frontiers in Sociology

POLICY AND PRACTICE REVIEWS
published: 21 August 2018
doi: 10.3389/fsoc.2018.00024

Discounting of Evolutionary Explanations in Sociology Textbooks and Curricula

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Despite being internally fragmented by clashes of paradigms, sociology textbooks and introductory courses show a remarkable similarity in their content, while they share a peculiar neglect of small scale societies, non-human social relations, as well as evolutionary explanations. The mistreatment is explained by the strong position of sociology in the nature vs. nurture debate, by paradigmatic and ideologically motivated condemnations, by the later misuse of Social Darwinism, by certain unresolved issues of evolutionary explanations of human sociality, and by epistemological critiques of evolutionary explanations. The current study assesses the extent of this avoidance in sociology by three methods: a review of major sociology textbooks, a descriptive quantitative text analysis of introductory course outlines at top ranked universities, and a keyword search in the all-time most emblematic classical books in sociology. In reaction to this mistreatment, the benefits of synthesis of sociological explanations with evolutionary thinking are discussed.

Keywords: evolutionary explanations, socialization, sociobiology, evolutionary sociology, sociology, textbooks, teaching

OPEN ACCESS

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Specialty section:
This article was submitted to Evolutionary Sociology and Biosociology, a section of the journal Frontiers in Sociology

Received: *24 April 2018*
Accepted: *12 July 2018*
Published: *21 August 2018*

Citation:
Takács K (2018) Discounting of Evolutionary Explanations in Sociology Textbooks and Curricula. Front. Sociol. 3:24. doi: 10.3389/fsoc.2018.00024

INTRODUCTION

This study analyzes the inclusive or exclusive standpoint of sociology concerning human evolution. A range of related factors are considered, including the evolution of social behavior, a study of small-scale societies, sociobiology, evolutionary psychology, and the "sociology" of non-human species. First, the reasons for a potentially striking gap between sociology and evolutionary explanations are summarized. Second, the size of the gap is assessed by three methods: a review of major sociology textbooks, an overview of introductory course outlines at highly ranked universities, and the screening of the all-time most important contributions to sociology. These reviews are indicators to evaluate the extent to which sociology turns inwards, and is distanced from evolutionary explanations and animal social behavior. Finally, conclusions are drawn, and the benefits of a better coverage and synthesis are summarized.

The fundamental hypothesis of the study is that sociologists keep a significant distance from evolutionary explanations. The first reason lies in the nature vs. nurture debate. In this debate, sociologists position themselves clearly on the nurture side, and emphasize the fundamental importance of socialization and culture. The second reason is that certain paradigms within sociology have expressed their rejection of evolutionary explanations loudly as they interfered with some fundamental normative goals of these paradigms. The third reason originates from the unfavorable treatment of attempts at theoretical synthesis, including the later misuse of Social Darwinism for fascist and Nazi ideologies. The fourth reason lies in that there are missing links in

evolutionary theory, including problems to explain human sociality; the high extent of cooperation, the complex division of labor, and socialization that goes together with social stratification in human societies. The fifth reason is epistemological, and concerns the scientific validity of functionalist explanations in evolutionary thinking.

THE NATURE vs. NURTURE DEBATE

One of the tenets accepted by all branches of sociology is the major governance of human life by *socialization*, *social norms*, and *culture*. This implies that sociology deals with and is *only interested* in nurture and therefore takes a clear stance on the nature vs. nurture debate. Tischler summarizes this elegantly in his primer on sociology (2011: 78): "Biology is about nature; culture is about nurture."

According to the sociologist perspective, our social behavior is not determined by genes. Culture and socialization can explain what we do, especially if we do something in relation with others. What concerns "normal social behavior" is strictly socialization and culture-based: "Very little human behavior is instinctual or biologically programmed" (Tischler, 2011, p. 67). A typical standpoint is articulated in Henslin (2012, p. 57): "…although a few sociologists take the position that genes significantly influence human behavior, almost all sociologists reject this view." Henslin (2012, p. 57) continues as: "A controversial view of human behavior, called sociobiology (also known as neo-Darwinism and evolutionary psychology) [sic], provides a sharp contrast to the perspective of this paper that human behavior is primarily due to culture. Sociobiologists (evolutionary psychologists, evolutionary anthropologists) believe that because of natural selection, biology is the basic cause of human behavior."

It is not more than a polarizing accusation that sociobiology, evolutionary psychology, evolutionary sociology, and biosociology have such an extreme point of view of genetic determinism. In fact, the relevance of culture is generally acknowledged by these directions and by biologists (e.g., Richerson and Boyd, 2005). There is a rich literature on gene-environment interaction processes, how environments influence gene expression, gene-culture co-evolution (Walsh and Yun, 2016), imitation, cultural transmission, and cultural evolution (Gintis, 2007). Biologists study socialization and they underline the relevance of a universal tendency and human ability to internalize norms (Gintis, 2003). Despite this more fine-grained view on nature vs. nurture, given the rigid stance of sociology little can be expected at the intersection of evolutionary thought and sociology.

PARADIGMATIC ATTACKS ON EVOLUTIONARY EXPLANATIONS

The critique of evolutionary explanations by certain sociological paradigms is particularly loud and spilled over also to other sociologists. Feminist approaches emphasize the systematic oppression of women and the historical dominance of men. They advocate that gender relations need to be shifted from patriarchal to gender-equal (Eagly and Wood, 2011). The normative and ideological program of feminism and the orientation to conflict necessarily imply disagreement with any evolutionary explanation of gender differences. Feminist sociologists promote that gender-equality can be achieved because gender differences are due to social construction and path dependence (Oakley, 1972; Gray, 1997; Rose and Rose, 2010). In particular, feminist sociologists accuse evolutionary explanations of explaining all aspects of female sexuality in terms of reproductive functions (Lloyd, 1993). This common accusation is a reflection to studies that equalize mating with reproductive intentions (cf. Rossi, 1995).

Not only feminists, but also other promoters of social constructivism from Berger and Luckmann (1966/1991) through phenomenology to postmodernism react similarly to and condemn evolutionary accounts of systematic differences among humans. They question the social world that is defined and shared by humans to be reality. They claim that behavioral expressions, interactions, social categories, and institutions are results of jointly constructed understandings that have no biological origin—as their existence is not objective but based on shared and rationalized experiences (Burr, 2006).

THE MISUSE OF SOCIAL DARWINISM

Evolutionary theory ever since the breakthrough of Darwin (1860) has shaped and formed disciplines as it has provided a fundamental explanation for the observed variety of life. Also, sociology has not been intact to evolutionary thinking (cf. Sanderson, 2016; Mitchell, 2017). At the early years (for instance, in the work of Comte), biology was not excluded from the discipline (Hopcroft, 2016). Evolutionary explanations have become attractive to sociologists in multiple waves ever since (Parsons, 1964; Degler, 1991; Runciman, 1998; Sanderson, 2016).

Social Darwinism is an umbrella term that is given to various sociological theories about human society with a relation to natural selection, and to the principle of survival of the fittest (Spencer, 1860; Rogers, 1972; Claeys, 2000; Dickens, 2000; Leonard, 2009). Social Darwinist ideas were later dramatically misused for fascist and Nazi ideologies to justify and enforce gender and racial inequalities (cf. Sahlins, 1976; Degler, 1991; Udry, 1995; Ellis, 1996; Pearson, 1996; Hopcroft, 2016). The sociological criticism of Social Darwinism has focussed on its misuse by far-right ideologies and considered other strands that were leftist or not ideologically driven as a footnote in history (Leyva, 2009). These criticisms and the bold equalization of evolutionary explanations with Social Darwinism have made the acceptance of the new synthesizing attempts of sociobiology (Wilson, 1975, 1978), evolutionary psychology (Cosmides and Tooby, 1987, 1992; Barkow et al., 1992), evolutionary sociology and biosociology (Hopcroft, 2010, 2016; Walsh, 2017; Rotkirch, 2018; Turner and Machalek, 2018) troublesome for sociologists. Critics of these synthesizing attempts are overly swayed by politics, ideology, and a fear of biological determinism (van den Berghe, 1990; Pinker, 2002).

MISSING PIECES OF EVOLUTIONARY THEORY FOR EXPLAINING HUMAN SOCIALITY

Cooperation

Darwin acknowledged that evolutionary theory has unresolved points in relation to social behavior (Darwin, 1874/1902: Papers III-V). One of the most difficult puzzles is the commonality of social behavior that implies direct costs to the individual and provides benefits to others; hence it *reduces* individual fitness and should not be selected for. Examples include caring for unrelated others, altruism, and cooperation. As human societies are large groups that show a remarkably high level of cooperation (e.g., Gintis, 2000; Sommerfeld et al., 2007), the problem is particularly relevant for the sociological critique on evolutionary explanations. For most sociologists, the traits that are used to establish large scale cooperation are internalized during socialization.

While the problem of sociality and cooperation has not been solved yet, decades of research have produced significant contributions to completing the puzzle of the evolutionary theory of human sociality (for summaries see Burtsev and Turchin, 2006; Nowak, 2006).

Socialization and Culture

Sociologists and evolutionary theorists approach the problem of socialization in a different way. Sociologists claim that *all human sociality is learnt during socialization*. Sociologists see parental care and maturing purely in terms of *learning, teaching*, role modeling, and internalization. The first relevant scene of socialization is the family that is most typically composed of biological kins. Care, altruism, cooperation, and socialization within genetically related members of the family have been convincingly explained on evolutionary grounds by evolutionary scholars (Westermarck, 1926; Hamilton, 1964a,b; Hrdy, 2011). It is more of a challenge to find evolutionary explanations for socialization in developmental contexts outside the family where genetically unrelated peers or adults, as well as societal expectations and norms shape individual life and behavior (cf. Sameroff, 2010).

According to standard social science model as labeled by Tooby and Cosmides (1992), also the complex division of labor in human societies cannot be explained in evolutionary terms. It considers the justification of why some individuals specialize in parental care, others in gathering food, and yet others in warfare as erroneous in terms of genetic determinism and also in terms of conditional genes that are activated based on environmental conditions (e.g., Tischler, 2011; Henslin, 2012).

Culture is commonly used to describe the distinct characteristics of social customs, rules, and behavior in different human societies. Culture and cultural evolution supplanted biological evolution as the principal shaper of human nature and social behavior (Kaye, 1996; Mesoudi, 2011, 2016) while sociologists successfully decoupled cultural transmission from biology (Walsh and Yun, 2016). On the one hand, very rich evidence is accumulated in anthropology and sociology highlighting that culture could take very different forms, which is a clear indication of cultural transmission of human sociality. On the other hand, a long list of cultural universals that are present in every small-scale human society clearly supports the common roots of human culture and the need of evolutionary explanations (Brown, 1991).

There are certain necessities in our genetic make-up that make cultural learning possible. This includes a general ability to learn and rehearse skills (Donald, 2017) and a large extent of *social abilities* or *preconditions* that *allow* for learning complex social strategies and behavior (Gintis, 2003). Note that it would be misleading to date the evolution of our complex cognitive abilities and memory first and the evolution of our social skills thereafter. Our exceptional social intelligence and cognitive abilities have co-evolved gradually. Human social behavior and the social organization of human life gained more advanced forms throughout ancestral history.

Social Stratification

Another coordination device among social species is the establishment of *social hierarchy* and its maintenance by dominance, aggression, deterrence, and more complex strategies. Social hierarchies stabilize order and diminish within-group conflicts, fights, and casualties (Chase and Lindquist, 2009). They determine rules about access to territory, mating, and food. No wonder that individuals strive for higher positions as they have central importance for life success (Fieder and Huber, 2012). Social hierarchies prescribe roles and tasks for members, including "status duties" for alpha individuals, such as defense, representation, and guarding. Obedience to the social hierarchy is difficult to explain on the grounds of individual fitness perspectives. Similarly, it is also very challenging to underline *egalitarian preferences* within humans at the same time (Dawes et al., 2007; Fehr et al., 2008) with evolutionary arguments.

In fact, given the presence of complex hierarchies among our closest relatives, the hierarchical social organization in humans is not especially surprising (Boehm, 1999; Dubreuil, 2010). According to generally accepted accounts, however, social hierarchy is relatively *recent* in human history. 12,000 years ago, humans typically lived an egalitarian group life (Knauft, 1991; Boehm, 1999). Our exceptional sociality and egalitarianism could possibly be attributed to this lack of social hierarchy in our recent ancestral past.

EPISTEMOLOGICAL CRITIQUE OF EVOLUTIONARY EXPLANATIONS

It is claimed repeatedly that evolutionary explanations of human social behavior cannot be tested and therefore they need to be ruled out as unfalsifiable (Gould, 1981/1996; Lewontin et al., 1984). According to this claim, evolutionary explanations including explanations by sociobiology and evolutionary psychology are speculative and are based on currently observed adaptations that are functional, which leads to circular argumentation (cf. Turner and Machalek, 2018). This primarily concerns the "survival of the fittest" logic of evolutionary explanations. On the one hand, those who survive

are the fittest individuals. On the other hand, the fittest ones are defined based on their survival (Popper, 1972; Freese, 1994; Maryanski, 1994; Sober, 2000, p. 70; Rosenberg, 2015). The circular argumentation disappears only if fitness is defined independently from survival (Gould, 1989, p. 236).

A broader epistemological critique targets the functionalist view in evolutionary explanations in general. Biologists often talk in the style that "this and that trait and behavior exist because they have this and that function." These statements help to characterize traits and behavior and emphasize which features contributed to survival advantages in the past. Biological functionalism is problematic as it cannot be falsified (Popper, 1972, 1976; Peters, 1976) and because it does not take account of motivational and endogenous change (Rosenberg, 2015). Evolutionary explanations rely on causal processes that are identified mostly in an inductive way, and their potential contributions are tentatively generalized to other situations (Quinn and Dunham, 1983). Such as in other domains of science, the strict application of strong inference methodology to elucidating potential causes of patterns in nature is unfeasible (Quinn and Dunham, 1983). Historical as well as fundamental explanations require an inductive accumulation of knowledge and a critical scientific debate (Fetzer, 1985; Sober, 2000).

Another critique concerns maladaptations and handicaps that provide no practical benefits for survival. The persistence of such traits contradicts the basic principle of selection of the fittest. Darwin argued that some of the seemingly useless abilities might have been beneficial in the ancestral environments or might have evolved for a different function that had disappeared in the meantime (Darwin, 1860). The idea that traits might have evolved for one reason and perform a quite different task becomes accepted among evolutionary thinkers. For instance, salinary gland activation and drooling is a common physiological reaction at the expression of social disgust (Bradbury and Vehrencamp, 2011, p. 683; Breedlove et al., 2010). Some traits do not disappear even if they are not beneficial anymore. Moreover, traits and functions hitchhike on others (Gangestad and Scheyd, 2005, p. 525).

ASSESSMENT OF THE STATE OF SOCIOLOGY AND EVOLUTIONARY EXPLANATIONS

The State of the Art: Sociology Textbooks

The stance of the discipline is assessed first by analyzing major textbooks that are used in undergraduate sociology education. Textbooks are good indicators of what is consensual in a discipline, what the commonly accepted grounds are, what is in the focus of interest and what is not. Their content is scanned, analyzed, interpreted, and linked to the core of the discipline by several studies (e.g., Keith and Ender, 2004; Lewis and Humphrey, 2005; Suarez and Balaji, 2007; Puentes and Gougherty, 2013; Dixon and Quirke, 2014; Ballantine et al., 2016).

There is an abundance of primer sociology textbooks on the market. According to the review of Lynch and Bogen (1997), however, the best-selling introductory texts of the 1990s showed a remarkable similarity, while they did not fully represent the intellectual state of the wider discipline. After the review of all American sociology textbooks published between 1998 and 2004, Manza et al. (2010) concluded that textbooks mainly concentrated on structural functionalism, conflict theory, and symbolic interactionism.

While its importance is often emphasized in proposals and open discussions, interdisciplinary thinking does not seem to characterize sociology textbooks. The need to broaden the foundations of the discipline does not even appear among the abundance of critical aspects raised for current sociology textbooks in the special issue of *Current Sociology* in 2008 (Platt, 2008).

The objective here is more restricted: the stance on evolutionary explanations and the coverage of social behavior of our ancestors and close relatives are reviewed in main textbooks. For this purpose, a keyword search was performed on the full content of most widely used textbooks. Selected keywords point to the presence of evolutionary arguments or the comparative perspective with our ancestors and non-human relatives in the content. They were selected as they unambigously describe or label the content that needs to be checked for. The major disadvantage of a simple keyword search is that it also results in hits of incidental mentions and of discussions in a negative context. **Table 1** summarizes the results on how the evolutionary perspective is reflected in the most relevant textbooks that are used for teaching sociology.

The most relevant textbooks are not written in a synthetic way that would incorporate insights from evolutionary theory, evolutionary psychology, or sociobiology into sociology. They also keep distance from social anthropology of small-scale societies. The neglect, however, is *not* over-all. Small sections are typically devoted to the nature vs. nurture debate, to models of man, to sociobiology, to genetic determinism, and to the impact of Darwinism on the development of sociological thought. The tone of these parts varies from objective short reports to value-based strong counter-attacks. Sharp criticism mostly targets "genetic determinism," "biological reductionism" (e.g., Giddens, 2006, p. 472), and anything that hurts the sociological perspective according to which inequalities are only created by society. An example of what is severely criticized is the possibility of genetic influence on intelligence (e.g., Giddens, 2006, p. 724).

One should note that hardly any evolutionary theorist today would neglect the important role of socialization and culture in human life. There is no genetic determinism of human behavior. Only some authors realize that the evolutionary perspective is not as plain as most sociologists claim. Tischler (2011), for instance, acknowledges that sociobiology views human social evolution as more cultural than genetic. Referring to Wilson (1978), Tischler writes (2011, p. 78): "He also left the door open to free will, admitting that even though our genetic coding may have a major influence, we still have the ability to choose an appropriate course of action (Wilson, 1978) ."

TABLE 1 | The take of the most relevant textbooks of sociology on evolutionary explanations: keyword frequencies.

	Studies	*Human nature*	Human evolution	*Ancest**	Ape + primate	*Hominid*	Natural selection	*Sexual selection*	Evolutionary pressure	Total of these	Total pages (words)
1	Macionis, 2012										
		7	0	*39*	5	*0*	3	*0*	0	**54**	707 (479,140)
	Discusses sociobiology and evolution, culture is placed into an evolutionary perspective, discussion of hunter gatherers, but critical on the evolutionary perspective on human behavior, a page on nonhuman primates (p. 117)										
2	Ferris and Stein, 2009										
		12	0	*8*	1	*0*	5	*0*	0	**26**	577 (357,848)
	Half a page on "What Is Human Nature? The Nature vs. Nurture Debate"										
2	Giddens, 2009										
		3	2	*10*	3	*0*	0	*0*	0	**18**	1194 (576,096)
	Six pages on hunter-gatherer societies; Darwin is cited for the universal of emotional expressions (p. 253); sociobiologists' view on human sexual behavior is discussed as "fiercely contested" (p. 579)										
4	Schaefer, 2013										
		3	0	*23*	3	*0*	3	*0*	0	**32**	640 (413,235)
	A sharpened review of sociobiology: "In its extreme form, sociobiology suggests that *all* behavior is the result of genetic or biological factors, and that social interactions play no role in shaping people's conduct" (p. 63); a section on primate studies; questioning of larger behavioral similarity of identical twins than that of non-twin siblings; notes on the continuing influence of evolutionary theory on sociology										
5	Henslin, 2012										
		11	0	*16*	4	*0*	7	*0*	0	**38**	796 (491,888)
	A paper titled "Society Makes Us Human"; one page on "Biology versus Culture – Culture Is the Answer"; one page on "Are We Prisoners of our Genes? Sociobiology and Human Behavior"										
5	Tischler, 2011										
		11	4	*41*	35	*0*	2	*0*	0	**93**	591 (357,650)
	A review on the evolution of language (p. 57–59); a section on culture in animals (p. 63); a review of the nature vs. nurture debate (p. 76), and a relatively long review on sociobiology (p. 76–78); a review on biological perspectives, ethology and sociobiology in particular, about inequalities (p. 250–253)										
7	Andersen and Taylor, 2012										
		2	0	*12*	0	*0*	1	*0*	0	**15**	512 (337,671)
	The only discussion of evolutionary theory is with Social Darwinism and in contrary to creationism										

Method summary. Ranking is aggregated based on 6 different rankings. Only 1 title has been selected from each leading author (the highest ranked title). If there were multiple titles (e.g., by Macionis), then rank scores were merged. Ranks for different editions were also merged. The detailed description of the method and the list of editions that were considered for ranking are available from an open online repository. End of line division of words could hide some keyword hits. The edition that is selected for counting keyword frequencies is indicated in the table.

THE STATE OF THE ART: INTRODUCTORY CURRICULA

Textbooks play a conservative role in reproducing the dominant ideas of a disciplinary field (Fleck, 1935/1979; Kuhn, 1979; Manza et al., 2010). An alternative indicator of the state of the art of the discipline is the material of introductory course syllabi. This could especially be the case because top sociology programs tend not to rely on a single textbook in current introductory courses. This might be a conscious choice that takes into account the conservative role of textbooks and the lack of current debates and unresolved issues within them. It is more likely also a reflection of the taste of the instructor, who demonstrates self-confidence.

The content of course syllabi and short course descriptions from the top 12 sociology programs has been screened and analyzed. The screening confirmed that most of the top universities put existing textbooks aside, aiming to provide an *overview* of topics in sociology. This is not different from the organization of most textbooks. Replacing textbooks with a selection of readings does not improve the narrow view that is provided on human social behavior. In fact, course syllabi seem to devote even less space for evolutionary explanations than textbooks do. Introductory courses seem to make significant efforts to *distinguish* the discipline from others rather than highlighting the common ground of social sciences. This is reflected by the emphasis on "sociological imagination" and on the "social construction of reality." In particular, there is a neglect of small scale societies, social relations and organization among other species, and also evolutionary explanations.

In order to demonstrate the abandonment of evolutionary views more convincingly, a keyword search has been performed on the text of introductory undergraduate sociology course syllabi (or course outlines) and graduate course syllabi on classical sociological theory at top ranked sociology programs. The same keywords were used as in the case of sociology textbooks (**Table 1**). In addition, the list of course offerings has been screened at undergraduate and graduate programs of sociology at these universities. **Figures 1**, **2** provide a word cloud summary of undergraduate and graduate course syllabi. **Table 2** summarizes the results with regard to the keywords searched.

FIGURE 1 | A word cloud created from 13 syllabi and course descriptions of undergraduate introductory sociology courses from the top 12 programs (including an additional honors program).

FIGURE 2 | A word cloud created from 9 syllabi and course descriptions of graudate introductory social theory / sociology courses from the top 12 programs.

Table 2 demonstrates the extent of involvement of evolutionary explanations in introductory sociology courses at top-ranked US universities. The single hit for the searched keywords comes from the title of Cooley (1902/1992), which is part of the readings at the introductory course for graduate students at Berkeley. One can confidently conclude that hardly any attention is devoted to evolutionary origins of social behavior in the introductory courses at the top-ranked US sociology programs.

It is important to note that just as primer textbooks, introductory sociology courses are almost necessarily introvert. They create boundaries around what is primarily considered as sociological and their role is not to provide a comprehensive view on human sociality.

This is, however, definitely not the role of an entire sociology undergraduate or graduate program. Given the variety and depth of courses offered at undergraduate and graduate curricula, it is quite surprising that hardly any courses are offered on evolutionary origins at the top sociology programs, with the exception of the University of North Carolina at Chapel Hill largely thanks to the emblematic work of François Nielsen in evolutionary sociology.

One might argue that top-ranked university syllabi and curricula could be biased, because these universities are protectors and gate-keepers of the discipline in which they are good at. They preserve the current state of the art purposefully and selfishly. It is doubtful, however, if qualitative conclusions would be much different for other sociology programs, except for the stronger reliance on textbooks in introductory courses. As of 24 April 2018, the Teaching Resources and Innovations Library for Sociology (TRAILS) database of the American Sociological Association (ASA) contained no course that had "evolution," "human nature," "ancestors," "apes," "primates," "hominids," "natural selection," "sexual selection," or even "sociobiology" in its *title*.

TABLE 2 | Total keyword counts in syllabi and short course outlines used for undergraduate introductory sociology courses, graduate classical social theory courses, and screening of course offerings at the top 12 sociology programs.

Level	Course on evolution	*Human nature*	Human evolution	*Ancest**	Ape + primate	*Hominid*	Natural selection	*Sexual selection*	Evolutionary pressure	Total of these	Total word count	Notes
Undergraduate (and 1 honors program) ($N = 13$)	1/13	0	0	0	0	0	0	0	0	**0**	30,118	
Graduate ($N = 9$)	1/9	1[a]	0	0	0	0	0	0	0	**1**	24,921	3 graduate course descriptions were not available and 1 had a only a very short description

The second column displays if there is any course offering on evolution in the sociology program. In further columns, aggregated word counts are provided. The elementary introduction to sociology course is selected for undergraduate studies and the first required social theory course for graduate studies. Syllabi were gathered from webpages of the programs or received directly from the instructors in private communication. Only openly available or consented versions have been used that were not necessarily detailed. All course descriptions and syllabi are from 2013 fall or after. The most recent accessible course descriptions have been used.

*Method summary. Eleven different program rankings were used to select top sociology programs and departments. Each ranking was valued equivalently. The resulting selection contains only US-based programs and departments (**Table 3**). Eight of these rankings considered US universities only, which might have caused some bias, but these programs turn out to be on top also in international rankings. Note that only one program was included from each university. Social policy and demography programs were excluded. Additional details of the method that includes which rankings were included can be found in an open repository at doi: 10.17203/KDK376.*

[a] = *Cooley, Charles Horton: Human Nature and the Social Order is amongst the readings in one course.*

TABLE 3 | The composite ranking of sociology programs.

Rank	Points	University
1	74	Harvard University
2	58	Princeton University
3	51	University of California, Berkeley
4	43	University of Chicago
5	39	University of Michigan, Ann Arbor
6	37	Stanford University
7	36	University of Wisconsin, Madison
8	32	University of Pennsylvania
9	25	University of North Carolina, Chapel Hill
10	23	University of California at Los Angeles (UCLA)
11	19	Duke University
12	16	Columbia University

Each ranking counted equivalently for the total score. 10, 9, 8, etc. points were assigned for ranks 1, 2, 3, etc. in each ranking. Note that only one program is included from each university. Social policy and demography programs have been excluded.

THE CORE OF THE DISCIPLINE: THE MOST IMPORTANT CONTRIBUTIONS TO SOCIOLOGY

Textbooks and introductory courses are reflections on what is considered important in the discipline. Even American textbooks and history of sociology courses largely build on European origins. The "Holy Trinity" of Weber, Durkheim, and Marx emerged and stabilized in the 1970s, despite the fact that until the 1920s, the foundations of sociology had been much broader and more interdisciplinary (Bierstedt, 1981; Connell, 1997; Platt, 2008). Although Marx or Weber themselves cannot be simply labeled as sociologists as their interests ranged across many areas (Giddens, 2006: 17), they have become the distinguishing symbols of the discipline. The "Holy Trinity" is one example of the identifying characteristics that is shared by many sociologists. Only a few leading theorist has placed this consensus of the otherwise fragmented discipline under attack and called for a more interdisciplinary foundation of sociology within the social sciences (e.g., with economics: Lindenberg, 1990; Abell, 2003; Smelser and Swedberg, 2010).

A more unbiased view on the role of evolutionary theory in sociology can be obtained by approaching the question from yet another angle. Besides the analysis of what is taught under the label of sociology, the all-time most important contributions in the discipline, determined by the Books of the Century ranking of the International Sociological Association (ISA), are analyzed. Keywords indicating references to evolutionary explanations have been counted and content has also been scanned qualitatively. **Table 4** summarizes the results.

The keyword search and the qualitative screening of the Books of the Century show that evolutionary explanations are not disregarded completely. Rather, they are considered mostly as unfeasible by emblematic sociologists. Some of these fundamental contributions contain discussions on ancient prehistory, on human nature and a retrospective view on how Darwinism influenced thinkers in sociology.

TABLE 4 | Word counts for key phrases and some relevant highlights from the International Sociological Association (ISA) Books of the twentieth Century.

	Studies	*a*	b	*c*	d	*e*	f	*g*	h	i	Total pages (words)
1	Weber, 1978.	*2*	0	*0*	0	*0*	0	*0*	0	**2**	1,643 (733,560)
	A paper on "Patriarchalism and Patrimonialism" and an extended discussion on how clans turned toward societies; Weber was not keen on evolutionary explanations, but reconstructed existing differences based on different conditions in ancient time										
2	Mills, 2000.	*12*	0	*0*	0	*0*	0	*0*	0	**12**	255 (92,264)
	Extensive discussion on models of man										
3	Merton, 1968.	*10*	0	*0*	0	*0*	0	*0*	0	**10**	698 (333,090)
	Some of these appear because of citing Cooley's *Human Nature and the Social Order*										
4	Weber, 2000.	*0*	0	*0*	0	*0*	0	*0*	0	**0**	314 (104,430)
5	Berger and Luckmann, 1966/1991.	*8*	0	*0*	0	*0*	0	*0*	0	**8**	125 (80,443)
	A typical quote: "The empirical relativity of these configurations, their immense variety and luxurious inventiveness, indicate that they are the product of man's own socio-cultural formations rather than of a biologically fixed human nature." (p. 67)										
6	Bourdieu, 1984.	*1*	0	*0*	2	*0*	0	*0*	0	**3**	640 (295,088)
7	Elias, 2000.	*4*	0	*5*	1	*0*	2	*0*	0	**12**	585 (292,257)
	A footnote on the impact of Darwin on sociology (p. 544). The entire book is in a certain way about the evolution of the social human nature through human history.										
8	Habermas, 1984.	*5*	2	*4*	2	*4*	0	*0*	0	**17**	972 (202,157)
	Long discussion of evolutionary perspectives on societal development, an attack on evolutionary determinism										
9	Parsons, 1937/1966.	*26*	0	*0*	0	*0*	10	*0*	0	**36**	847 (334,859)
	Through the overview of the history of social thought, Parsons deals with human nature (in the theory of action); reviews the relation of psychology and biology (and issues of heredity); summarizes Social Darwinism; conceptualizes social evolution										
10	Goffman, 1956.	*1*	0	*0*	0	*0*	0	*0*	0	**1**	173 (83,181)

Word counts for: a, "human nature"; b, "human evolution"; c, "ancest"; d, "ape(s) and primate(s)," e, "homini*"; f, "natural selection"; g, "sexual selection"; h, "evolutionary pressure";* ***i, total of these (a-e)****; j, total number of pages (total word count) of book. Method: Top 10 of the ISA Books of the twentieth Century poll in 1997, https://www.isa-sociology.org/en/about-isa/history-of-isa/books-of-the-xx-century. The cited editions were used for keyword search. The online open repository contains detailed references to these editions.*

THE DISTANCE BETWEEN SOCIOLOGY AND EVOLUTIONARY THINKING

The disciplinary distance from sociology to evolutionary thinking, especially to evolutionary biology can nicely be illustrated by maps of science. Maps of science are created based on collaboration or citation patterns in journals listed in Thomson Reuters' *Web of Science* and Elsevier's *Scopus*, or Medline. Maps can be created in multiple ways. Arranged according to certain logical principles, sociology and social sciences in general are placed far from biology. **Figure 3** shows one illustration based on the 2010 University of California San Diego (UCSD) map of science data from Börner et al. (2012). Common in all representations is the relatively large distance between sociology and social studies on the one hand; and animal behavior, evolutionary biology, and sociobiology on the other hand (see Klavans and Boyack, 2006, 2007; Boyack et al., 2007; Bollen et al., 2009; Börner, 2010; Rafols et al., 2010 for more maps of science underlying this claim).

SUMMARY OF THE ASSESSMENT

This paper reviewed the extent to which sociology discounts evolutionary explanations. The most widely used current textbooks, curricula of introductory courses at top universities, and the most important all-time contributions to sociology have been reviewed. On the one hand, it can be concluded that there is no total neglect, and critical discussions occur. On the other hand, sociology keeps a rather large distance from evolutionary explanations of social behavior and also from the study of social behavior in other species.

The conclusion that sociology is separated from studies of human evolution comes as no surprise (cf. Sanderson, 2001, 2016; Barkow, 2006; Perry and Mace, 2010; Winegard et al., 2014). Even within the social sciences, and especially in contrast to some branches in anthropology and psychology, sociology is among the most reluctant to integrate evolutionary explanations (Rossi, 1995). This stand off can be considered traditional: most sociologists have always discredited explanations that are biological (Degler, 1991; Udry, 1995). "Sociologists have intuitively realized that evolutionary biology is a threat to their discipline. They have tried to insulate themselves from the threat by ridiculing the exercises of sociobiology" (Udry, 1995, p. 1270).

It needs to be noted that many evolutionary scientists also tend to ignore work by sociologists (see e.g., Coall and Hertwig, 2011 for discussion). At the same time, evolutionary theory has gone through a recent shift that has been missed by many scholars in sociology. The problems of cooperation, socialization, and social stratification highlighted certain weak points of classical evolutionary theory that heavily focuses on individual competition for survival. Solutions for these problems have shifted evolutionary theory toward a new direction. Instead of formulating evolution in terms of competition as the guiding metaphor and sociality as a by-product, cooperation and positive social interactions are now more often seen as the central driving forces of evolution (Maynard Smith and Szathmáry, 1997;

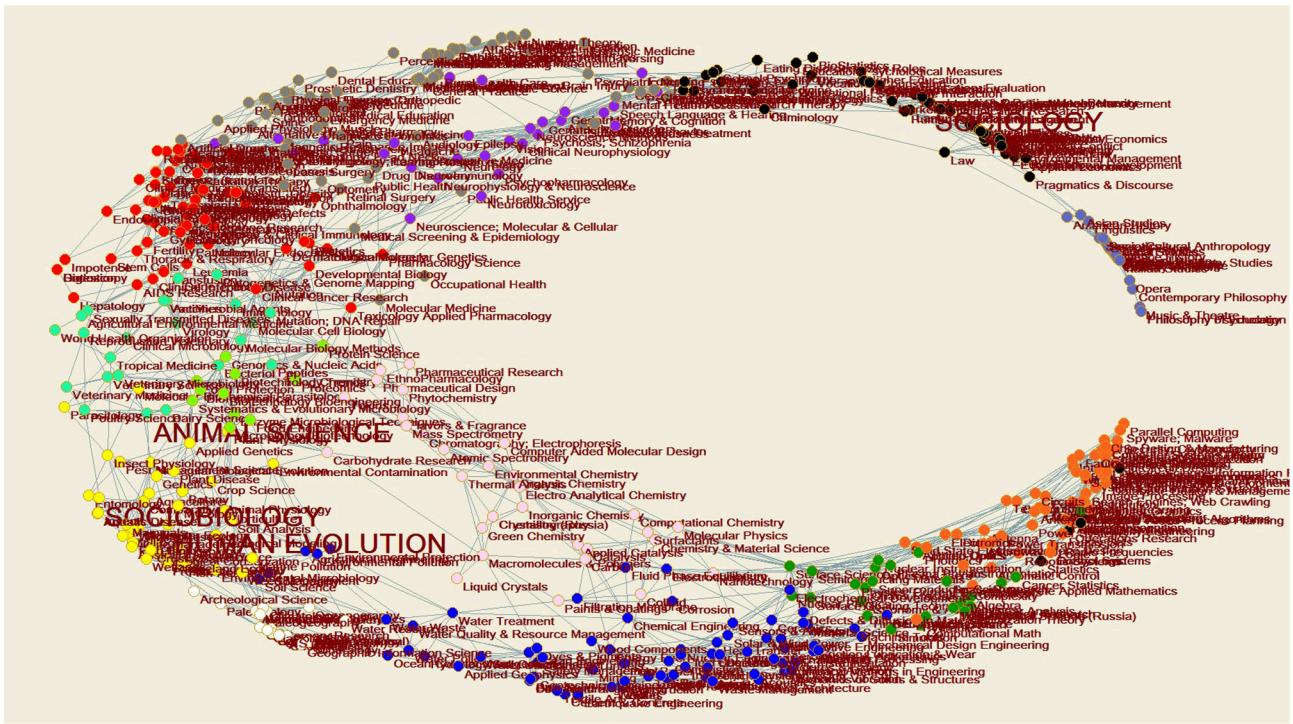

FIGURE 3 | A Map of Science created in Pajek (Batagelj and Mrvar, 2016) using the 2010 USCD map of science data and classification system covering 10 years (2001–2010) of Web of Science data and 8 years (2001–2008) of Scopus data (Börner et al., 2012).

Sussman and Cloninger, 2011; Pierce and Bekoff, 2012; Barta, 2016).

RECOMMENDATIONS: BENEFITS OF A SYNTHESIS

The large distance of sociology to evolutionary explanations is worrisome. What follows is a discussion of some major benefits for sociology to consider evolutionary explanations, as they outweigh the criticism put forward.

These benefits can be grouped as

1. Evolutionary insights into human sociality;
2. Gaining sociological knowledge from evolutionary history; and
3. Gaining sociological knowledge from a wider comparative perspective.

EVOLUTIONARY INSIGHTS INTO HUMAN SOCIALITY

A popular distinction on the nature of causation in biology distinguishes between proximate (physiological) and ultimate (evolutionary) explanations (Mayr, 1982, 1988). Similarly, one could differentiate between direct causes and "deeper" explanations also concerning social behavior in the social sciences. For instance, when economists begin their explanations from the standpoint of given and fixed individual preferences, they are able to explain current consumer choices. Sociologists go "deeper" by studying how preferences are constructed socially and what is the role of socialization and social influence in their development. One could dig even "deeper" for the roots of social behavior and of human nature by considering human evolution. Such an exercise would be of high value particularly for the appropriate positioning of the model of man and for the justification of innate human sociality.

To demonstrate the usefulness of such comparisons, consider a non-social trait first: the body size difference between men and women. A lot of explanations are possible. For instance, the gender division of labor is responsible, and the workload that requires strength has made men larger. Or, gender-specific socialization causes men and women to eat different things, which causes the difference in size. Alternatively, men grow larger because larger body size corresponds to the popular body image in the eyes of women, and men strive to achieve this aim with various means including exercise. These purely sociological explanations are clearly unsatisfactory and wrong.

The same holds for explanations that take into account the human ancestral environment only. One could argue in parallel that men are larger because they were involved in hunting for prey, which required physical strength. Hunting could also imply that men ate more meat than women in the early time of hominid development. Alternatively, sexual selection in the past can be responsible: larger males were more successful in the competition for mates than smaller ones. It is difficult to judge the appropriateness of these evolutionary explanations against each other (Sober, 2000, p. 134).

Much more can be gained if one relates the problem of human body size to the same problem in other species. Multiple studies correlated the male-female proportional size difference (sexual dimorphism) with various factors (Clutton-Brock and Harvey, 1977; Möller, 2003). They found no relation with niche separation (which would be hunting and gathering in humans), but have found that sexual selection could be important. In monogamous species, male and female body size is not radically different. In polygynous groups, in which one (or a few) male breeds with several females, males are larger than females. Humans, who are mainly but not strictly monogamous, fit nicely into the overall pattern (Murdock, 1981). What holds for physical attributes such as sexual dimorphism, could also be relevant for elements of human sociality.

For instance, not only hierarchies, but also egalitarian social systems need regulations and norms of sexual behavior. Many birds and some mammals live a monogamous life and sanction abnormal sexual behavior. They establish a "marriage contract" by certain rituals and remain faithful to their partners even in large colonies, offering an abundance of alternatives. Similarly, all human cultures practice marriage rituals. The egalitarian norm of monogamy and related sanctioning practices provide a relatively straightforward way to maintain harmonious group life that counts on each individual for collective gains (Durkheim, 1912/1995; Deacon, 1997).

Another example considers the existence and nature of strong emotions among humans. How humans have become ultrasocial is not fully understood, but emotions could have played an important catalyst role (Nesse, 1990; Cosmides and Tooby, 2000). Emotions are related to all forms of sociality. They work as devices to handle socially desirable and undesirable situations. Emotions have a bodily component and they have likely evolved to cope with specific fitness-relevant social situations (Plutchik, 2003; Smaniotto, 2004). For instance, the emotion of *love* drives toward the establishment and maintenance of a single relationship, preserves social bonding in established couples, and helps the neglect of outside options (Frank, 1988; Nesse, 1990). *Embarrassment* and *guilt* are results of wrong-doing or norm violation by the self and are displayed to signal the acknowledgment of inappropriateness and to acquire forgiveness by the group (Eisenberg, 2000; Fessler and Haley, 2003). *Shame* is a stronger version in which the individual mistake is difficult to overcome (Eisenberg, 2000). *Anger* is directed toward norm violators and suggests the need of their punishment (Nesse, 1990; Smaniotto, 2004).

The understanding of major overarching problems of social science - inequality, social order, and social conflict - could all improve with the help of explanations considering human evolution. In a similar fashion as the evolution of cooperation (Axelrod, 1984, 1997) and the evolution of norms (Axelrod, 1986; Epstein, 2001) are studied, one could gain new insights into gender inequalities, ethnocentrism, as well as social stratification (e.g., Nielsen, 1994; Lopreato and Crippen, 1999; Sanderson, 2001).

A HISTORICAL PERSPECTIVE: OUR ORIGINS SHAPE OUR SOCIAL WORLD

As the study of human society and social phenomena, sociology looks at our world as completely isolated from our evolutionary origins (cf. Smaniotto, 2004, p. 25). In contrast, evolutionary psychology makes the claim that our current social make-up is very much formed by the conditions in our evolutionary past, namely by the environmental conditions to which adaptation took place. This is called the *Environment of Evolutionary Adaptedness* (EEA) by evolutionary psychologists (Bowlby, 1969; Tooby and Cosmides, 1990). For some reason, the *Pleistocene* period is generally considered as the EEA, when humans faced changing environmental conditions from forest to savanna-like habitats (e.g., Symons, 1992). Obviously, this is a very restricted and biased view on human evolution and adaptations. Human adaptations in fact took place not only in the Pleistocene, but also earlier and ever since. There is no reason to attribute special importance to a certain period in human development. This does not modify the most important message of evolutionary psychology, sociobiology, and evolutionary thinking: human behavior today is very much shaped by the past and is to a large extent path-dependent.

The recent record of human history, thanks to writing, art, and stone objects, tell us a lot about our last 10,000 years. This is undoubtedly a very important period for current social behavior. This last period of human history has witnessed the emergence of the state, and living in mass societies. It is therefore natural that sociologists rely heavily on the work of historians. One could highlight the similarities and the differences between large scale societies that emerged independently in a similar fashion on different continents, and can come closer to establish grand theories in sociology. This means reliance on data from our human past to understand our current social behavior.

The focus of social psychology and sociology on *small groups* and communities is another reason why the relevant historical window could go back more in time. And if it does, similarly to historical path dependence, one could use arguments based on human evolutionary history. One can get only hints from the ancestral past with the help of anthropogeny, paleoanthropology, and the archeological study of human development. Thanks to anthropology, one can at least speculate about human social life in the ancestral past. This is highly valuable for the understanding of the emergence of social complexity today.

A COMPARATIVE PERSPECTIVE: ALTERNATIVE SOCIAL WORLDS

The comparative perspective is very much the essence of cultural anthropology as well as studies of culture in sociology. The anthropology of hunter gatherers and pastorial societies informs sociology about human cultural variation. For many anthropologists, the key question of their discipline is to describe human universals and human cultural differences. Cultural universals describe characteristics present in *all* human societies. Living in groups, in-group bias, fear of strangers, child rearing,

puberty displays, sexual taboos, marriage, status competition, division of labor, sense of fairness (Henrich, 2000; Henrich et al., 2001; Brosnan and de Waal, 2003), coyness displays, music, dance, body decoration, playing games, storytelling, jokes, insults, crying, spoken language, gossip, preparing food, myths, beliefs about death, disposing the dead, grief, and religion are all human cultural universals (Brown, 1991). By taking count of them, one could identify the social traits and behaviors that require explanations beyond direct sociological causes.

Besides studying hints from the past, other ways of opening up the comparative perspective exist. One is to construct artificial social worlds that *could* in principle be ours. Artificial societies are designed to do especially that (e.g., Epstein and Axtell, 1996; see also the Journal of Artificial Societies and Social Simulation). Another is to study new online platforms of social life that rise independently from everyday life. For instance, Massive Multiplayer Online Games (MMOGs) keep record of every human action and therefore offer immense possibilities for detailed sociological analysis. Some MMOGs cause full addiction and 24–h involvement with the consequence that participants live in fact in these virtual spaces. These environments provide unique opportunities to study the emergence of norms, the emergence of inequalities, persistent gender differences, or even intergroup warfare (Szell and Thurner, 2010, 2013; Szell et al., 2010; Thurner et al., 2012; Sinatra and Szell, 2014). Similarly, open collaboration platforms and websites could also be the focus of study of fundamental sociological problems, such as cooperation, consensus, and conflict (e.g., Yasseri et al., 2012; Török et al., 2013).

There is yet another subject of comparison for our social world that is unusual for sociologists. Human distinctiveness is often attributed to exceptional sociality. Humans are *extreme* in their sociality, but sociality is *not* a unique human feature. To the contrary, many other species are social species. Studying them informs us about the diversity of social life and could help us to describe and understand characteristics that are important to the foundations and nature of distinctive human sociality.

CONCLUSIONS

The current study provided an overview on the stance of sociology on evolutionary explanations. Given the tenacious attitude of keeping distance from evolutionary principles, it has been argued that it pays off for sociology to integrate evolutionary insights into human sociality, and to take a wider comparative perspective that considers small-scale societies, the ancient human past, and alternative worlds of online, artificial, and non-human societies.

The integration of evolutionary explanations into the study of human social life is not without precedents. Sociobiology (Wilson, 1975, 1978), however, considered sociology as the branch of biology (cf. Wilson, 1975: 4). As a better way to synthesis, evolutionary thinking needs to be integrated *into* sociology. This can ensure that sociologists remain thinkers who speculate primarily about proximate and action-based mechanisms. They do not need to depart from the sociological point of view. In the human social world, nothing is determined in advance. Individual choice, action, decisions, interactions, contextual effects, and socialization should remain the core of sociological explanations. At the same time, the origins of our social life and behavior could be searched, since not only the anatomy of humans, but also social behavior has been subject to evolution and could be understood better if its evolutionary origins are considered (Wilson, 1975; Udry, 1995).

The misuse of Social Darwinism, and later the neglect of sociobiology and evolutionary psychology are warnings about the historical burden and the difficulties of the synthesis of sociology and evolutionary thinking. Such a synthesis is attempted recently by evolutionary sociology and biosociology (Hopcroft, 2016; Walsh, 2017; Turner and Machalek, 2018). The synthesis is necessary because sociologists all share the ultimate quest for a deeper understanding of human sociality and social behavior. Steps on this path include studying and comparing our social world with social worlds of remote parts of the world, of artificial and online societies, of the ancient human past, and of different animal species.

The comparative perspective is in line with the need and the importance of *modeling* social life and behavior. Understanding the complexity of our social organization can improve by creating simple, but realistic models rather than complex descriptions of individual cases. Looking at the social life of other species could also be considered as a form of abstraction, comparative analysis, and the modeling of alternatives (and similarities) of human social organization. Currently, no major sociology textbook deals with animal societies. Social scientists have neglected this possibility of comparison. Understanding human societies can improve by stepping outside of the human social world and objectively observing and comparing it with alternatives.

Last but not least, it is important to emphasize that it is not the role of any scientist, including biologists and sociologists, to compete in a clash of scientific disciplines. There is no need to determine a winner or superiority on the ground of traditional discipline borders. Without doubt, every discipline adds an important layer of explanation to our observed world. As biology does not overlook but supervenes on the elementary rules of physics, sociology should not overlook but supervene on the basic tenets of evolution (e.g., Massey, 2002; Legare et al., 2018).

AUTHOR CONTRIBUTIONS

KT designed and conducted the study and wrote the paper.

FUNDING

The author acknowledges funding from the European Research Council (ERC) under the European Union's Horizon 2020 research and innovation programme (grant agreement No 648693). I wish to acknowledge The Regents of the University of California, SciTech Strategies, Observatoire des Sciences et

des Technologies, and the Cyberinfrastructure for Network Science Center for making the 2010 UCSD Map of Science and Classification System used in **Figure 3** available for this work.

ACKNOWLEDGMENTS

I thank Flóra Samu, Barbara Panyik, Eszter Vit, Gabriella Mezei, István Boros, and Sára Horlai for research assistance.

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Conflict of Interest Statement: The author declares that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.