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On Cultural Evolution

A Review of Current Research toward a Unified Theory of Societal Change

Christoph Antweiler

Darwin's 200th birthday and the 150th anniversary of his "Origins" are gone, but the proliferation of books inspired by Darwin goes on. This cumu-

lative review discusses fourteen monographs and edited volumes published in German and English.¹ This review discusses works published mostly between 2009 and 2011 and can be taken as an update to an earlier review in this journal (Antweiler 2005). My aim is three-fold: (1) to discover cross-cutting issues and results in a fragmented field of research; (2) to present some recent German language scholarship to English-speaking readers; and (3) to

1 Distin, Kate: Cultural Evolution. Cambridge: Cambridge University Press, 2011. 272 pp. ISBN 978-0-521-18971-2. Price: £ 17.99

Gerhardt, Volker, und Julian Nida-Rümelin (Hrsg.): Evolution in der Natur und Kultur. Berlin: Walter de Gruyter, 2010. 303 pp. ISBN 978-3-11-021350-8. (Humanprojekt, 6) Preis: € 69.95

Hrdy, Sarah Blaffer: Mütter und Andere. Wie die Evolution uns zu sozialen Wesen gemacht hat. Berlin: Berlin Verlag, 2009. 537 pp. ISBN 978-3-8270-0885-5. Preis: € 28.00

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Müller, Stephan S. W.: Theorien sozialer Evolution. Zur Plausibilität darwinistischer Erklärungen sozialen Wandels. Bielefeld: transcript Verlag, 2010. 289 pp. ISBN 978-3-8376-1342-1. Preis: € 31.80

Müller-Karpe, Hermann: Erwachen in der Steinzeit. Wie wir Menschen wurden. Augsburg: Sankt Ulrich Verlag, 2010. 157 pp. ISBN 978-3-86744-153-7. Preis: € 16.90

Oehler, Jochen (Hrsg.): Der Mensch – Evolution, Natur und Kultur. Beiträge zu unserem heutigen Menschenbild. Heidelberg: Springer, 2010. 359 pp. ISBN 978-3-642-10349-0. Preis: € 24.95

Patzelt, Werner J. (Hrsg.): Evolutorischer Institutionalismus. Theorie und exemplarische Studien zu Evolution, Institutionalität und Geschichtlichkeit. Würzburg: Ergon Verlag, 2007. 739 pp. ISBN 978-3-89913-554-1. (Politikwissenschaftliche Theorie, 3) Preis: € 89.00

Rossano, Matthew J.: Supernatural Selection. How Religion Evolved. Oxford: Oxford University Press, 2010. 294 pp. ISBN 978-0-19-53858-16.

Sarasin, Philipp, und Marianne Sommer (Hrsg.): Evolution. Ein interdisziplinäres Handbuch. Stuttgart: Verlag J. B. Metzler, 2010. 424 pp. ISBN 978-3-476-02274-5. Preis: € 49.95

Schmidt-Wellenburg, Christian: Evolution und sozialer Wandel. Neodarwinistische Mechanismen bei W. G. Runciman und N. Luhmann. Opladen: Verlag Barbara Budrich, 2005. 174 pp. ISBN 978-3-938094-42-6. Preis: € 22.90

Schurz, Gerhard: Evolution in Natur und Kultur. Eine Einführung in die verallgemeinerte Evolutionstheorie. Heidelberg: Spektrum Akademischer Verlag, 2011. 436 pp. ISBN 978-3-8274-2665-9. Preis: € 39.95

Shennan, Stephen (ed.): Pattern and Process in Cultural Evolution. Berkeley: University of California Press, 2009. 341 pp. ISBN 978-0-520-25599-9. (Origins of Human Behavior and Culture, 2) Price: £ 41.95

Wortmann, Hendrik: Zum Desiderat einer Evolutionstheorie des Sozialen. Darwinistische Konzepte in den Sozialwissenschaften. Konstanz: UVK Verlagsgesellschaft, 2010. 225 pp. ISBN 978-3-86764-264-4. Preis: € 29.00

connect the titles reviewed to other relevant works published mainly since the 1990s (see references). What are the main topics studied currently in evolutionary theorizing about culture, cultures, and societal change? What are the main theories used in recent studies? Which are the main open questions within current debate and the main issues worthy of study theoretically and even empirically?

There are some basic questions which should be addressed by evolutionary theories of culture and cultural change. Which of the elements of the human capacity for culture (and the human dependence on culture) can be demonstrated in other primates? How did these capacities evolve as adaptations? What does adaptation mean on the level of changing societies? How should we measure cultural change and what are fundamental societal changes? How can we understand the observed directionality of macro-societal change in human history? How to explain innovation and how is complexity maintained and transmitted? Do evolutionary approaches provide an alternative to traditional theories of society and social change, such as action or system theories? If such theories shall be truly “evolutionary,” they should say something about mechanisms in cultural evolution and relate them to Darwin’s model, to the Neo-Darwinian synthesis, or to a generalized model of evolution, where the evolution of organisms and societies are only examples.

Nature, Culture, and Another Unique Species?

I will start with a book readable for the layman, primatologist Sarah Blaffer-Hrdy’s (2010) recent volume on mothering and its evolutionary effects. Her work is concentrated on the specific human capacity of metacognition and empathy. She presents ethnographic material on empathy and cooperative relations among humans and other primates. Hrdy locates the origin of social relations and societal institutions in collective breeding and mothering by mothers and others (sisters, brothers, and other trusted people). Human infants had to develop skills to attract the attention of their caregivers. This triggered the evolution of social intelligence and especially the competence of mind reading from gestures. Hrdy knows not only her primatology but also is aware of results from palaeoanthropology and cultural anthropology. She presents us a dynamic view of the role of females in human evolution. The book already resulted in a wave of scientific work as well as many trade books which stress the more human side of humanity. I recommend Hrdy’s book because it presents an interesting thesis peppered

with a lot of empirical observations and comes in a very readable prose. The book is better than most of the derivative books on the positive capacities of humans now on the market.

Three recent edited volumes are concentrated on the implications of evolutionary theory for our worldview and specifically for the understanding of the *conditio humana*. The volume edited by Volker Gerhardt and Julian Nida-Rümelin (2010) is concerned with evolution in nature and culture and specially the different forms of transmission of information between generations. Edited by two philosophers it contains fourteen articles mainly by philosophers, but aims explicitly at an integration of perspectives and thus brings in also insights from the biosciences and the humanities. Topics covered are broad, ranging from the relation of humanism to naturalisms and the specifics of tool use in humans vs. other primates to enhancement and the problems of using evolutionary scenarios in palaeoanthropology. A specific aspect, more covered here than in comparable volumes is coevolution, e.g., in the case of evolving human dietary niches. The anthology is a result of one of the few long-standing efforts to study humans via an institutionalized cooperation between colleagues from different scientific cultures, the “Humanprojekt. Interdisziplinäre Anthropologie”. This is a project of the Berlin-Brandenburgische Akademie der Wissenschaften. This institution published already other important volumes on humanity, e.g., a collection of twenty, specially commissioned short essays on the definition of humans (Ganten et al. 2008; for a more historically oriented interdisciplinary project on humanity and humanism cf. Rösen 2010).

Jochen Oehler’s (2010) collection takes the issue of implications of evolution for our current view of humanity explicitly into account. Contributors ask for the scope and relevance of the evolutionary paradigm. This collection is more biologically inclined than the above mentioned one, but presents also views from other scientific fields such as physics, sociology, political science, psychology, and even literary studies. Throughout the 21 essays we find topics relevant for any cultural anthropology and philosophical anthropology informed by biological theories. Some of the more specialized contributions are on the evolution of language, beauty, and religiosity. The specific strength of these two volumes compared to similar collections are contributions on basics of evolutionary theorizing. There are, e.g., pieces on general principles of naturalistic explanations, the chances and limits of an evolutionary explanation of cultural entities, and on evolutionary-minded theories of history.

The volume edited by Helmut Müller (2010) presents 14 essays mainly by theologians and philosophers. They are supplemented by contributions from other fields, e.g., by a physicist, a music scientist, and a journalist. Many of the essays are specifically concerned with the relation of evolutionistic theory vs. an approach via the “Geisteswissenschaften” (*humanities*) or approaches from a believer’s perspective. Some articles are dealing with the evolution of the capacity for culture. Other pieces discuss the evolutionary bases of aesthetics, music, and archetypal symbols, universally found across human societies. A continuous question is whether humans are inclined to believe in supernatural beings. The tenor of several articles, especially in a contribution by Ulrich Lüke, is positive. The three anthologies complement each other well and are all very well edited technically. All three have indexes and Gerhardt and Nida-Rümelin’s volume even has separate name and topical indexes, which sadly is not the rule for edited volumes in German language.

Matt Rossano’s book (2010) is included in this review as an especially interesting example of a nowadays well-known genre of books on the evolutionary roots of religion. The author is an evolutionary psychologist and sees religion as a means of adaptation. His aim is to complement the existing evolutionary approaches, such as commitment theories, cognitive approaches, ecological theories, performance approaches, and experiential theories. Rossano sees religion primarily as a means of relating to the world around us and to build relationships to social partners as well as to supernatural beings. One indication for this is that the brain seems to treat religious experience as a social encounter. He argues that religion fosters the adaptation of individuals as well as social groups. Religion is good for the mental and physical health of individuals and religion functions to enhance coordination and cohesion of social collectives. Social rituals are central for this. The specific contribution of this book to the research on the evolution of religiosity lies in a tightly argued long-term scenario. The author carefully uses a theory and data from palaeoanthropology, archeology, ecological anthropology, and religious studies. According to Rossano, religion emerged about 500,000 years ago with the evolution of the capacity to dance and sing, which made social rituals possible. These collective rituals could emotionalize larger groups of people. After the emergence of anatomically modern humans around 100,000 years, the history of religion was punctuated by the effects of a volcanic eruption and a global ecological crisis about 70,000 years ago. The crisis resulted in unprecedented levels of co-

operation between groups and an expanded imagination forming the supernatural layer of religiosity among the survivors. This period thus saw the emergence of two specific modes of religiosity. The later chapters revolve around the capacity of religion to increase morality within groups as well as aversion against others. Another topic discussed is the question whether religiosity may still be adaptive in modern societies. Rossano manages to cover a lot of terrain in just a little over 200 pages of text. This is possible because of a clear writing style and a masterful organization of the argument.

Evolutionary Societal Change: Critique, the Micro-Macro-Problem, and the “Web of Life”

Evolutionary theory is not very prominent, neither in sociology nor in social anthropology or cultural anthropology nowadays, even if there were some recent collections that appeared since the early 1990s.² Thus three thoughtful volumes by sociologists come in handy. Stephan Müller (2010) discusses the explanatory core of explicitly Darwinian notions of social change. His leading thesis is: “Darwinian” explanations are either strictly analogous to Darwinian theory (and then quite unrealistic as a model for social change) or they are modified to fit the empirical realities of cultural evolution (and resulting in models no more Darwinian at all). They either fail because of the specifics of social change or lose their evolutionary character. He scrutinizes rigorously seven approaches and I can only state some of his critiques here. The meme concept suffers from the fact that it does not separate genotype and phenotype and thus conflates replicator and vehicle. Furthermore, meme theorists would not realize that the copier has to produce action patterns firstly before acting. The meme model is not the mechanic model like Darwin’s and in the end of the day meme theory only describes social change. Robert Boyd and Peter Richerson’s dual inheritance theory is Lamarckian as it allows for an intentional preselection of variants. This holds even more with the model of Tom Burns and Thomas Dietz, who propose rules as the basic units of cultural evolution. Variation and transmission are not clearly separated and all that remains from a Darwinian model are the very terms variation, selection, and transmission.

2 But see, e.g., the collections edited by Ingold (1991); Rambo and Gillogly (1991); Antweiler and Adams (1991); Feinman and Manzanilla (2000); Goudsblom and Wilterdink (2000); Schelkle et al. (2000); Wheeler et al. (2002); Meleghy und Niedenzu (2003); and Niedenzu et al. (2008).

Müller also discusses Walter G. Runciman, who proposes practices as the basic units of cultural evolution. According to Müller, this approach suffers from not separating practices from memes. Furthermore, Runciman does not realize that practices (like memes) are underdetermined as regards their meaning (but see now Runciman 2009). Müller argues that the incorporation should not be conceived as a mere storage process. Everyday action is always adapted to the social and environmental context and thus there is a variation of practices in the very act of acting. As Müller sees it, the assumption of blind variation is one of the main reasons for the failure of Darwinian models.

Stephen Toulmin's model of the evolution of ideas fares a little better since it allows for several forms of evolution, where variation and selection are coupled *or* decoupled. Niklas Luhmann tries to combine an abstract Darwinian algorithm with an explanation of the rise of specifically modern societies. He separates variation, selection, and "restabilization", as he calls it, and this allows a plausible model of blind evolution. The problem here lies in the underlying assumptions of (Luhmann's specific form of) systems theorizing where actors are not really relevant. This inevitably leads to a total watering of the meaning of "evolution." The last approach scrutinized is the integrative concept by Peter Kappelhoff. This approach combines systems theory with a rational-choice approach and interpretive sociology. Evolutionary processes are seen as ways of learning and problem-solving. Thus Kappelhoff conceives even individual learning as an evolutionary process and conflates the trial-and-error mechanism with evolution. Other problems are his fuzzy concept of "adaptive rationality" and the assumption that interactor and replicator have to be separate units to make a process an evolutionary one. Müller argues that in social evolution the functions often are separable but without being located in separable units. In the end, Müller sees this combined approach as a hodgepodge of incompatible elements. Müller has done a good job in detecting weak aspects of current approaches that should be discussed intensively. Furthermore, he stresses a cardinal point, the separation of variation and selection. But in view of this reviewer he is too concentrated on a sparse model of Darwinism as well as too focused on units and "blindness." The reality of cultural evolution probably calls for a family of mini-models and the real question might be, whether cultural evolution is more Darwinian or neo-Darwinian (Mesodi 2011).

Müller's book could be read together with a book by Hendrik Wortmann (2010), which is densely ar-

gued but written in a very clear style. He asks what added value evolutionary theorizing has to offer as regards explanation of processes of societal change. He begins by showing the multiplicity of Darwin's theories (sic!). Thus, Darwin's model consists of phylogenesis, anagenesis via selection, speciation, gradual change, historical diversification and the ecological "web of life," the latter often being forgotten. Wortmann then reconstructs Donald Campbell's paradigm of variation, selection and retention (cf. Campbell 1965) systematically. He shows that Campbell was especially important in driving the attention away from developmentally oriented phase models. The central insight of Campbell is that there may be autonomous spheres of evolution *if* we have different conditions – like in organic evolution proper. Campbell's tripartite approach is analyzed in the way it was used by Karl E. Weick in organization studies and by Luhmann in his autopoietic model. The main innovation of Luhmann is his reformulation of retention as "restabilization." He makes this the central instance of forming otherness, as a mechanism of separation (analogous to genetic incompatibility). Nevertheless, Luhmann's approach is rightly diagnosed as more ontogenic than phylogenetic, but it might be also considered as a contribution to an abstract theory of selection. The most important contribution Wortmann makes is that he highlights the ecological aspect. In this light he reconstructs several approaches which model populations of forms (e.g., of humans, strategies, cultural patterns, organizations) as an object of selective forces in an environment. The approaches analyzed are meme theory, human behavioral ecology, evolutionary psychology, dual-inheritance theory, and Runciman's evolutionary sociology. Despite their differences all these approaches are more influenced by the "Modern Synthesis" than by Darwin's earlier work. Instead of aiming at complex ontologies like Luhmann they are more gene-oriented, population-minded, and aiming at specific models using simple assumptions. Wortmann ends with a chapter on the Chicago school of sociology. This is especially interesting since the author reveals the ecological dimension often overlooked in other approaches to social change. Wortmann shows that a central lacuna in current evolutionary social theory is a counterpart/equivalent to Darwin's concept of speciation. The author concludes that the explanatory potential of evolutionary theory has not been fully realized in social theory yet.

Wortmann and Müller's books can be used as a complement to an earlier volume by Christian Schmidt-Wellenburg (2005). This author brings evolutionary theorizing and classic sociological

work on social change into dialogue. In order to reveal the core of the Neo-Darwinian paradigm he discusses two very different models, the well known theory by Luhmann and the lesser known by Runciman. Luhmann's theory is about self-related communicative systems whereas Runciman's approach is oriented toward the societal effects of individual actions. The first chapter gives a succinct outline of the evolutionary approach of social change as a research program, exemplified in the work of Spencer, Marx, Morgan, Durkheim, Weber, and in neoevolutionism of Parsons. The main point here is that "evolutionary" theories, using ontogenetic developmental analogies, were blocking truly selectionistic theory-building for a long time (cf. Greenwood 1984). Then the models of Luhmann and Runciman are surveyed each for their neo-Darwinian components. A problem analyzed by this author more than most others is the relation between the macro level of societal change and the micro level of Darwinian mechanisms and their respective connection to a middle level. This meso level is filled with differentiation and structures of communication in Luhmann's theory, whereas it is filled with power distribution, roles, and especially practices in Runciman's approach. This allows Schmidt-Wellenburg to locate the role of chance as a core element between the micro and macro levels. This links to the openness of evolutionary processes where the mechanisms are context-sensitive. These characteristics leave societies only path-dependent and show evolutionary stages (the "ladder") as having a merely inductive character. This would open the way for a view of societies as existing in a (partially) self-canalized space of limited possibilities for their trajectory.

Directionality and Cumulative Sociocultural Evolution

In a very tightly argued book Kate Distin (2011) discusses the origin and the further development of human cultural capacities as well as the emergence of cultural diversity. The author is specifically concerned with the question why human cultural evolution is so cumulative compared to the change in other primate societies. She concentrates on language and cognition and is specifically on our abilities to think about how we think (meta-representation). Distin argues to a considerable extent along the lines of meme theorists, but she does it in a very careful and distinctive way. Her main point is that language and extracorporeal storage of information expands the limits of individual cognition considerably. The storage in artifacts, script, mathematical

notation, cartography, and music is crucial, because these "artifactual languages" allow an information storage more durable, accurate and sizeable than individual brains. Due to the many misunderstandings and the misapplications of Dawkin's approach she couches her argument largely in non-meme terms. Distin stresses that receivers should get more attention in evolutionary transmission models. Receivers have to have the capacity to understand the messages. They can share information only if they are biologically prepared to learn specific languages. She also elaborates on a topic often sidestepped in current theories of social change: barriers. The spread of cultural variations is often restricted by species-like barriers and results in tree-like cultural phylogenies. Distin exemplifies her argument by many empirical examples and one extended case. Her main example for an evolutionary significant artifactual language is money. One of the main sources of Distin is archaeological theory and data (cf. the cognitive archaeological approach by, e.g., Coolidge and Wynn 2009).

Archaeologist Stephan Shennan (2009) edited a collection which is by far the most technical of the books presented here. The volume is a result of a 2005 conference of the "AHRC Centre for the Evolutionary Analysis of Cultural Behavior," an organization founded in 2001. The contributors are mainly archaeologists, behavioral ecologists, and palaeo-anthropologists. The very perceptive introduction and 21 articles aim to provide examples of evolutionary theorizing combined with using material remains as an empirical testing ground for such theories. The contributions are structured in three parts, the first on cultural transmission (mainly) in material culture, the second on the testing of evolutionary hypotheses (mainly on innovation and diffusion in technology), and the third on social evolution. This last section contains articles ranging from the evolution of human brain size correlated to societal complexity, marriage practices, prestige goods, and warfare to the emergence of social hierarchies. This collection clearly shows the usefulness of evolution as an integrating paradigm for a broad anthropology. Furthermore, and probably more important, many contributions demonstrate how useful at least some of theoretical approaches (e.g., dual-inheritance theories) and formal models (clustering) are for empirical research on material culture and human-environment-relations. The combined breadth and depth of most of the contributions makes it a fascinating book. But they make also clear, that the term "evolution" should not be used for any form of long-term change (for examples cf. Bowler 2003). Otherwise the specifics of evolution as a process and

the character of evolutionary explanations as a specific form of historical explanation might get lost.

Prehistorian Hermann Müller-Karpe's (2010) book is thematically close to Shennan's but located on another star as regards assumptions, scope, and intended readership. This is a small volume aimed at the general audience. The book explicitly starts from a religious assumption, arguing against purely naturalistic views and for the uniqueness of humans. The title translates as "Awakening in Stone Age," the main topics being the onset of human cognitive capacity, the beginnings of art, and the basis of religious belief in the palaeolithic period. The author wants to demolish the popular image of Stone Age humans as the raw beings. The author combines a short and informative essay on human evolution with several fictive but scientifically based *Lebensbilder*. The author is fully conscious about the limits of such scenarios but he wants to counter the *Lebensbilder* found in mass in the media. In these descriptions he stresses the high state of capacities of early humans. Even if one does not follow Müller-Karpe's Christian stance, he has produced an informative book. Furthermore, he found an elegant way to present scientific findings and complex argumentations for the layman. I stress this because there are good German language trade books by archaeologists and prehistorians but almost none from the field of cultural anthropology.

Towards a Generalized Evolutionary Theory?

Many of the volumes thus far mentioned contain ideas of a generalized model of evolution. The main question is whether we can think of a model of evolutionary processes which is independent of the specific instances and materials of Darwinian evolution (see already Cziko 1995). This is the main thrust of Gerhard Schurz's (2011) monograph. The author sets his argument in a broad context. After a historical outline of the emancipation of evolutionary theory from metaphysical-cum-normative concepts he presents firstly the current state of the "Modern Synthesis." Three chapters argue then against strict creationists, liberal creationists, and theologians and also cover the anthropic principle. The core of the book begins with part 2, where Schurz lays out a general theory of evolution in detail. Schurz differentiates the main elements of the evolution of human person's (individual evolution), the evolution of societies (cultural evolution), and the evolution of organisms (biological evolution). Thus, organismic evolution and sociocultural evolution are conceived as two special cases of a general process. Part 3 pre-

sents a detailed model of cultural evolution beginning with a careful reconstruction of meme theory, criticizing it as a distinct/separate science (memetics) but aimed at working out the important core. He then discusses sociobiology and mechanisms of cultural reproduction, cultural variation, forms of cultural selection, and frequency-dependant selection. Furthermore, we are given exemplary applications of evolutionary cultural theory, such as Diamond's scenarios, and the author explains the interactions between cultural, biotic, and individual evolution. A fourth part discusses mathematical basics, e.g., population dynamics and theoretical models of a generalized evolution theory, such as directional selection and evolutionary game theory. The last part of Schurz's dense book is in the evolution of co-operation, moral, cognition worldviews, and religious beliefs. This reviewer thinks that such a general approach to evolution is an alternative to models arguing via so-called analogies. Analogies, in the strict sense, are not some general similarities but *specific* similarities or a *specific* "sameness" between basically *different* entities or phenomena. One could argue that there are specific analogies in the mechanisms or the course of noncultural and sociocultural evolution, despite their profound difference.

Werner Patzelt's edited volume (2007) appeared already some time ago but needs to be mentioned here because of its special orientation and the sheer quality of the contributions. This is a collection centered on the long-term change of institutions. Patzelt wants to reveal evolutionary methods and theories to historically oriented social scientists and specifically to colleagues in the field of the science of politics. Thus, compared to other volumes, historical approaches are strongly represented here and, thus, there is a lot to find for evolutionary-minded readers in the social sciences in this thick volume. The first part presents overviews of theories of evolution conceived as spontaneous order and approaches in social science and political science. Part 2 presents a generalized model of evolution strongly inspired by meme theory. This is fleshed out in a chapter on the approach of "Evolutionary Institutionalism" and a concept of a historically inspired science of politics. Another chapter asks how evolutionary theory can be helpful for a rehistoricization of social science. Part 3 contains chapters on the historicity of institutions, on their endogenous conditions, and their stability. Part 4, about one third of the book, is given to case studies on the evolution of parliaments, diplomatic institutions, a department of foreign affairs, globally acting companies, and on evolutionary management and concepts of leadership. Published in a somewhat aberrant place this voluminous collection de-

serves more attention than it already got. This is a very thought-provoking as well as material-rich volume. Furthermore, the book presents many sources normally not used in the social science literature on evolution. More specifically, it contains a theory on the evolution of institutions which could be linked to other approaches to human institutions.³ The articles by the editor and Jakob Lempp are especially noteworthy since together they conceive a clear model of general evolution and show that evolutionary theories are not necessarily reductionist. This generalized model could be fruitfully linked to some of the models discussed in Schurz's monograph and by Toepfer in the handbook now reviewed (Sarasin and Sommer 2010).

The handbook edited by Philipp Sarasin and Marianne Sommer (2010) is broad and portrays core concepts of Darwin's theory of evolution as well as its derivatives and controversies in a plethora of fields. The explicitly interdisciplinary volume combines 67 entries arranged in four big chapters. The editors are a discourse-oriented historian and a historian of science. The contributions were written by 40 scholars from diverse fields, such as philosophy, cultural anthropology, and literary studies (details on authors and their affiliations are sadly not mentioned). There are entries on 26 concepts around evolution in the human as well as nonhuman sphere, six on the history of debates, 12 entries on museums, botanical gardens and other institutions, objects, and practices dealing with evolution, 15 on evolutionistic thinking in scientific disciplines, and eight entries on evolution as an issue in modern society, such as in films and politics. Several of the contributions in the handbook are in line with models of general evolution such as Schurz's book. This handbook was edited not by biologists, which makes its strength and some (minor) weaknesses. This handbook is truly comprehensive and explicitly tries to cross the *rubicon* between the cultures of sciences and humanities. We find many entries on topics one misses in other handbooks on evolution, such as on evolutionary theories preceding Darwin, on laboratories or on representations of evolution in current public culture, e.g., in belletristic literature and films. Furthermore, Sarasin and Müller avoid the total concentration on Darwin's person and work evident in most publications that appeared in the Darwin year. The book is carefully edited and almost all the articles are very readable. Some entries are especially noteworthy, such as Georg Toepfer's piece on general evolution theo-

ry, a gem of content as well as regards presentation. Another wonderful entry is a witty piece on a totally fictive phenomenon of nature (which I will not mention here!). A certain weakness of this handbook lies in some of the contributions on more biological topics or issues which are all too short, such as those on adaptation, the species concept and also editor Marianne Sommer's entry on "Mensch (Rasse)," mainly treating the history of the concept and eschewing any attempt at a definition. All in all, this is a very good book, which should also be consulted by the English-speaking scientific community.

The good news is that evolutionary oriented research in the social sciences is well alive. Evolution is back again, not only in the biologically oriented human sciences but at least in traces also in the humanities. In these scientific fields traditionally often hostile against any "naturalistic" approach there are nowadays more and more scholars open for evolutionary reasoning. More cultural anthropologists are using evolutionary theory for understanding contemporary societies. Some are beginning to offer ethnological insights to help understanding human origins (Barnard 2011). This new openness also can be seen in philosophical anthropology, being nowadays far more biologically informed than in Gehlen's times. This is evidenced by a recent German handbook on anthropology in broad terms (Bohlken und Thies 2009). This volume includes evolution and also technology and is part of the same series as Sarasin and Müller's handbook. Both handbooks could be very fruitfully used in combination. Taken together these developments may give some hope to develop the four-field approach which has suffered in the last decades in the United States and never existed in Europe.

The Four-Field Approach and Venues of Research in Bio-cultural "Nowhereland"

What are my general conclusions reading through these volumes? Firstly, some authors, beyond Darwin himself, seem to be especially productive in establishing truly evolutionary approaches in the social sciences: these are Marion Blute, Robert Boyd, Luigi Cavalli-Sforza, Richard Dawkins, Robin I. M. Dunbar, William Durham, Marcus Feldman, Peter Richerson, Michael Tomasello, Andrew Whiten, and especially Donald Thomas Campbell. These and some other authors have produced insights that have a potential to hold this research field together. On the other hand, the research field is still quite scattered and lacks systematization. The problem remains that evolutionary approaches are still (or

³ E.g., Turner (2003); Turner and Maryanski (2008); Meyer (2010).

again) marginal against the antinaturalist respective constructivist mainstream. In consequence, there is no real scientific evolution-minded community existing but only several small circles. They do not reach a certain “critical mass” and thus sometimes are not knowing much about their respective work. In consequence, some authors are not aware of works directly relevant to their approach. I will give only some of many examples. Stephan Müller seems not to be aware of the work of Schmidt-Wellenburg, which would fit quite well for parts of his argument, especially concerning Runciman’s theory. Similarly, neither Schurz nor any author in Sarasin and Sommer’s handbook do use the above mentioned work of Patzelt, which would be relevant for a generalized model especially as regards memes. Despite arguing at length about an evolutionary basis of religion and its placebo-like function, Schurz seems not to be aware of the current intensive debate about the specific functions of the *different* dimensions of religiosity (for the current state of the art cf. Voland and Schievenhövel 2009). Astonishingly, some very fruitful approaches are not mentioned very often in these volumes. I think, for example, of the work of Kevin Laland and co-workers on the historical constitution of ecological niches (Laland et al. 2000; Laland and Brown 2011). This is a pity, since studies in the humanities in the sense of Bruno Latour, e.g., could be more precise in taking into account such recent evolutionary-informed theorizing in the long-term interplay of humans and other actors and especially human-influenced evolution in other species as a main factor of human history (cf. Russell 2011).

The research landscape being so fractured as regards topics, assumptions, and also terminology, systematic syntheses (like the volume by Schurz) are as important as overviews about evolution in different realms (such as the handbook by Sarasin and Sommer).⁴ For the evolution of human behavior we have also good monographic overviews (my favorite is Fuentes 2009). What we also need is to establish a clear view of the spectrum of approaches on evolution in the social sciences proper, since some of the older approaches contain gems we can use today. Since some years we have not only several good collections but also a larger choice of monographic introductions and overviews on theories of social or cultural evolution suitable for class use.⁵

What we more basically need is to increase the knowledge about evolution among the general audience and also among scientists, even among biology students (for some disturbing results cf. Graf 2010).

Secondly, this reviewer would argue that the more complex bio-cultural phenomena are the more analytical we should be. Thus, we should, e.g., distinguish more clearly between describing origins and change, on the one hand, and explanatory mechanisms on the other. Furthermore, a clear analytical distinction between (a) the evolution of culture as an organic *capacity* and need of human beings and (b) the long-term (transgenerational change of *societal entities* and their material products would be helpful; cf. Antweiler 2005). Even if we argue for a monistic approach – which I would do –, we should not confound these issues by treating them all as “cultural evolution.” Moreover, an understanding of the complex interchange and mutual dependence of organic evolution and cultural evolution requires analytical rigor. The term “coevolution” should be very carefully used (cf. Durham 1991; Russell 2011). What remains to be more clearly discussed is the relation of the approaches called “evolutionary” or “Darwinian.” I would propose not to call theories “evolutionary” only if their topic is long-term change. If they are called “Darwinian,” there should be a relation to Darwin or the “Modern Synthesis.” Furthermore, there is a difference between theories arguing for (a) a general model of evolution with organic evolution and cultural evolution as specific cases), (b) analogical models stressing specific similarities between modes of evolution conceived as different, and (c) coevolutionary models treating the interdependency of natural and cultural evolution. These approaches are compatible but they are different (Antweiler 2008). Furthermore we have to distinguish between long-term societal change as such and trend-like developments like directional and cumulative evolution. That brings me to the next point.

Thirdly, the issue of explaining directional evolution is far from being closed. Most of the classical theories of social evolution of the 19th century clearly were flawed. They were teleological, sometimes racist, often barely mentioned devolution, and – mostly important here – did not really explain trends. But these classical evolutionists brought an important phenomenon into focus. It is worth reading them in detail as their theories were not as crude as they are usually portrayed. Most of current Darwinian approaches are concerned with mechanisms explaining societal change. This seems logical, as Darwin was less interested in macroevolutionary directionality than in mechanisms of microevolution. But both, organic and cultural evolution show

4 Cf. the handbooks ed. by Wuketits and Antweiler (2004); Wuketits and Ayala (2005) and also the anthologies ed. by Dugger and Sherman (2003) and Lindquist (2010).

5 See, for example, Trigger (1998); Johnson and Earle (2000); Claessen (2000); Carneiro (2003); Pluciennik (2005); Rousseau (2006); Sanderson (2007).

general trends toward increasing complexity within most of the lines. Contrary to the mainstream position against social evolution as ladder stereotype, there is still the challenge to explain this directionality of macroevolution by selective mechanisms. This holds for transgenerational cultural change and macrohistory as well as for biotic evolution.⁶

What would be my advice to time-constrained and money-conscious readers? If one wants to get into details of the specifics of human sociocultural evolution but wants to read only one of these books, one should buy and read Kate Distin's volume. She also lays out the potential of evolutionary theory to synthesize the social sciences. If one wants to get an even deeper view of the state of the art towards a truly evolutionary theory that uses our knowledge about organic evolution to get a precise view of cultural evolution, one should read Distin together with two recent, truly seminal books not under review here. One is written by the philosophically and biologically informed sociologist Marion Blute (2010), the other by the psychologist Alex Mesoudi (2011). Taken together these books give a fine overview.

If one wants to get a broad overview of the current state of the arts, Sarasin and Sommer's handbook is a one-stop choice. In case one is interested in the scientific and biological foundations of a generalized approach to evolution, Schurz's book is very suitable. As a reader of *Anthropos* one is probably very critical of Darwinian approaches to the social sciences and humanities. One might be generally sceptic about generalizing evolutionary principles but, nevertheless, at least have an open mind about it. In this case Stephan Müller's and Hendrik Wortmann's books (best being read together) should be the choice.

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⁶ See, e.g., Adams (1988); Schelkle et al. (2000); Johnson and Earle (2000); Pomper and Shaw (2002); Lenski (2005); Rousseau (2006); Nolan and Lenski (2010); and Russell (2011) regarding directionality in cultural evolution and Bonner (1988), and Vinicius (2010) on increasing complexity in organic evolution.

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