

History and Philosophy of the Life Sciences, Vol. 31, No. 2, 2009 - Editorial

Hist. Phil. Life Sci., 31 (2009), 147-160 Commemorating Darwin: The 2009 Edition Keith R. Benson, Editor-in-chief Ohad Parnes, Guest editor While commemorations of major scientific achievements and of science's major luminaries are a commonplace among both scientists and historians of science,1 the celebratory events during the twentieth century marking the monumental accomplishments of Charles Darwin and his On the Origin of Species (1859) are especially noteworthy as having exceeded all other scientific festivities (Smocovitis 1999). Betty Smocovitis has chronicled the last of the twin Darwinian celebrations (his birth and the publication of the Origin) in 1959, surprisingly held not in Darwin's homeland or at his alma mater, but at the University of Chicago during November of the celebratory year (Smocovitis 1999, 278). There were many other events held during the same year throughout the world, but by far the largest and most influential was the Chicago event. Despite the inherent historical nature of the meeting, it was primarily a scientific affair arranged by scientists (physical, biological, and social), with only one professional historian (Robert Stauffer) in attendance and with no significant historical content to the program (Smocovitis 1999, 278). Indeed, as Smocovitis clearly argues, this was not just a celebration of Darwin, but it was a meeting to recognize self-consciously the triumph of the evolutionary synthesis of the 1940s, the series of events that created a new framework for modern evolution theory within the rapidly emerging fields of genetics and population biology. In retrospect, the lack of historical content at the Chicago meeting is actually not too surprising, however, since the history of science profession was in its nascent stage, restricted to the scholarship of a few passionate and dedicated practitioners of the new discipline. 1 See the special Osiris issue (volume 14, 1999) for a rich depiction of these commemorations. Not surprisingly, therefore, there were only a few academic publications centered on Darwin and his legacy, with perhaps Richard Hofstadter's New Deal-inspired Social Darwinism in American Thought (1944), with its social and cultural biases firmly reflecting the liberal ideas of the 1930s, being the most influential work (Hofstadter 1944). Indeed, among its other contributions, the centennial year also marked the slow emergence of a Darwin cottage industry within the growing history of science community, with the appearance of three books that became widely used in the emerging field of the history of biology over the next two decades. These were John C. Greene's influential and excellent Death of Adam, Loren Eiseley's more literary work on Darwin's Century, and Gertrude Himmelfarb's acerbic treatment linking Darwin to nineteenth-century liberal ideas she disparaged (she may have influenced her son, William Kristol who, along with other neoconservatives, has been critical of evolution theory's impact on modern American culture) in Darwin and the Darwinian Revolution (Greene 1959; Eiseley 1958; Himmelfarb 1959). These works found a ready audience among growing numbers of historians of science who had participated in the expansion of the field beyond its traditional focus on the scientific revolution and the physical sciences to include research and teaching interests in the history of biology and the history of evolution theory. Michael Ghiselin, an invertebrate zoologist and evolutionary biologist, combined his interest in the history and philosophy of biology to write The Triumph of the Darwinian Method, another early and influential book (Ghiselin 1969). In a more recent review article in the Journal of the History of Biology, Smocovitis also points to the next Darwin fest, in 1982, to mark the centennial of his death, now pointing to the central role in the festivities played by historians of science (Smocovitis 2005). As she notes, by this time the cottage industry had become a veritable "Darwin Industry," pointing to the publication of Michael Ruse's influential book, The Darwinian Revolution: Science Red in Tooth and Claw in 1979, as an indicator of the growing popularity of the history of evolution theory (Ruse 1979). As one sign of this growth, and also serving to epitomize it, was the release of the magisterial volume, The Darwinian Heritage, edited by David Kohn in 1985 that was intended to mark the actual centennial year (Kohn 1985). The thick volume contained a stunning array of recent scholarship touching on almost every imaginable aspect of Darwin, his life and times, and his scientific work. Scholarly works have continued to pour from the industry since that time, capped by the two best biographies of Darwin, Adrian Desmond's and James Moore's book simply-titled Darwin and Janet Browne's splendid two-volume biography, Charles Darwin: Voyaging and Charles Darwin: The Power of Place.2 At the same time, many other works have continued to cover the wide-sweep of topics that contributed to the industry, including biographies of Darwin's supportive companions and ardent foes, close examinations of Darwin's argument, new perspectives on Darwin's other biological publications, and studies of the impact of evolution theory on science and society, all contributing to the breathtaking array of studies.3 Bracketed between 1959 and 1982 was also the emergence of another legacy of Darwin, the scholarly attention to his impact on culture. Again, Smocovitis notes that while the focus of the first celebration was on the evolutionary synthesis, "[c]ultural evolution - what it was, how it operated, and the extent to which it hinged on biological evolution - remained a problematic and divisive subject" (Smocovitis 1999, 320). Within a little more than a decade, however, concerns about Darwin's influence on culture (especially in its US context) included the attempt by John Whitcomb and Henry Morris in the United States to form an alternative to evolution theory through their elaboration of "scientific creationism." As a result, the 1982 celebratory event was not without its share of controversy, as that same year marked the culmination of the first head-to-head battle between Darwinian evolution theory and scientific creationism in the form of the courtroom deliberations surrounding Arkansas' so-called "balanced treatment" law, intended to "balance" the teaching of evolution theory with what was called "scientific creationism." Judge Overton's

decision in the court case that year affirmed the argument that "scientific creationism" was thinly disguised religious dogma. and his legal opinion overturned the Arkansas law. Soon, thereafter, creationism adopted a different rhetorical flourish and challenged evolution theory with "intelligent design" arguments, this time championed by several scientists and the wellfunded Discovery 2 It is interesting to note that Desmond's and Moore's volume, when it appeared in its US edition bore the subtitle, The Life of a Tormented Evolutionist. Whether this was simply to identify who Darwin was to an uninformed US audience or whether it was to "spice-up" a scholarly book in an abortive attempt to increase sales, is perhaps known only to the marketing department at Harper Collins. 3 For a comprehensive listing of this literature, see Ghiselin 2009 and the digitally-accessible "Complete Works of Charles Darwin Online," available from Cambridge University thanks to John van Wyhe (http://darwin-online.org.wk/2009.html). A careful perusal of the dates of these works illustrates the growing popularity of dealing with Darwin as we become more distant from his actual life. The Cambridge database also holds the most complete list of celebrations related to Darwin during 2009, a list that is the best testament to Darwin's impact on science and contemporary society. Institute, located in Seattle.4 Attempts to place "intelligent design" within school curricula ultimately suffered the same fate as "scientific creationism" when Judge Jones ruled in a Dover (PA) courtroom that, once again, opponents of evolution theory had erected a religiouslybased alternative to evolution theory, and ruled against the intelligent design argument as violating US constitutional law. Behind these disputes to challenge Darwinian evolution theory is not so much an argument concerning the scientific basis of evolution, especially given the overwhelming success of genetic studies and investigations in population biology conducted within an evolutionary framework. Instead, these challenges are representative of what has come to be known as the "culture wars" in the United States, with Darwin seen as the ultimate exponent of a thorough-going materialism that can be blamed for most, if not all, of modern society's ills. For scholars, this has become a "teachable moment," especially through attempts to unpack these public critiques by asking, "How does modern evolution theory impact culture" or "What is the relationship between biological evolution and cultural changes?" The Conference Theme One meeting that focused on these types of issues in the context of the Darwin Year in 2009, took place at Berlin's Zentrum für Literatur- und Kulturforschung (Center for Literary and Cultural Research, Berlin) from 30 October - 1 November 2008 and entitled "Kultur der Evolution: Rethinking Evolutionary Theory from the Perspective of Cultural Studies." Organized by Sigrid Weigel, Uta Kornmeier, Peter Berz, and Ohad Parnes, the meeting featured presentations examining evolution theory from perspectives that have not always received the attention they deserve in earlier commemorative events. 4 The Discovery Institute was established by Bruce Chapman, a long-time political operative in Washington state who also served in the Department of Transportation under President Ronald Reagan. With his government service completed, Chapman began the Discovery Institute, initially to advise local governments concerning issues related to transportation. By the early 1990s, a secondary focus emerged, to challenge the teaching of evolution theory. Now spearheaded by Stephen Meyer, a scholar with a doctoral degree in history and philosophy of science from Darwin's alma mater (Cambridge), Meyer left his faculty position at Whitworth College (Spokane, WA) to direct the Discovery Institute's efforts. It was one of the primary supporters of intelligent design in Dover (PA) and in defending the statute before Judge Jones's court. The meeting in Berlin originated from the conviction that onehundred and fifty years after the publication of the Origin of Species the time has come to try to approach evolution from a different perspective; that is, not merely looking into its historical origins and epistemological foundations (themselves part of the scope of the conference), but also to use the tools of cultural studies to rethink the foundations of evolutionary theory itself. More ambitiously formulated, the conference aimed at an inversion of the common relation between evolution and culture. Instead of assuming evolutionary theory to be valid and then examining its implication to a history and theory of culture (as is typically done by "cultural evolution"), participants were encouraged to begin with culture, specifically with the history and epistemology of some key cultural concepts, and from there tour the historical and conceptual implications of evolutionary theory. It goes without saying that the aim of such an endeavor is not a denial of Darwinism. Instead, the cultural perspective should enhance the identification of various levels of interactions between the cultural dimensions of knowledge and evolution as a concept and a theory. Evolutionary theory is today stronger than ever. The growing significance of the life sciences in the twentieth century and the dominant role they have attained in the twenty-first century has helped to make evolutionary theory into an all-encompassing frame of interpretation, going far beyond the borders of biology and biomedicine and well into the realm of historical and cultural phenomena. The meaning of "evolution," however, varies considerably across its epistemological domains. On the one hand, we have Darwin's original definition based on the principles of mutation, variation, selection, and heredity. On the other hand, there are the many attempts to fit and refit Darwin's scheme to the progress of science, beginning with genetics and the neo-Darwinian synthesis, and ending with very recent attempts to accommodate evolutionary theory with insights from fields like molecular biology and the neurosciences. Finally, the word "evolution" is still used today to denote a variety of developmental processes that are not necessarily and strictly related to Darwin's theory. From the point of view of the history of science, the conference focused on the historical, cultural, and conceptual context of the emergence and reception of evolutionary theory in the second part of the nineteenth century and the first few decades of the twentieth century. In particular, the conference was aimed at an examination of the relationship between some key concepts of evolutionary theory (such as survival, symbiosis, heredity) and similar concepts that have played a similar role in other fields of knowledge - notably cultural knowledge - in this period. From the more general and phenomenological perspective, the purpose of the conference was to promote a critical discussion of the status of cultural phenomena for the laws of evolution. To what extent are the laws of evolution modified or suspended in the context of human culture (a view that can be attributed to Darwin himself)? Is biological inheritance really indifferent to its cultural context? Specifically, what impact could the new insights from the field of epigenetic inheritance have on fundamental concepts like selection, descent, or mutation? And finally, from the epistemological perspective, the conference aimed at a more detailed examination of the practice of research into and about evolution since Darwin's time to the present. This touches on questions about the experimental settings out of which empirical knowledge about evolution is generated, but also on the role of nonbiological knowledge about evolution, notably cultural and artistic figurations of evolutionary knowledge. The conference brought together scholars from many different fields

of knowledge: cultural studies, historians, anthropologists, and also biologists and bench scientists. The intent was to create a genuinely interdisciplinary rethinking of some of the foundations of the relation between evolution and culture. To accomplish this, the conference was organized upon the themes of (1) surviving, survival, and existence; (2) inheritance and acquisition of characters; (3) imitation, deception, and appearance; (4) gestures and the expression of emotions; (5) between symbiosis and the struggle for existence; (6) evolutionary theory in the 21st century. The Center for Literary and Cultural Research in Berlin was an ideal place to hold this type of conference. The stance of the Center is to support deeply culturally embedded research. At the same time, it has been preoccupied with evolution and evolutionary theory recently. Among the various research projects currently or recently conducted at the Center are a long-time endeavor of research into the historical and conceptual foundations of inheritance and heredity; an active research group on the history of demography; work on the history of the inheritance of acquired characters and the modern notion of epigenetics as the intersection for nature/culture; a research project on Darwin's Expressions of the Emotions; a research group working out the notion of expressive gestures ("Ausdruck") in evolution and cultural history; and research into the historiography of alternative theories of evolution in the twentieth century. It was out of this cascade of research contexts that the idea arose to dedicate an annual conference to the topic of "the culture of evolution" and its various facets with leading experts from all over the world. Expanding the Culture of Evolution Focusing primarily on evolution and culture in Europe, the sessions revealed a much richer context outside the US, one that was not characterized by the religiously-inspired culture wars on the other side of the Atlantic. Of particular interest is the ubiquity of evolutionary views that are not orthodox within the Darwinian paradigm. That is, despite the tendency to depict evolution as pitting Darwin against everyone else, there were many variations upon the Darwinian theme, including a rich and robust Lamarckian tradition. The latter observation is of particular importance since, while Europeans tend to be wellexposed to the French version of transmutation theory, Americans have been largely unaware of Lamarck. Yet, it was in the US that Lamarck received his first full positive reception, especially through the predominance of Lamarckian ideas among the American paleontological community, perhaps representing the largest number of American biologists by the end of the nineteenth century. The case of Lamarckism exemplifies the importance of an historical and cultural approach to Darwinian evolution (the year 2009 is not only a Darwin year, but also marks 200 years since the publication of Lamarck's Philosophie zoologique). In particular, as several of the papers in this issue help to show, it is misleading to use oppositional language when it comes to the relation between Darwinian and Lamarckian ideas. In fact, most proponents of Lamarck after Darwin were convinced Darwinians. At the same time, the attitude to the inheritance of acquired characters was often determined as much by biological reasoning as by what could be described as cultural reasoning or even cultural theory. The question was about "culture" and about the relation of culture to non-culture, i.e. to the "biological." A few examples help to exemplify this argument. Paul Kammerer, whose story has become iconic (not to say inconoclastic) to the history of Lamarckism in the twentieth century, was actually an adherent to Darwinian evolution. In fact, the only point he rejected about earlytwentieth century Darwinism was its denial of culture as part of the evolutionary process. Culture, he wrote just a few months before committing suicide, is nothing but an "artificial environment," an environment that is kept approximately similar over long periods regardless of the external physical and climatic conditions (Kammerer 1926). Culture, therefore, is agenerator of variations and these variations, in turn, comply with the blind regularities of natural selection. Sigmund Freud, a contemporary of Kammerer, similarly approved of Lamarckism but from a very different perspective that, in turn, derived from his more general theory of culture and its history. Freud was very cautious not to get involved in a biological debate about Lamarckism, but his writing leaves little doubt about his deep belief in the ability of acquired characters to become hereditary and even persist for centuries. In several published and unpublished writings he speculated about the relation between what he called the "phylogeny of culture" and the appearance of certain, specific neuroses. Obviously this is an almost inevitable deduction from his more general theory of culture, representing a thin veneer dividing the instincts and drives of the individual from its actual confrontation with its particular life. The history of culture is thus a part of the history of the psychology of the individual and newly acquired cultural "traits" (or dogmas, restrictions, beliefs) necessarily influence the psychopathology of the individual. Freud concluded that the psychological development of the individual must be determined also by factors acquired in earlier phases of evolution: "pieces of phylogenetic origins, an archaic inheritance" (Freud 1999, 204; see also Freud 1989; Slavet 2007). Both Kammerer and Freud, therefore, did not reject Darwinism. Instead they opted for a different perspective, putting culture in the foreground and attempting to explain the origin of individual traits as part of the history of the nature-culture interaction in the history of life. Their theoretical conclusions seem to be very distinct, also because of their different research objects; humans for Freud, and reptiles and other small vertebrates for Kammerer. They share, however, a wish to avoid a too-narrow perspective of biology and they both reject the consequence of such a view, namely the understanding of culture as a second-order realm, which has little if anything to do with the science of evolution. It was exactly this view, the desire to define culture as a strictly nonbiological realm, that was central in the arguments of another contemporary of Freud and Kammerer, namely the cultural anthropologist Alfred Kroeber. Evolution has nothing to do with "human accomplishment," he wrote in 1916, which for him is "Speech, knowledge, arts, learning, and all our activities except the bare substratum of physiological abilities." Like Kammerer and Freud, Kroeber also acknowledged the Lamarckian dimension in the history of culture and the fact that when a "social group develops anything new in its civilization or acquires any modification of its social activities, we and our successors acquire it too." But whereas for Kammerer and Freud the inheritance of acquired characters became a leading maxim, a cornerstone also for their biological theories, Kroeber used the same insight (of Lamarckism as a central driving force in the evolution of culture) as an exclusion criterion. Indeed, Kroeber turned the argument on its head. Lamarckism becomes the classificatory criterion between biology and culture: everything that is Lamarckian, is per se not biological. Biological evolution should thus be concerned only with those phenomena where the environment does not play a role other than a selective one, whereas the inheritance of acquired characters is cultural evolution per se: "[i]t is precisely the method by which [it] takes place" (Kroeber 1916; see also Kronfeldner 2009). The Special Section But what is "culture" for evolutionary theory one-hundred and fifty years after Darwin? Assume, for example, that a definition of culture (in the context of evolution) is "acquired information, such as knowledge, beliefs, and values, that is

inherited through social learning, and expressed in behavior and artifacts" (Mesoudi, Whiten and Laland 2004; see also Boyd and Richardson 1983). Obviously such a definition is problematic from various perspectives, notably the use of a concept ("inheritance") that is used as a metaphor for the process of knowledge transmission and at the same time endows this definition with the aura of biological rigidity. But even more fundamental is the very deep epistemological tenet on which this definition is based, namely that humans and also animals live in a realm which has two dimensions, the "biological" dimension and the "cultural" dimension, and that it is legitimate and even necessary to consider these two realms separately. Note that this conviction is typical not only for the proponents of cultural evolution, like in this specific example. The only difference between those who believe in cultural evolution and those who reject it is the question whether culture evolves according to rules similar to those established by Darwin for the biological world. The distinction itself - biological/cultural - is widely accepted as obvious and self-evident. This is not to say that evolutionary biologists did not ponder about the border between the biological and the cultural ever since. Indeed there exists a long tradition - which some of the papers in this volume reflect upon - of attempting to explain traits, whose function seems to fulfill needs that are not strictly biological. Darwin himself began this endeavor when he introduced sexual selection as an auxiliary hypothesis to explain a whole set of phenomena which, he believed, could not be explained by a strict reference to natural selection. More recently, sociobiology and its even more recent version of evolutionary psychology have taken a similar way; i.e. attempting to provide a biological underpinning to traits that do not seem to be justified on the basis of their first-order survival value. This may sound trivial but is important. The move of Darwinian explanation is always from the trait to the reproductive value and then - and this is the critical point - from the reproductive value to the level on which this reproductive value works. This, in turn, is always a step into the cultural domain. All this is built-in for Darwinian evolution that, in a nutshell, involves the following reasoning. Imagine a dedicated evolutionary scientist attempting to provide an evolutionary explanation for a trait that has hitherto evaded evolutionary explanation. The first and most plausible level has always (since Darwin) been natural selection. The simple and seductive logic of natural selection is as follows: inheritance, plus variation, plus fecundity must yield selective pressure and the fittest (ergo more reproductive) will survive. Sexual selection adds another level of explaining reproductive value by assuming that some traits may not help the individual to survive, but will enhance its sexual potential and mating success, again contributing to its reproductive value. When this does not work, there is still the group level. Group selection has its own history, which cannot be told here in detail. But suffice it to say that it goes back at least as far as the turn of the twentieth century. What do you do when a biological trait seems to be neither beneficial to the survival of the individual nor to enhance its chances to mate? You can always refer to the group level and claim that it is beneficial to the species as such. One famous example is August Weismann's attempt to explain aging and senescence as a mechanism aimed at replacing "worn out" individuals by young and sturdy ones (Weismann 1891/1892). Almost at the same time, as Gerhard Scharbert argues in this issue, the young Sigmund Freud, too, was struggling to accommodate various levels of Darwinian selection attempting to integrate neuroanatomy with human psychology. The point here is not the question why and when such explanations become scientific and go beyond the "just so" level. Much more and from the perspective of culture, it is interesting to note how each of these levels is an attempt to explain the abstract concept of "survival" or "reproductive value" by endowing it with a context, which is per se cultural. As shown by Menninghaus in this issue, the construction of the theory of sexual selection not only relied on contemporary aesthetic preferences, but also on culturally-derived notions of fashion and the role of fashion in human culture. This, in turn, gave rise to new "aesthetics semantics" that had a far-reaching influence on European art in the following decades. Similarly, Müller-Wille reveals the deep cultural embeddedness of some of the seemingly more straightforward concepts used in Darwin's theory of natural selection, which play a largely hidden role in the construction of the Darwinian notion of "survival." A concept like "mimicry," for example, as Müller-Wille's and Stefan Willer's papers show, has been substantially modified by Darwinism only to bounce back to the cultural realm, becoming a novel figure of man-animal relations. Another place where the cultural perspective may reveal hitherto largely hidden aspects concerns the history of debates - not to say battles - over the status of Darwinism as a scientific theory. One standard foe has always been creationism (and intelligent design) whereas within biology Lamarckism was often considered to be a constant threat to the integrity of evolutionary theory. In the last years, scholarship has begun dismantling this divide, showing that Lamarckian elements were actually part of Darwin's own theory, and pointing to the role of Mendelian genetics and neo-Darwinism in the construction of this alleged dichotomy between Darwinism and Lamarckism (Jablonka and Lamb 1995). Darwin himself endorsed the inheritance of acquired characters as part of his system and it was only after the establishment of the evolutionary synthesis in the 1920s and 1930s that mutation became the only accepted mechanism for the generation of variation. Indeed, as Peter Berz shows in this volume, in the early twentieth century it was very well possible to be an advocate of Darwinism and Lamarckism at the same time, as in the case of the Vienna biologist Paul Kammerer. Here, again, the notion of culture and its uses becomes central to the understanding of the epistemology involved. Obviously almost everybody will agree that "cultural traits" can be acquired and that within a cultural system these traits could be transmitted to the next generation. The main issue here is the definition of the surroundings of the organism. One way of describing the difference between biology and culture in Darwinian evolution theory is in terms of forces versus intentionality. Natural selection and sexual selection are considered as forces, working upon individuals (or genes, or groups, in the case of group selection) and thus gradually shaping the evolution of species. Culture, on the other hand, is self-made and intentional. The inheritance of acquired characters is almost by definition intentional or at least potentially intentional. Lamarckism also usually implies a bi-directional interaction with the environment: instead of being blindly selected, the organism "chooses" (at least in the physiological sense) to acquire certain characters reactively and these are then transmitted to its offspring. Thus one of the interesting aspects of the history of evolutionary theory is the extent to which the repeated rejection of Lamarckian notions was based on the presupposition that everything that is intentional is cultural, and everything that is cultural is per se outside the scope of classical Darwinism. Margarete Vöhringer's paper in this issue tells the story of an unorthodox interpretation of Darwinism and a theory about the "struggle of the organism with its environment," many years before the introduction of the idea of niche construction in the early 1980s. Rethinking evolutionary theory does

not amount to taking sides in the debate between evolution and creationism. At the same time, taking the cultural perspective seriously enables a suspension of the ideological tension and a sober analysis of the underlying epistemologies involved in this debate. One of the interesting aspects of the history of evolutionary theory – an aspect largely ignored by historians and philosophers of biology - is the identification of the limits of evolutionary theory. Taking Darwinism seriously does not necessarily imply a totality of explanatory power. Indeed, one comprehensive history of Darwinism that is still waiting to be written concerns all those cases where evolutionary theory failed to supply a good explanation of a biological trait and the many strategies with which mainstream biology has dealt with such deviations. In this issue, Jan Sapp describes how bacteria were once considered to be outside the Darwinian evolutionary framework, whereas Jon Marks argues that evolutionary theory failed to provide a convincing classification of primates. Here a cultural perspective, critical of a dogmatic evolutionary stance, is in no way paving the way to creationism. The opposite is true: by illuminating those "blind spots" of evolutionary theory, the cultural perspective helps opening the way to alternative explanations - biological explanations instead of embarking upon futile ideological debates. The papers that follow represent a sampling of the work presented at the conference in Berlin. They also represent the growing interest in examining Darwin outside of his contributions to the biological sciences. In so doing, they also illuminate a rich tapestry of perspectives when scholars address the deep cultural impact of one of science's most fertile ideas, the notion of species change over time. References Boyd R. and Richardson P.J., 1983, "Why is Culture Adaptive?", The Quarterly Review of Biology, 58: 209-214. Browne J., 1995, Charles Darwin: Voyaging, Volume I, New York: Knopf, Inc. COMMEMORATING DARWIN - Hist. Phil. Life Sci., 31 (2009), 147-160 Browne J., 2002, Charles Darwin: The Power of Place, Volume II, New York: Knopf, Inc. Desmond A. and Moore J., 1991, Darwin, London: Michael Joseph. Eiseley L., 1958, Darwin's Century, New York: Doubleday. Freud S., 1989, A Phylogenetic Fantasy: Overview of the Transference Neuroses (Translated by Axel Hoffer), Cambridge: Belknap Press of Harvard University Press. Freud S., 1999 [1939], "Der Mann Moses und die monotheistische Religion". In: Freud S., Gesammelte Werke, Frankfurt: Fischer, vol. 16: 101-246. Ghiselin M., 1969, The Triumph of the Darwinian Method, Berkeley: University of California Press. Ghiselin M., 2009, "Darwin: A Reader's Guide", Occasional Papers of the California Academy of Sciences, 155. Greene J.C., 1959, The Death of Adam: Evolution and Its Impact on Western Thought, Ames, Iowa: Iowa State University Press. Himmelfarb G., 1959, Darwin and the Darwinian Revolution, Garden City: Doubleday. Hofstadter R., 1944, Social Darwinism in American Thought, Philadelphia: University of Pennsylvania Press. Jablonka E. and Lamb M.J., 1995, Epigenetic Inheritance and Evolution: The Lamarckian Dimension, Oxford: Oxford University Press. Kammerer P., 1926, "Ist die Abstammungslehre unbewiesen?", Monistische Monatshefte, 11: 89-94. Kohn D. (ed.), 1985, The Darwinian Heritage, Princeton: Princeton University Press. Kroeber A.L., 1916, "Inheritance by Magic", American Anthropologist, New Series, 18(1): 19-40. Kronfeldner M.A., 2009, "If There Is Nothing Beyond the Organic: Heredity and Culture at the Boundaries of Anthropology in the Work of Alfred L. Kroeber", NTM- Journal of the History of Science, Technology and Medicine, 17: 107-134. Mesoudi A., Whiten A. and Laland K.N., 2004, "Perspective: Is Human Cultural Evolution Darwinian? Evidence Reviewed from the Perspective of The Origin of Species", Evolution, 58(1), 1-11; 239-383. Ruse M., 1979, The Darwinian Revolution, Chicago: University of Chicago Press. Slavet E., 2006, "Freud's 'Lamarckism' and the Politics of Racial Science", Journal of the History of Biology, 41: 37-80. Smocovitis V.B., 1999, "The 1959 Darwin Centennial Celebration in America", Osiris, 14: 274-323. Smocovitis V.B., 2005, "It Ain't Over 'Till it's Over': Rethinking the Darwinian Revolution", Journal of the History of Biology, 38: 33-49. Weismann A., 1891/1892, Essays upon Heredity and Kindred Biological Problems, Oxford: Clarendon Press.