

The History of Hayek's Theory of Cultural Evolution

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Abstract. This paper traces the historical origins of Friedrich A. Hayek's theory of cultural evolution, and argues that Hayek's evolutionary thought was significantly inspired by Alexander M. Carr-Saunders and Oxford zoology. While traditional Hayek scholarship emphasizes the influence of Carl Menger and the British eighteenth century moral philosophers, I claim that these sources underdetermine what was most characteristic of Hayek's theory, viz. the idea that cultural evolution is a matter of group selection, and the idea that natural selection operates on acquired as well as on inherited properties.

Keywords. Economics, biology, zoology, cultural evolution, group selection.

1. Introduction

Friedrich A. Hayek (1899-1992) – Austrian economist, political philosopher, and winner of the 1974 Nobel memorial prize – spent a good part of his career developing a theory of cultural evolution. According to this theory, rules, norms and practices evolve in a process of natural selection operating at the level of the group. Thus, groups that happen to have more efficient rules and practices tend to grow, multiply, and ultimately displace other groups. The theory, of which Hayek himself was proud, is on all accounts central to his economic, social, and political project. In the present paper, I explore the history of this theory of cultural evolution.

My main thesis is that Hayek's evolutionary thought was significantly inspired by the British biologist Alexander M. Carr-Saunders (1886-1966) in particular and Oxford zoology in general. Hayek quoted Carr-Saunders' book The Population Problem (1922) – which includes an account of what Hayek called cultural evolution – in virtually every passage on the topic; Hayek and Carr-Saunders knew each other well, as they were close colleagues at the London School of Economics (LSE) for twelve years; and unpublished letters indicate that the two read and evaluated each other's work. Broadening my focus, I will also argue that Carr-Saunders represents a wider influence on Hayek's thought, viz. that of Oxford zoology. Carr-Saunders was demonstrator in zoology at Oxford around the time when he published his book, but Hayek also drew inspiration from prominent Oxford zoologists such as Julian S. Huxley (1887-1975), Alister C. Hardy (1896-1985), and Vero C. Wynne-Edwards (1906-97).

Traditional Hayek literature capitalizes on two other sources of inspiration: the Austrian economist Carl Menger (1840-1921), and the British moral philosophers of the eighteenth century. I agree that there is a strong case to be made for their influence.

Hayek clearly acknowledged his debt to Menger, who was a towering figure in Austrian economics, and a professor at the University of Vienna, where Hayek was a student. Meanwhile, the British moral philosophers emphasized the idea of spontaneous order, which is eminently important in Hayek's work. Nevertheless, I claim, the traditional account underdetermines what was most characteristic of Hayek's theory of cultural evolution, viz. the idea that cultural evolution works through group selection, and the idea that selection operates on acquired as well as on inherited properties. Neither of these two elements of Hayek's theory can be found in the work of Menger or the British moral philosophers.

The present account therefore adds to the traditional one, in that it explains the origin of two of the most characteristic elements of Hayek's theory of cultural evolution. As we will see, both the idea of group selection and the idea of selection operating on acquired properties are clearly present in the work of Carr-Saunders and many of his fellow Oxford zoologists. Though I recognize limitations of arguments imputing influence, I believe that the resulting account sheds new light on several important issues. The account indicates that Hayek scholars may not have realized the extent of Hayek's debt to Charles Darwin (1809-82). Though Hayek consistently downplayed the importance of Darwin for the development of evolutionary theory, the association with Carr-Saunders and Oxford zoology indicates that Darwin at least indirectly exerted substantial influence on Hayek's evolutionary thought. Also, the account suggests that historians of biology may not have properly acknowledged the importance of Carr-Saunders for the development of theories of group selection. Though some scholars have acknowledged the fact that Carr-Saunders defended a theory of group selection, it has remained an open question whether he actually inspired the later development of such theories. Finally, the discussion strongly suggests that Hayek was acquainted with the main elements of his mature theory of

cultural evolution already in the 1920's and 30's, which is earlier than previously thought.

2. Hayek on cultural evolution

Hayek's theory of cultural evolution – as well as the closely associated notion of spontaneous order – was crucial to his system of thought. The theory figures essentially in definitions of central terms like “law,” “justice,” and “legislation.” Moreover, cultural evolution was intended to account for the development of free-market capitalism, and to explain why it works so well. Hayek himself was proud of the theory. He believed that it had allowed him to achieve what no earlier economist had, viz. to paint “what now seems to me a tolerably clear picture of the nature of the spontaneous order of which liberal economists have so long been talking” (1967, p. 92).

Hayek scholars have agreed on the importance of cultural evolution to Hayek's system of thought. His biographer Alan Ebenstein, for instance, wrote: “The survival of the fit and of unanticipated, undirected evolutionary development were central in Hayek's thought” (2001, p. 14), and added: “The concept of spontaneous order was among Hayek's greatest contributions” (p. 237). According to Viktor J. Vanberg, “the evolutionary outlook is, in fact, an aspect that permeates, and gives coherence to, [Hayek's] entire work” (1994, p. 315). Geoffrey M Hodgson maintained that “[Hayek's] conception of socioeconomic and cultural evolution is the centerpiece of his mature theory” (1994, p. 408; cf. Paul, 1988, p. 251).

In his first systematic presentation of the theory of cultural evolution, ‘Notes on the Evolution of Systems of Rules of Conduct’ (1967, pp. 66-81), Hayek began with the distinction between rules and orders. He specified a rule of conduct as a regularity in the behavior of an individual, regardless of whether the individual is aware of the

regularity or not, and whether the rule is inherited or learned (1967, pp. 66-7; 1973, pp. 19, 43). Instead of “rules,” Hayek occasionally used the terms “customs,” “norms,” “practices,” “habits,” and “traditions.” Furthermore, he defined the order of a group as something that allows an observer to make reliable predictions about unknown parts of the group (1973, pp. 35-6). Instead of “order,” Hayek sometimes wrote “system,” “structure,” or “pattern.” The order of a group is produced jointly by the rules of conduct adhered to by its members and the environment in which they live. Hayek’s definitions of “rules” and “order” remained vague, but for our purposes it suffices to note that a rule is a property of the individual, while an order is a property of the group.

According to Hayek there are two kinds of order, artificial and spontaneous, depending on their origin. An artificial order – also called a “made order,” a “construction,” or an “organization” – is one that has been consciously designed and imposed on the group. In Hayek’s words, an artificial order “has been made by somebody putting the elements of a set in their places or directing their movements,” like the order of a battle (1973, p. 37). Such an order can be imposed on a group, presumably, by directing the members to follow certain rules. In contrast, a spontaneous order – a “grown,” “self-generating,” or “endogenous” order – is one that has evolved without deliberate intervention. The spontaneous order, like any other order, emerges as a result of individual action, but unlike the artificial order it was not designed. As Hayek said, spontaneous orders are “orderly structures which are the product of the action of many men but are not the result of human design” (1973, p. 37). Language, morals, law, and money are all spontaneous orders (1979, p. 163), but the most important one in Hayek’s opinion is perhaps the competitive market (cf. 1973, p. 38). The order of a free market was never designed by a thinking mind; in fact, Hayek wrote, it is far too complex to have been designed (1979, p. 164).

Spontaneous orders, Hayek maintained, evolve in a process of cultural evolution in which natural selection operates on the order of the group. He said that “what may be called the natural selection of rules will operate on the basis of the greater or lesser efficiency of the resulting order of the group” (1967, p. 67, italics in original; cf. 1967, pp. 68, 71; 1973, p. 44). In cultural evolution, then, natural selection operates directly on the order of the group, which in turn is produced by the individuals’ following certain rules. Thus, selection operates on acquired characteristics like rules indirectly, via the order they produce. Some groups, Hayek added, have rules and orders that are more “efficient” (1967, p. 71), “advantageous” (1967, p. 71), or “beneficial” (1978, p. 162). Such rules and orders are more conducive to survival, Hayek believed, and confer an advantage to the group in the struggle for existence: “Those groups practicing the most advantageous customs will have an advantage in the constant struggle with adjacent groups” (Carr-Saunders, 1922, p. 223; quoted in Hayek, 1967, p. 67; 1973, p. 148). Hence, there is differential survival. Groups with more efficient rules and orders tend to grow and multiply, while groups with less efficient rules and orders tend to perish and disappear. In Hayek’s own words:

The individual may have no idea what this overall order is that results from his observing such rules as those concerning kinship and intermarriage, or the succession of property, or which function this overall order serves. Yet all the individuals of the species which exist will behave in that manner because groups of individuals which have thus behaved have displaced those which did not do so. (1967, p. 70)

The structures [i.e. orders] formed by traditional human practices are ... the result of a process of winnowing or sifting, directed by the differential advantages gained by groups from practices adopted for some unknown and perhaps purely accidental reasons. (1979, p. 155)

In sum, on Hayek’s view, cultural evolution is a matter of natural selection operating on the order of the group.¹ Since the order is produced in part by the rules

followed by group members, selection operates indirectly on characteristics that may be acquired. It should be said that Hayek occasionally gave the impression that cultural evolution works through imitation rather than natural selection. According to the mechanism of imitation, members of less prosperous groups either join more prosperous ones, or choose to adopt their rules and customs (1979, p. 159; cf. Vanberg, 1986, p. 85). On the basis of such remarks, some commentators have concluded that Hayek's theory of cultural evolution relies primarily on imitation (Tomlinson, 1990, p. 48). This interpretation, I believe, is difficult to maintain. Hayek made it quite clear that he saw group selection as the most important mechanism of cultural evolution. He even wrote that "cultural evolution is founded wholly on group selection" (1984, p. 318; cf. 1979, p. 202).

Since groups survive and prosper because of differential advantages, Hayek went on to describe evolved rules and orders as "efficient," "beneficial," and "advantageous." For example, he wrote: "we are bound to explain the fact that the elements [i.e. the individuals] behave in a certain way by the circumstance that this sort of conduct is most likely to preserve the whole" (1967, p. 77). He added that the term "function" is indispensable when talking about spontaneous social orders (1973, p. 28), and that a spontaneous order "will always constitute an adaptation" (1973, p. 44). In a later work, he argued: "That ... the inherited traditional rules ... should often be most beneficial to the functioning of society, is a truth the dominant constructivistic [socialist] outlook of our time refuses to accept" (1979, p. 162). Evolved rules tend to be not only advantageous, efficient, and beneficial, but adaptive and functional as well.

The theory of cultural evolution serves to explain how the order of the free market, and the rules underlying it, evolved. In short, groups who adhered to these rules – that is, respected private property and so on – had an advantage in the struggle for

existence, and won out over groups who did not. Moreover, the claim that the order of the free market is an adaptation explains why it works so well, and why it must not be replaced by an artificial order, as socialists would want (1988, p. 6 ff). In Hayek's last work, he wrote that "civilization depends, not only for its origin but also for its preservation, on what can be precisely described only as the extended order of human cooperation, an order more commonly, if somewhat misleadingly, known as capitalism" (1988, p. 6). By the late seventies, Hayek had realized that group selection was no longer as popular among biologists as it used to be. Nevertheless, he insisted that his theory of cultural evolution remained correct. He wrote: "Although the conception of group selection may now not appear as important as it had been thought after its introduction ... there can be no doubt that it is of the greatest importance for cultural evolution" (1979, p. 202).

3. Alexander M. Carr-Saunders

The main thesis of the present paper is that Hayek's theory of cultural evolution was significantly inspired by Alexander M. Carr-Saunders. In this section, I discuss some important characteristics of Carr-Saunders' work, and spell out the argument in support of my thesis. So far, Hayek literature has all but ignored the link between the two. The only writer who has suggested that Carr-Saunders influenced Hayek appears to be David Ramsay Steele, who in a footnote remarked: "The influence of ... parts of [Carr-Saunders' book The Population Problem (1922)] upon Hayek is ... highly evident, a fact of interest to students of Hayek's intellectual biography and the 'LSE connection'" (Steele, 1987, p. 194). Steele, however, did not argue the case. Since Hayek himself neither affirms nor denies that he was inspired by Carr-Saunders, the case must be settled on the basis of other evidence.

Carr-Saunders was a British biologist turned demographer and sociologist. Born in 1886, he was educated at Eton and at the University of Oxford, where he proved a gifted student of biology (Stamp, 1968, p. 319). Carr-Saunders served as demonstrator in zoology from 1921 to 1923, when he accepted the Chair of Social Science at the University of Liverpool (Morrell, 1997, pp. 48-49). In 1937 he became Director of the London School of Economics, where he remained until his retirement in 1957 (Stamp, 1968, p. 319). He is also known for his key involvement in the British Eugenics movement (Blacker et al., 1967, p. 4), and for his active role in establishing university colleges overseas (Stamp, 1969, p. 319). He was knighted in 1946, and died in 1966.

A reader of Hayek's work on cultural evolution will be struck by the sheer number of references to The Population Problem (Carr-Saunders, 1922). Indeed, from 1967 to 1988, Hayek looked to the book for support in virtually every passage in which he discussed the theory of cultural evolution.² It is clear that Hayek was well aware of Carr-Saunders' work, and took it to be highly relevant for his own purposes. Thus, there is prima facie evidence that Carr-Saunders' work had an impact on Hayek's thought on evolutionary matters. Furthermore, as we will see next, there are striking structural similarities between Hayek's theory of cultural evolution and that of Carr-Saunders.

The Population Problem is a treatise on the "quantity and quality of the population" (1922, p. 17). The book is an attempt to put problems of population in new perspective by giving them a systematic treatment from a historical and evolutionary perspective (p. 5). Every people at every time, in Carr-Saunders' view, faces problems of quantity, and the need to solve it has had "a profound effect on all societies" (pp. 476-7). In particular, the threat of overpopulation among what Carr-Saunders called "primitive races" has spawned powerful traditions of abstention, abortion, and infanticide (p. 476). When it comes to problems of quality, Carr-Saunders discussed how the

development of human races has been affected by “germinal changes” in physical and mental characteristics (pp. 477-8). He concluded that germinal changes might improve the physical condition of the human race, but that “the course of history is in the main dependent upon changes in tradition” (pp. 481-2).

Central to the argument of The Population Problem is the thesis that every population has an optimum size. Given an area of land, the arts of production, social conditions, and so on, there is an optimum number, viz. the number that maximizes return per capita (pp. 200-1, 476). Carr-Saunders maintained that as a matter of fact human populations regulate their numbers in such a way that the optimum size is approximated. Several different factors serve to regulate numbers, and in particular to limit the increase of the population. For example, “primitive peoples” rely on prolonged abstention from intercourse, abortion, and infanticide to maintain their optimum size, and these factors tend to be present to the appropriate degree (p. 214).

Carr-Saunders asked how the customs limiting population growth came to be practiced to the appropriate degree. He answered:

Now men and groups of men are naturally selected on account of the customs they practise just as they are selected on account of their mental and physical characters. Those groups practising the most advantageous customs will have an advantage in the constant struggle between adjacent groups over those that practise less advantageous customs. Few customs can be more advantageous than those which limit the number of a group to the desirable number, and there is no difficulty in understanding how – once any of these three customs had originated – it would by a process of natural selection come to be so practised that it would produce an approximation to the desirable number. (p. 223)

The question is answered in terms of “group selection,” a term that Carr-Saunders used freely (cf. p. 455). According to the theory he developed, first, there are differences between groups of people, in particular between the customs and traditions

adhered to by different groups. Second, natural selection acts on differences between groups, in particular on the differences in customs between groups. Third, groups practicing the most advantageous customs have an advantage in the struggle with other groups. Thus, the surviving groups practice the most advantageous customs – in this case, customs that serve to regulate numbers in the appropriate way.

In a carefully worded passage, Carr-Saunders continued:

... the tradition acquired and present at any one time may form the basis for the selection of men and of groups of men. There are often, especially among the higher races, differences in tradition as between the groups and classes in the same race. The differences are usually much greater between different races. The tradition present in a race, whether because it includes a higher degree of skill, enables a greater degree of coherence to be realized, is the foundation of more vigorous endeavour, or because it is a combination of these and other elements, may enable one race, when in conflict with other races, to overcome those other races, should the latter be possessed of a tradition, which, taken as a whole, is, relatively to the conditions of the contest, less valuable. (pp. 416-7)

The first part of the quote repeats Carr-Saunders' claim that natural selection acts not only on individuals, but on groups as well. As a result, selection acts on differences between races and between classes within a race. In this process of selection, races that practice more valuable traditions will tend to overcome those that practice less valuable ones.

By way of illustration, Carr-Saunders discussed the differences between those European races that are "larger and more prosperous," and those that are "smaller and weaker" (p. 416). In particular, he said, "The attitude of the Englishman is very different from that of the Dane, who will tell you that Denmark is only a little country that wants to be left alone" (p. 416). There is no doubt here which race possesses the more valuable tradition. Carr-Saunders apparently also believed that the upper classes

were the most valuable, as he deplored the “unfavorable germinal changes” which would result from a reduction in their birthrates (pp. 475-6). If the upper classes were more valuable as a result of cultural evolution, this would be consistent with Carr-Saunders’ claim that group selection operates between classes as well as between races.

Carr-Saunders’ theory of cultural evolution is strikingly similar to that of Hayek. Both believed that cultural evolution is a matter of group selection rather than of individual selection, imitation, or some other mechanism. While Carr-Saunders did not draw Hayek’s distinction between rules and order, both of them believed that selection operates (directly or indirectly) on the rules or traditions adhered to by different groups. Furthermore, both maintained that the characteristics on which selection operates may be acquired as well as inherited. In Carr-Saunders’ terms, differences in traditions between groups may or may not be “a measure of more fundamental [germinal] differences” (1922, p. 417). Thus, with the exception of the distinction between rules and order, the two main elements of Hayek’s theory of cultural evolution are clearly present in Carr-Saunders’ work.

The similarities between the theories of Hayek and Carr-Saunders are especially notable since a belief in cultural evolution in no way implies a commitment to any particular theory or mechanism of evolution. While not conclusive by themselves, strong structural similarities suggest that one of the two thinkers influenced the other, or that they borrowed from similar sources. Clearly, Carr-Saunders could not have drawn on Hayek’s work, since The Population Problem was published when Hayek was still a student at the University of Vienna (Gamble, 1993, pp. 15-6), some 45 years before the appearance of Hayek’s ‘Notes’ in 1967. Furthermore, Hayek explicitly said he knew of no one before Carr-Saunders who articulated the thesis that selection operates on acquired habits and traditions (Hayek, 1988, p. 16). This

statement undercuts the hypothesis that the structural similarities between Hayek's theory and that of Carr-Saunders result from their drawing on similar sources.³ Thus, the influence is likely to have run from Carr-Saunders to Hayek.

The fact that Hayek repeatedly quoted Carr-Saunders' work, and the fact that their theories are so similar in relevant respects, are only some of the considerations that support Carr-Saunders' influence on Hayek. There are several other reasons to believe that Carr-Saunders significantly inspired Hayek's evolutionary thought.

Hayek and Carr-Saunders knew each other well, as they were close colleagues at the London School of Economics between 1937 and 1949. Hayek held a professorship at the LSE from 1932 to 1949, when he moved to Chicago (Hayek, 1994, p. 76), and Carr-Saunders served as the Director of the LSE from 1937 to his retirement in 1957 (Stamp, 1968, p. 319). During World War II, the two were among a small number of teachers who were evacuated to Cambridge, where Hayek was a member of the Appointments Committee that Carr-Saunders chaired, and that, incidentally, was responsible for hiring the philosopher Karl Popper (Watkins, 1997, pp. 657-8). Thus, not only did Hayek know Carr-Saunders' work well, he had known the man for some three decades before publishing the 'Notes' in 1967. For this reason, the two had ample opportunity to discuss their scientific, social and political views. It is hard to believe that they never seized this opportunity, especially since both were relatively well known social theorists by the time they became colleagues.

The contention that Hayek and Carr-Saunders had a close intellectual relationship is supported by the fact that they maintained a correspondence. The Hoover Institution Archives contain at least fifteen letters between the two.⁴ Though most of their correspondence concerns administrative matters, some indicate that Hayek and Carr-Saunders read and discussed each other's work. In 1949, for example, Carr-Saunders wrote a two page handwritten response to a recent publication of Hayek (Carr-

Saunders, 1949). In the letter, Carr-Saunders listed a number of points of agreement between the two, but noted that he had “difficulties about the composition of the ‘intellectuals’ and about the way in which they gain and exert influence” (p.1). Also, he objected that Hayek failed to discuss “socialism and the prevailing cosmology,” and argued that “naturalism” – which Carr-Saunders called “demonstrable nonsense” – was in part to blame for the appeal of socialism (p. 2). Hayek appears to have kept Carr-Saunders informed about his publications also after leaving London. So, in 1952 Carr-Saunders wrote to thank Hayek for sending a copy of his book *The Sensory Order*, which was published that year (Carr-Saunders, 1952).⁵

Finally, Hayek had clear incentives to adopt Carr-Saunders’ theory of cultural evolution. Hayek was fascinated by the functionality of the price mechanism – a central theme of his work – and in 1945, according to Martin de Vlieghe, had posed himself the question “How could such a marvelous functionality come into existence?” (1994, p. 285). Carr-Saunders’ theory, with its group selectionism, provided the beginning of an answer to this question. The fact that the new theory could serve an important function in Hayek’s system of thought, in combination with Hayek’s acquaintance with Carr-Saunders and his work, as well as the remarkable structural similarities between their theories, strongly suggests that Carr-Saunders significantly inspired Hayek’s evolutionary thought.

4. Oxford zoology

In the present section I broaden my focus, and argue that Hayek’s association with Carr-Saunders reveals the influence of Oxford zoology on Hayek’s evolutionary thought.⁶ As we have seen, Carr-Saunders studied biology at Oxford, and remained there as a demonstrator of zoology for several years before moving to Liverpool. However, there are many other indications that Hayek drew inspiration from Oxford

zoology, including a clearly demonstrated interest in various zoological issues, and a number of references to important Oxford zoologists other than Carr-Saunders. Incidentally, since some of the other Oxford figures themselves appear to have been inspired by Carr-Saunders, the considerations brought forth in this section indicate that Carr-Saunders, through the work of his fellow Oxford zoologists, influenced Hayek indirectly as well as directly.

Even a cursory glance at some of Hayek's writings reveals a definite interest in zoology, a field that includes ethology, the study of animal behavior, and ecology, the study of interrelationships between organisms and their environment. Consider, as an example, Hayek's 'Notes' (1967, pp. 66-81). The article contains a wealth of references to titles like 'Termite Nests: A study of phylogeny of behavior' (Emerson, 1938), Behavior and Evolution (Roe and Simpson, 1958), and Animal Dispersion in Relation to Social Behavior (Wynne-Edwards, 1962). Moreover, the 'Notes' relies on a great number of examples from the animal kingdom, as Hayek discussed the behavior of geese, buffaloes, and lions, as well as bees, ants, and termites (1967, p. 69). Throughout the article, furthermore, Hayek emphasized how order results from a complex interplay between the behavior of organisms and the environment in which they live. Elsewhere, Hayek praised "the great development of the fascinating study of ethology" (1979, p. 153).

Beyond his interest in issues of zoology, however, Hayek's work shows clear signs of an Oxford zoology influence. Most of the zoologists to whom Hayek referred were students or teachers of zoology at Oxford at some point in time, and many were there around 1920, when Carr-Saunders published his ideas on population. In what follows, I discuss three other important Oxford zoology influences on Hayek's evolutionary thought: Huxley, Hardy, and Wynne-Edwards. This is not, however, an exhaustive list. Other names that could be mentioned in the context include 1960 Nobel laureate Peter

Medawar (1915-1987), a 1935 Oxford graduate who remained there until 1947 (Morrell, 1997, p. 51),⁷ and 1973 Nobel laureate Nikolaas Tinbergen (1907-1988), who came to Oxford in 1949 and was professor of animal behavior from 1966 to 1974 (Morrell, 1997, p. 274).⁸

4.1 Julian S. Huxley

Julian S. Huxley, born in 1887, came to Oxford from Eton in 1906 (Zuckerman, 1986, p. 439). He gained a degree in zoology in 1909, and won a fellowship that allowed him to work for a year in a marine biological laboratory in Naples. Later he returned to Oxford zoology as a lecturer from 1910 to 1912, and as a senior demonstrator from 1919 to 1925, when he was appointed professor of zoology at King's College, London (Zuckerman, 1986, p. 439). During his time in Oxford, he tutored several students who were to become prominent zoologists in their own right, including Charles S. Elton (1900-1991), Wynne-Edwards, and Hardy (Baker, 1976, p. 211). Huxley passed away in 1975.

In his major work Evolution: The modern synthesis (1974), Huxley appears to have defended both group selection (under certain circumstances) and the idea that behavior shapes evolution. About group selection, he wrote: "An interesting type of selection ... may occur in forms which exist in numerous and relatively isolated local populations" (p. 479). He referred to this kind of selection as intergroup selection, and asserted: "It is probable that this type of evolution has played a considerable role in some kinds of species" (p. 479). As for the evolutionary significance of behavior, Huxley wrote that "an organism may in the first instance become adapted to an ecological niche merely by behaviour (whether genetic or purely habitual) and any consequent non-heritable modifications" (p. 524, cf. p. 304). The contrast between "genetic" and "purely habitual," among other things, indicates that he allowed for the possibility that such

behavior may not be inherited. He added: “The principle is an important one which would appear to have been unduly neglected by recent evolutionists” (p. 524).

Hayek frequently referred to Huxley, both in support of the idea of group selection and in support of the idea of selection for acquired characteristics.⁹ Also, there are passages in Hayek’s work in which a debt to Huxley is not clearly acknowledged, but which nonetheless appear to reflect his influence. For example, when Hayek wrote that cultural evolution because of selection for habits and the like “simulates Lamarckism” (e.g. in Hayek 1988, p. 25, italics in original), his phrase is identical to Huxley’s own (e.g. 1974, p. 304). Finally, Hayek and Huxley met at the 1959 Darwin Centennial Celebration in Chicago. Hayek was involved in some of the preparations before the meeting,¹⁰ where Huxley delivered the Convocation Address (Huxley, 1970, p. 192). Later, when Hayek had realized that biologists no longer considered group selection quite so important, he invoked Huxley to underscore the differences between biological and cultural evolution (Hayek, 1988, p. 25). It seems clear, therefore, that Huxley exerted some amount of influence on Hayek’s evolutionary thought.

Huxley himself may have been inspired by Carr-Saunders. Though Huxley did not cite Carr-Saunders in his Evolution (1974), Huxley referred to both Carr-Saunders and The Population Problem in his memoirs: “It was around this time [1925] that I read my old colleague Carr-Saunders’ remarkable book on population, in which he showed that primitive people all over the world had deliberately adopted some method of regulating their numbers. This made me think hard” (Huxley, 1970, p. 149). Moreover, the two knew each other since well before 1925. They were colleagues at Oxford in the early twenties, of course, but they also ran experiments together (Huxley, 1970, p. 143), and jointly participated, with Elton and others, in the 1921 expedition to Spitsbergen (Huxley, 1970, p. 128). In 1935 Carr-Saunders and Huxley collaborated on the book We Europeans (Huxley et al., 1935; see Huxley, 1970, p. 216). They kept

in touch also later in life, for Huxley and his wife spent a few days with Carr-Saunders and his wife shortly before Carr-Saunders' death in 1966 (Huxley, 1973, p. 229).

Thus, it is not implausible that Huxley's views on group selection, and the evolutionary significance of behavior, were in part shaped by Carr-Saunders' influence.

4.2 Alister C. Hardy

Alister C. Hardy, born in 1896, also received his education at Oxford (Porter, 1994, p. 308), where he was tutored by Huxley (Morrell, 1997, p. 284). Although Huxley wanted him to be demonstrator of comparative anatomy, Hardy left Oxford in 1921 – one year after his graduation – in order to work for the Ministry of Fisheries (Morrell, 1997, p. 271). He had developed an interest in marine biology when, like Huxley, he spent a year at the Naples research station (Morrell, 1997, p. 284). After serving at Hull and Aberdeen, he came back to Oxford as professor of zoology in 1946 (Porter, 1994, p. 308). Hardy remained in Oxford until 1963, when he took up a lectureship in Aberdeen (Porter, 1994, p. 308). He died in 1985.

To the best of my knowledge Hardy did not defend a theory of group selection, but he did emphasize what he called “behaviour as a selective force” (cf. 1965, p. 153). In particular, he dedicated a whole chapter of one of his most important books, The Living Stream (1965), to the topic. Hardy feared that contemporary evolutionary theory was incomplete, since it failed to consider “the behavioural side in the working of animal evolution” (p. 155). He asked: “How, in fact, do I believe that changes in behaviour alter the course of evolution? Quite simply by a form of Darwinian selection” (p. 161, italics in original). For example, he wrote, if birds of some species learn that they can get more prey by pecking deeper into the bark of trees, over time that species is likely to develop a new shape of beak. The new shape is a result of

Darwinian selection, but the “evolutionary change is one caused initially by a change in behaviour” (pp. 170-171). Thus, the change in behavior precedes the change in genes, not the other way around. In Hardy’s view, this is “one of the major factors in the evolutionary process: by this means, the changing habits of animals become, at least in the higher groups, the dominant factor in the process” (p. 163).

Hayek invoked Hardy in support of the thesis that selection acts on acquired characteristics, and that the acquisition of such characteristics may over time come to affect the purely genetic material of a species.¹¹ Thus, Hayek wrote that “acquired cultural traits may affect physiological evolution – as is obvious in the case of language” (1979, p.155; cf. p. 199). He added, however, that he found it hard to believe that Hardy would be “the first to point out this reverse effect of cultural on biological evolution,” but called the idea “a major breakthrough of decisive importance” (1979, p. 199). No matter, it is clear that Hayek, in Hardy’s work, found support for the thesis that natural selection operates on acquired as well as on inherited characteristics.

It is unclear, however, to what extent Carr-Saunders influenced Hardy’s intellectual development. The Living Stream contains no references to Carr-Saunders’ work. Instead, Hardy credited Huxley – especially Evolution: A modern synthesis (1974), and the passages quoted above – with directing him to the idea of behavior shaping evolution (Hardy, 1965, pp. 161-2). Yet, Carr-Saunders and Hardy must have known each other, since they were at Oxford at the same time. Moreover, it is hard to imagine that Hardy was not exposed to the ideas expressed in Carr-Saunders’ work at some point during his time at Oxford.

4.3 Vero C. Wynne-Edwards

Born in 1906, Vero C. Wynne-Edwards came to Oxford in order to study zoology in 1924 (Wynne-Edwards, 1985, p. 489). He was tutored first by Huxley, and then by Elton, himself a former student of Huxley (Baker, 1976, p. 211). Elton, who was greatly interested in population ecology, was responsible for giving Wynne-Edwards his lasting interest in questions of population, and in fact suggested early on that he should read Carr-Saunders' The Population Problem (see Wynne-Edwards, 1985, pp. 490-2). Wynne-Edwards later served at McGill and at the University of Aberdeen (1985, pp. 500-1). He died in 1997.

Wynne-Edwards' major work, Animal Dispersion in Relation to Social Behavior (1962) is a forceful defense of group selection among natural populations. Interestingly, Wynne-Edwards' theory of group selection is virtually identical to that of Carr-Saunders. Wynne-Edwards too was concerned with explaining the control of population, and assumed that there is an optimum population size for each given population and habitat; that natural populations as a matter of fact closely approximate this size; and that groups of animals exhibiting the right behavior have been favored by evolution (Wynne-Edwards, 1962). In his own words: "it must be highly advantageous to survival, and thus strongly favoured by selection, for animal species (1) to control their own population-densities, and (2) to keep them as near as possible to the optimum level for each habitat they occupy" (p. 9); "Evolution at this level can be ascribed, therefore, to what is here termed group selection" (p. 20). Just like Carr-Saunders, Wynne-Edwards allowed selection to operate also on acquired characteristics like traditions:

Conventional behaviour frequently turns out to be essentially inborn or instinctive... But a second very important constituent of conventions is found in tradition, the distinctive feature of which is the element of learning acquired by each new generation from its predecessors. (p. 449)

In sum, Wynne-Edwards' theory, though applied to species other than humans, is hard to distinguish from that of Carr-Saunders.

Hayek repeatedly invoked Wynne-Edwards' book, which appeared some five years before the 'Notes.'¹² Hayek referred to it both in support of group selection, and in support of the idea that human traditions may be the result of an evolutionary process (cf. especially Hayek, 1973, p. 164). Because of the similarities between Wynne-Edwards' theory and that of Carr-Saunders, Hayek is likely to have seen the two as mutually supportive. I take it for granted, therefore, that Wynne-Edwards exerted some amount of influence over Hayek's work. So does Viktor J. Vanberg, who wrote: "When Hayek made the notion of group selection a key concept in his theory of cultural evolution he obviously was influenced by the discussion on 'group selection' in biology, and notably by V. C. Wynne-Edwards' (1962) treatise on the subject" (Vanberg, 1986, pp. 85-6; cf. Steele, 1987, p. 185).

Wynne-Edwards claimed to have developed his theory independently of Carr-Saunders, and to have found out "only relatively late in the day" that "so distinguished a student" had anticipated his conclusions (1962, pp. 21-2; cf. 1985, p. 492). Wynne-Edwards' claim of independent discovery is somewhat dubious, however, since he made it clear that he had read The Population Problem well before developing his own theory. In the introduction to Animal Dispersion (1962), he wrote:

... on my tutor Mr. Elton's strong recommendation, I bought a copy of The Population Problem a few months before my final examinations at Oxford in 1927; but it was not until nineteen chapters of the present work had been finished, in 1959, that I re-read Carr-Saunders' chapter on 'The regulation of numbers among primitive races,' and, not without astonishment and satisfaction, found so many of my own conclusions anticipated. (1962, p. 493, my italics)

Of course, "re-read" implies having read it before. Thus it is highly likely that, at some level of consciousness, Carr-Saunders' work also influenced that of Wynne-Edwards.

4.4 Discussion

In this section, I have argued that Hayek's evolutionary thought was inspired by early twentieth century Oxford zoology. Not only did Hayek have a clearly demonstrated interest in various zoological issues, but he also drew on a number of Oxford zoologists, especially Huxley, Hardy and Wynne-Edwards. All three were present around 1920, when Carr-Saunders developed and published his ideas on population; it is hardly a coincidence that similar ideas surfaced in their work.¹³ It is relevant that these events took place during "the eclipse of Darwinism," when the Darwinian conception of evolution was under heavy attack (Huxley, 1974, p. 22 ff; Bowler, 1983), and that Oxford at the time was perhaps the main Darwinian stronghold (Morrell, 1997, p. 269). Therefore, the evolutionary conception defended by Carr-Saunders, Huxley, Hardy, and Wynne-Edwards to a large degree reflects their common Oxford background.

In passing, I have argued that at least Huxley and Wynne-Edwards, but likely also Hardy, were themselves inspired by Carr-Saunders. My emphasis on the influence exerted by Carr-Saunders, as opposed to that exerted on him, is not to suggest that the influence was a one-way affair. However, it is significant that Carr-Saunders published his ideas about group selection and selection for acquired characteristics so much earlier than the others. This fact clearly suggests that Carr-Saunders was mainly responsible for these ideas, and that he affected the others at least in this respect. Thus, this section provides evidence to the effect that Carr-Saunders influenced Hayek's evolutionary thought also indirectly, via the other Oxford zoologists.

5. The traditional picture

Existing Hayek scholarship has suggested two main sources of influence on Hayek's evolutionary thought: the Austrian economist Carl Menger (1840-1921), and the group

of thinkers to which Hayek referred as the eighteenth-century British moral philosophers.¹⁴ The latter include most notably Bernard Mandeville (1670-1733), David Hume (1711-76), Adam Smith (1723-90), and Adam Ferguson (1723-1816). In this section, I discuss the possible influences of these two sources on Hayek's evolutionary thought. Though a strong case can be made for their influence, it underdetermines what was most characteristic of Hayek's theory of cultural evolution.

For reasons of space I ignore Herbert Spencer (1820-1903), William Graham Sumner (1840-1910), and the Social Darwinists, who are occasionally discussed in the secondary literature, but whose influence on Hayek appears to have been less notable. Scholars interested in these connections have not made the case for direct influence.¹⁵ Moreover, Hayek repeatedly denounced the Social Darwinists, who in his view committed grave mistakes when they concentrated on individual rather than group selection, and on the selection of inherited rather than acquired characteristics (see e.g. 1973, p. 23).

5.1 Carl Menger

There is a solid consensus among Hayek scholars that Menger's thought influenced Hayek in decisive ways. John Gray, in his study Hayek on Liberty, wrote that "Hayek's debts to the Austrian school founded by Menger ... are so many and so obvious that they tend to obscure those elements of his thoughts that are original" (1984, p. 16). According to Gray, Hayek developed the "general contentions of the Austrian school" (ibid.), one of which was Menger's "thesis that social institutions arise as a result of human action but not of human design" (p. 33). D. P. O'Brien said that "the evolutionism on which Hayek laid such stress ... comes from what was undoubtedly the most fundamental Austrian influence on Hayek – Menger himself" (1994, p. 348; cf. Ebenstein, 2001, pp. 23-4).

There is little doubt that Menger's influence on Hayek was of the first importance. Hayek himself explained that he decided to pursue a degree in economics at the University of Vienna shortly after World War I because he had read Menger's Principles of Economics (1871) and "really got hooked" (Hayek, 1994, p. 48). Menger, who founded the Austrian school of economics, held a chair in economics at the University of Vienna between 1873 and 1903 (Gamble, 1996, p. 13). Although the two never met, Menger influenced Hayek via Friedrich von Wieser (1851-1926) and Ludwig von Mises (1881-1973), both of whom were prominent members of the Austrian school in Vienna (Gamble, 1996, p. 13). In particular Menger's theory on the origin of social phenomena made an impression on Hayek. In Menger's work, Hayek said, "[the] conception of the spontaneous generation of institutions is worked out more beautifully than anywhere I know" (1994, p. 57). Hayek returned to Menger's texts many times. In 1934, for example, Hayek accepted the task of editing a new edition of Menger's writings (Hayek, 1994, pp. 13-4).

Menger's influence on Hayek is supported by their shared interest in the origin of social institutions. Menger did not use the term "cultural evolution," but discussed what he called the "organic origin of institutions" in two of his major works: Principles of Economics ([1871] 1981) and Problems of Economics and Sociology ([1883] 1963). According to Menger, social structures such as political institutions were often not organized by a thinking mind but have organic origin, that is, arose in a natural process of development. In Menger's words, phenomena of organic origin are not the result of "an intention aimed at this purpose," but "'natural' products (in a certain sense), ... unintended results of historical development" ([1883] 1963, p. 130, italics in original). Social structures of this kind include phenomena such as law, language, money, and markets (pp. 130, 158). In Hayek's view, Menger actually provided a theory of cultural evolution closely analogous to the theory of evolution in

the biological realm (Hayek, 1967, p. 101). Clearly, both Hayek and Menger were concerned with the unintended consequences of individual action, and both emphasized that phenomena such as law, language, money, and markets are the result of human action but not of human design. To use the modern term, Menger and Hayek agreed that such phenomena are the result of cultural evolution.

Yet, there are important differences between Hayek's theory and that of Menger. In particular, the two differed on the mechanism whereby social institutions arise. Consider Menger's paradigmatic account of the origin of money, a case that he discussed in both Principles and Problems ([1871] 1981, chapter 8; [1883] 1963, pp. 152-8). The institution of money appeared, according to Menger, because economizing individuals realized that it was in their interest, first, to trade goods for some commodity desired only because it is easily tradable for other goods, and second, to trade that commodity for goods desired for their own sake ([1871] 1981, pp. 257-60). He wrote:

As each economizing individual becomes increasingly more aware of his economic interest, he is led by this interest, without any agreement, without legislative compulsion, and even without regard to the public interest, to give his commodities in exchange for other, more saleable, commodities, even if he does not need them for any immediate consumption purpose. With economic progress, therefore, we can everywhere observe the phenomenon of a certain number of goods ... becoming ... acceptable to everyone in trade, and thus capable of being given in exchange for any other commodity. ([1871] 1981, p. 260, italics in original)

Thus, in Menger's view, the institution of money was established when people naturally came to accept some easily saleable good or goods as a means of exchange. The case of money illustrates how it is possible for social structures of organic origin to appear as the unintended consequence of individual action. On Menger's account, however, they appear as the result of individuals' learning how to act in their personal

interest (cf. [1883] 1963, p. 158). In contrast with Hayek, therefore, Menger nowhere relies on the mechanism of natural selection, whether at the level of the individual or that of the group. Evidently, then, there is no mention of natural selection for acquired characteristics either.

In conclusion, there is good reason to believe that Menger exerted a decisive influence on Hayek's thought, evolutionary and otherwise. At the same time, their theories on the origin of social institutions differed in important respects. In particular, they disagreed on the mechanism of evolution; where Hayek favored natural selection at the level of the group, Menger defended a conception based on individuals' learning to act in their self-interest. Thus, the influence of Menger underdetermines Hayek's group selectionism as well as his idea of selection for acquired characteristics.

5.2 The British moral philosophers

The second main source of influence suggested by Hayek scholars is the eighteenth-century British moral philosophers. For example, O'Brien wrote:

With the exception of David Hume, the three authors to whom Hayek refers most are Adam Smith, Adam Ferguson and Edmund Burke. It is on the work of these authors that Hayek grounded his ideas of spontaneous order, selective evolution, and the fundamental importance of unintended consequences of individual human actions taken on the basis of limited knowledge.¹⁶
(1994, p. 344)

Moreover, O'Brien continued, "Hume is much the most important single source for Hayek's general position" (1994, p. 345). O'Brien's view has been echoed by Hodgson, who wrote that "Hayek repeatedly and proudly displays his intellectual genealogy through Carl Menger, back to Adam Smith, David Hume, and Bernard de Mandeville" (1994, p. 408).

A strong case can be made for the influence of the British moral philosophers on Hayek's intellectual development. It is true that they are well known as proponents of the idea of spontaneous order (cf. Gordon, 1991, p. 119), and that Hayek often mentioned them as his intellectual predecessors. He argued that Mandeville, Hume, Smith, and others laid the foundations for evolutionary theory when they realized that a wide range of phenomena, including language, law and morals, appeared as the result of human action even though they were never consciously designed. In an essay called 'The Result of Human Action but not of Human Design' (1967, pp. 96-105), for instance, Hayek explained that

... the British moral philosophers of the eighteenth century ... built up a social theory which made the undesigned results of individual action its central object, and in particular provided a comprehensive theory of the spontaneous order of the market.

There can be little question that the author to whom more than any other this 'anti-rationalist' reaction is due was Bernard Mandeville. But the full development comes only with Montesquieu and particularly with David Hume, Josiah Tucker, Adam Ferguson, and Adam Smith. (1967, p. 99)

Hayek wrote that Mandeville developed a theory of law, in which laws grow "not through the design of some wise legislator but through a long process of trial and error" (1978, p. 260), that Hume "demonstrates that our moral beliefs are ... an 'artifact' in the special sense in which he introduces this term, that is, a product of cultural evolution, as we would call it" (1967, p. 111), and that Ferguson talked about the spontaneous formation of social orders when he wrote: "Nations stumble upon establishments, which are indeed the result of human action, but not the execution of any human design" (Ferguson, 1767, p. 187; quoted in Hayek, 1973, p. 159).

Though it is correct to say that the British moral philosophers influenced Hayek in important respects, they clearly could not have provided him with his theory of

cultural evolution. Eighteenth century ideas about the origin of social institutions are substantially different from those of Hayek. Notably, the moral philosophers, who were active before Darwin, did not have access to a coherent theory of natural selection at all (Hodgson, 1994, p. 408). Evidently, therefore, Hayek could not have borrowed the idea of cultural evolution through natural selection from them. Thus, the influence of the British moral philosophers, like that of Menger, cannot account for the most characteristic elements of Hayek's evolutionary thought.

6. Discussion

In this paper, I have explored the historical origins of Hayek's theory of cultural evolution. It is clear that Menger and the eighteenth century British moral philosophers exerted a decisive influence on Hayek's thought. Nonetheless, the traditional account underdetermines what was most characteristic of Hayek's evolutionary theory, namely the idea that cultural evolution is a matter of group selection, and that natural selection operates on properties that may be acquired. To account for these features of Hayek's evolutionary thought, I have argued that he was significantly inspired by Alexander M. Carr-Saunders and Oxford zoology. Both the group selectionism and the idea that behavior shapes evolution were clearly enunciated at Oxford around 1920. I have argued that it cannot be a coincidence that these ideas would surface in the work of Huxley, Hardy, and Wynne-Edwards, since all three were present at Oxford around that time. Thus, I claim, Carr-Saunders influenced Hayek both directly, and indirectly via the other Oxford zoologists.

My account suggests that Hayek scholars may not have realized the extent of Hayek's debt to Darwin. Throughout his work, Hayek downplayed Darwin's importance for the development of evolutionary theory, instead emphasizing the importance of Hume, Smith, and the other moral philosophers (cf. Hodgson, 1993, pp.

159-61). In one characteristic passage, Hayek asserted: “A nineteenth-century social theorist who needed Darwin to teach him the idea of evolution was not worth his salt” (1973, p. 23). However, Oxford zoology was thoroughly Darwinian. According to Jack Morrell, for example, Oxford was “a leading center for evolutionary studies pursued in a Darwinian framework” (1997, p. 269). The claim that Hayek drew on Oxford zoology, therefore, suggests that Hayek’s debt to Darwin was significant.

Specifically, there is good reason to believe that Carr-Saunders’ evolutionary thought was influenced by Darwin’s The Descent of Man (1871). Carr-Saunders several times explicitly invoked the book in support of his theory,¹⁷ though unfortunately, the crucial passages quoted above lack references. Moreover, The Descent of Man includes passages that have been interpreted as espousing natural selection at the level of groups.¹⁸ Indeed, Alain Marciano and Maud Pélissier (1999) aspired to show that Darwin endorsed a theory of cultural evolution similar to that of Hayek. Carr-Saunders’ explicit debt to Darwin, in combination with Hayek’s debt to Carr-Saunders, provides further support of Darwin’s influence on Hayek. Since Hayek scholars have tended to emphasize the influence of Menger – who were less obviously influenced by Darwin – and the British moral philosophers – who preceded him – the scholars may not have realized the extent of Hayek’s debt to Darwin.

The account developed in the paper also suggests that historians of biology may not have properly recognized the importance of Carr-Saunders for the development of theories of group selection. Several writers have acknowledged that Carr-Saunders defended a theory of group selection at an early stage (Gilpin, 1975, pp. 3-10; Maynard Smith, 1976, p. 277). Gilpin, himself a group selectionist, wrote that The Population Problem “can only be compared to Darwin’s The Origin of Species. I would suggest that, even today, some fifty years after it was written, it would repay the efforts of population biologists who read it” (1975, p. xi). However, as Sober noted,

Gilpin and Maynard Smith “do not indicate whether this idea actually influenced group selectionist thinking in this century or merely represents an anticipation of it” (1984, p. 224). The considerations outlined above, though not by themselves conclusive, show rather clearly that Carr-Saunders not only anticipated, but also in fact inspired, later theories of group selection.

The discussion also suggests that Hayek was acquainted with the main elements of his mature theory of cultural evolution earlier than previously thought. Hodgson wrote that Hayek developed his idea of cultural evolution “relatively late” (1993, p. 153; cf. Caldwell, 2001, pp. 540-1). Bruce J. Caldwell objected to Hodgson’s assessment, and argued that “Hayek’s intrigue with evolutionary themes ... certainly dates at least to sometime in the 1950’s, and possibly back into the 1940’s” (Caldwell, 2001, pp. 542-3). Caldwell emphasized how Hayek’s thought on evolution was affected by his work on The Sensory Order, published as Hayek (1952), and by his exposure to biology at the University of Chicago – especially during the Darwin Centennial – in the 1950’s (Caldwell, 2000, pp. 9-13; 2001, p. 542). In Chicago, Hayek came to know among others the biologist Sewall Wright (1889-1988), who is famous for his adherence to group selection (Caldwell, 2000, p. 11; 2001, p. 542).¹⁹ No doubt, Hayek’s experiences in Chicago contributed to his interest in evolutionary theory.

Still, the association with Carr-Saunders strongly suggests that Hayek learned about the theory of group selection and the idea of selection for acquired characteristics already in London. As I have argued above, it is difficult to believe that Hayek would remain ignorant of the main argument of Carr-Saunders’ most important work, especially since the two knew each other well already at the time. If my argument is correct, Hayek was acquainted with the crucial elements of his mature theory of cultural evolution already during the 1930’s and 1940’s. It should be noted, however, that even if Hayek never thought about group selection before 1959, this would not

refute my thesis that Carr-Saunders and Oxford zoology were an important source of inspiration. For, the many references to Carr-Saunders, Huxley, and the others indicate that Hayek at the very least studied them carefully later on, and other influences on Hayek are themselves likely to have been influenced, to some degree, by Oxford zoology.

One may ask, of course, why Hayek published his thoughts on evolution only during the latter half of his career, if he learned about it so much earlier. The time lag may seem odd. In fact, however, there are a number of allusions to evolutionary thought in Hayek's work before the late sixties.²⁰ Moreover, early in his career and especially during his time in England, Hayek's interests focused on pure economics, such as monetary theory and the theory of economic cycles (Hayek, 1994, pp. 7-13). Only gradually did he develop what he called his "new interests," of which evolution was one (1994, p. 126). Caldwell (1988; 2000) has begun to explain how, and why, this transformation took place. There is nothing peculiar, therefore, about the thesis that Hayek learned about group selection rather early, but decided to publish on the matter only later.

One may also ask how it is possible that Hayek's autobiographical writings should fail to acknowledge the influence of Carr-Saunders, instead emphasizing the importance of Menger and the British moral philosophers (see Hayek, 1994)? If Carr-Saunders were indeed as important for Hayek's intellectual development as my account suggests, then one would perhaps expect to find this fact explicitly acknowledged in Hayek's autobiographical writings as well as in his footnotes. It is possible that Hayek wanted to escape the criticism that he was illegitimately importing biological concepts into social science (cf. 1973, pp. 22-3). By claiming that he drew on the British moral philosophers – the very sources he claimed Darwin used – Hayek could preempt that objection. This interpretation is strengthened by the fact that

Hayek's main autobiographical work (1994) makes no mention of either Carr-Saunders, Huxley, Hardy, Wynne-Edwards, Wright, or Emerson (see below). In contrast, Hayek had much to gain from associating himself with important economists and philosophers like Menger, Smith, and Hume, who were widely respected also outside of economics.

Another hypothesis is that Hayek wanted to distance himself from Carr-Saunders because of the latter's involvement in the eugenics movement. Hayek might have considered associating himself with eugenicists a bad rhetorical move for several reasons. When he published his 'Notes' in 1967, for example, the eugenics movement had been in decline for some time; before his death in 1966, even Carr-Saunders himself tried to gain distance from it.²¹ Moreover, the eugenicists were often motivated by what Hayek would have called socialist ideology, an ideology with which he certainly did not want to be linked. Either way, there were many reasons why Hayek, consciously or not, should downplay the importance of Carr-Saunders for the development of his thought, and instead emphasize the importance of intellectual giants like Menger, Smith, and Hume.

Similarly, one may ask why Hayek scholarship, with only one exception, should fail to consider the link between Hayek and Carr-Saunders. Ebenstein, for example, only makes passing reference to Carr-Saunders (2001, p. 247). Again, if the link between the two was as important as I claim, it may seem surprising that it should go almost unnoticed. Admittedly, the fact that Hayek did not mention Carr-Saunders in his autobiographical moments does constitute evidence against my thesis that his influence was significant. However, such evidence is only *prima facie*, as we have seen, since there were many different reasons why Hayek should downplay the importance of Carr-Saunders and other biologists for his intellectual development. Perhaps Hayek scholars have been inclined to accept Hayek's own picture of his

intellectual heritage without sufficient critical analysis. Since there are many reasons why a writer – consciously or not – should present a slightly skewed picture of his or her intellectual heritage, such first-person attribution of influence must be subjected to careful scrutiny.

In closing, it should be said that this paper does not aspire to present a complete picture of the history of Hayek's evolutionary thought. Evidently, there is a cultural, political, economic and social context that needs to be explored in a fuller account. Moreover, my thesis that Carr-Saunders and Oxford zoology – alongside Menger and the British moral philosophers – were among the most important influences on Hayek's evolutionary thought, does not imply they were the only notable influences. Others worth exploring include social anthropologists like E. E. Pritchard (1902-73), who spent most of his career at Oxford and whose work is frequently quoted in Hayek,²² and biologists like Alfred E. Emerson (1896-1976), a Chicago biologist with an interest in social insects, and another speaker at the Darwin Centennial.²³ Further work on the history of Hayek's evolutionary thought could shed more light on the history of both social and biological sciences, and on the context in which they developed.

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Notes

¹ According to modern construals of the idea of group selection, it is the thesis that natural selection operates on properties of the group is that makes Hayek a group selectionist in deed and not only in word (cf. Sober 1984, p. 280). Many other twentieth century biologists, however, do not explicitly draw the distinction between selection for properties of groups and selection for properties of individuals, and it would be anachronistic to fault them for not doing so.

² E.g. in Hayek (1967, p. 67; 1973, pp. 148-9; 1978, p. 292; 1979, pp. 154, 197; 1988, pp. 16, 156).

³ In particular, Hayek's claim makes it unlikely that he learned about selection for acquired characteristics directly from Menger, the British moral philosophers, or the Social Darwinists.

⁴ See the Friedrich A. von Hayek papers, Box 13, Folder 1; Box 14, Folder 11; Box 35, Folder 13, Hoover Institution Archives.

⁵ Unfortunately, there is no known collection of Carr-Saunders' papers. For this reason, Hayek's letters to Carr-Saunders are, at least for the time being, unavailable.

⁶ I thank an exceptionally generous anonymous referee for suggesting this line of argument.

⁷ Medawar is quoted e.g. in Hayek (1960, p. 440; 1979, p. 207).

⁸ Tinbergen appears e.g. in Hayek (1966, pp. 46, 65; 1973, p. 164; 1979, pp. 153, 197).

⁹ Huxley is cited e.g. in Hayek (1966, p. 12; 1973, p. 153; 1978, p. 293; 1979, pp. 153-4, 197; 1988, pp. 25, 121).

¹⁰ The Hayek papers contain the minutes from at least some of these meetings (Box 66, Folder 1, Hoover Institution Archives).

¹¹ See e.g. Hayek (1978, p. 292; 1979, p. 199; 1988, p. 25).

¹² For instance, in Hayek (1967, pp. 70, 77; 1973, p. 164; 1979, p. 202).

¹³ Also Elton emphasized the importance of behavior for evolution (Elton, 1930; cf. Hardy, 1965, p. 154).

¹⁴ Ebenstein has also mentioned the influence of Hayek's father, a part-time botanist (Ebenstein, 2001, p. 3).

¹⁵ See e.g. Gray (1984, pp. 103-10), Paul (1988), and Hodgson (1993, pp. 179-86).

¹⁶ References have been omitted.

¹⁷ See Carr-Saunders (1922, pp. 18, 43, 101, 339).

¹⁸ See e.g. Michael Ruse (1980, pp. 626-8), and Marciano and Pélissier (2000, pp. 245-7).

¹⁹ Wright is quoted e.g. in Hayek (1979, p. 202).

²⁰ See e.g. Hayek (1949, p. 6; 1955, p. 80; 1958, p. 232; 1960, pp. 58-9); cf. Caldwell (2001, pp. 542).

²¹ So his son reports, according to Ralf Dahrendorf (1995, p. 336).

²² Cf. e.g. Hayek (1960, pp.432, 435; 1973, pp. 152, 155; 1988, p. 108).

²³ Hayek referred to Emerson's work at least thrice in the 'Notes' only. The references are Emerson (1938), Roe and Simpson (1958), and Redfield (1942). The two latter contain articles by Emerson.

Acknowledgements

Thanks are due to Elizabeth Blum, Andy Denis, James G. Lennox, David M. Levy, Lance Lugar, Peter K. Machamer, Charles R. McCann, Robert C. Olby, Elizabeth S. Paris, Gualtiero Piccinini, Mark Perlman, Rebecca L. Skloot, and anonymous referees for helpful criticism. Needless to say, all errors remain my own.