itself only in the midst of society” (*Grundrisse* A. Introduction, [1] Production).

13. This was known already two and a half thousand years ago. Viz. Sophocles (1939), *Antigone*:

Numberless are the world’s wonders, but none
More wonderful than man; the stormgray sea
Yields to his prows, the huge crests bear him high...
The lightboned birds and beasts that cling to cover,
The lithe fish lighting their reaches of dim water,
All are taken, tamed in the net of his mind;
The lion on the hill, the wild horse windy-maned,
Resign to him; and his blunt yoke has broken
The sultry shoulders of the mountain bull.
Words also, and thought as rapid as air,
He fashions to his good use; statecraft is his...
O clear intelligence, force beyond all measure!
O fate of man, working both good and evil!
When the laws are kept, how proudly his city stands!

14. One implication of gradualism here is that there cannot have been a first society. Each society has a predecessor and thus a tradition, the latter consisting in the earliest societies of the instincts of their biological past, in the process of receding and making space for their replacement with social norms and institutions.
15. The modern term for this in international relations theory is “realism.” It can to some extent point to Max Weber as theoretical inspiration. Weber saw the international sphere of his time as an arena of unmitigated conflict among nation-states whose collective ambitions far exceeded what was available for sharing between them, for example “virgin lands” waiting to be colonized. Parliamentary party democracy for Weber was primarily a training ground for educating future national leaders in the struggle for power.

16. “Recent forms are generally looked at as being, in some vague sense, higher than ancient and extinct forms; and they are in so far higher as the later and more improved forms have conquered the older and less improved organic beings in the struggle for life” (*Origin*, 512). And less vague: “As natural selection works solely by and for the good of each being, all corporal and mental endowments will tend to progress towards perfection” (526).
17. “The combined domains of archaea and bacteria make up the most diverse and abundant group of organisms on Earth and inhabit practically all environments where the temperature is below +140°C. They are found in water, soil, air, as the microbiome of an organism, hot springs and even deep beneath the Earth’s crust in rocks. The number of prokaryotes is estimated to be around five million trillion trillion, or 5×10^{30} , accounting for at least half the biomass on Earth” (<https://en.wikipedia.org/wiki/Microorganism>, accessed February 26, 2018).

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