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Why do we Think Racially?

A Critical Journey in Culture and Evolution

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Abstract

Many contemporary theories of racial categorization are encompassed by two research traditions — social constructionism and the cognitive cum evolutionary approach. Although both literatures have plausibly some empirical evidence and some theoretical insights to contribute to a full understanding of racial categorization, there has been little contact between their proponents. In order to foster such contacts, we review critically both traditions, focusing particularly on the recent evolutionary/cognitive explanations of racial categorization. On the basis of this critical survey, we put forward a list of eleven requirements that a satisfactory theory of racial categorization should satisfy. We conclude that despite some decisive progresses, we are still far from having in hand a complete, satisfactory theory of why humans classify people on the basis of skin color, body appearance or hair style.

1. Introduction

One of the most prominent challenges of the psychology of categorization is to explain why of all the ways of dividing the world, we find some categories, but not others, natural. Psychologists underscore usually two kinds of causes: the nature of human cognition and the nature of the world itself (Malt, 1995). Social and cultural factors are usually thought of as secondary, if at all mentioned.¹

The study of social categories, e.g., the category of teenagers or the category of abused children (Hacking, 1999), highlights the shortcomings of this approach. It is difficult to

¹ For example, these factors receive very little attention in Laurence and Margolis' anthology (1999) and in Murphy's extensive review of the psychology of concepts (2002).

account for these categories, without paying attention to the social circumstances that surrounded their formation. For these categories, and plausibly for others too, social, cultural and psychological factors have all to be taken into consideration.

The study of concepts of races, e.g., BLACK², WHITE etc., and of the concept of race, that is, how people conceptualize race membership, illustrates the need for a more integrative approach. As we will see, such an approach is required to explain the nature and origin of racialism, that is, the fact that people classify humans on the basis of visible physical properties (skin color, body shape, height, hair appearance etc.) and believe that this classification has a biological reality, that it picks out meaningful, important biological kinds.³ This integration has been hindered by the fact that the study of racialism is scattered over several fields, particularly history, anthropology, sociology and psychology. Moreover, researchers are often committed to different theoretical tenets. Many contemporary theories of racialism are encompassed by two research traditions — social constructionism and the cognitive cum evolutionary approach. As we shall see in detail, most social constructionists believe that the concept of race is a pseudo-biological concept that results from some specific historical circumstances and that it has been used to justify the unequal treatment of specific groups of people. Proponents of the cognitive cum evolutionary approach believe rather that racialism results from the working of some specific cognitive system that had a particular evolutionary history. Since the tenets of these two research traditions are often judged inconsistent, there has been little contact between their proponents. This is certainly unfortunate. For, both literatures have plausibly some empirical evidence and some theoretical insights to contribute to a full understanding of racialism.

Like others, we believe that time has come to bridge the gap between these two research traditions (Sperber, 1996; Hirschfeld, 1996; Faucher, 1999; Mallon and Stich, 2000; Fiske, 2000; Boyer, 2001a; Wilson, ms; Medin and Atran, ms). This article is a step in this direction. We purport to review recent and significant contributions to the contemporary literature on

² We use capital letters to name concepts.

³ Racialism must be distinguished from *racism* that adds value judgments (mostly negative, but sometimes positive) to racialism (Hirschfeld, 1996, p. 3). In this article, we focus on racialism. On the contrary, most social scientists focus on racism and take the existence of racial classifications for granted, without inquiring into their origin. Because racism is a socially sensitive topic, it has attracted a considerable attention in psychology, sociology, political sciences, history etc. Between 2000 and 2004, the word “racism” has featured in the title of more than 500 articles in the journals that are browsed by OVID’s search engine. We do not purport to review this gigantic and confusing literature. For a partial review of the literature in sociology and political sciences, see Krysan, 2000

racialism.⁴ Thereby, we hope to stimulate research projects on racialism that would, in one way or another, take into consideration both research traditions. We present in general terms the social constructionist approach and we review and discuss in more details three cognitive cum evolutionary theories. We underscore the explanatory limits and the empirical and theoretical problems of all current theories of racialism. On the basis of this critical survey, we put forward a list of eleven requirements that a satisfactory theory of racialism should satisfy. We conclude that despite some decisive progresses, we are still far from having in hand a complete, satisfactory theory of why humans classify people on the basis of skin color, body appearance, hair style etc.

1. Is Racialism a Mere Social Construct?

1.1. Racial Skepticism

A dominant view about races today is the so-called social constructionist view. Like many scientists⁵, social constructionists recognize that the concept of race does not have any biological reality, as it was once thought (and, unfortunately, sometimes still is). From the 70's on, it has been widely recognized that the biological concept of subspecies could not be applied to humans.⁶ In racialist thinking, skin color and other skin-deep properties (hair type, body shape...) are supposed to pick out different subspecies, that is, populations of conspecifics that are genetically and morphologically different from each other. There is however more genetic variability within human racial groups than between them.⁷ Moreover, classifications based on different phenotypic traits (skin color, body shape, hair appearance ...) usually cross-cut each other (Brown and Armelagos, 2001). Finally, visible characteristics do not correlate in a systematic way with other biological characteristics (Diamond, 1994): for instance, malaria resistance is widespread in part of Africa (but not all), India, Arabian Peninsula and lactose tolerance is widespread among northern and central Europeans,

⁴ For the sake of space, we do not purport to be exhaustive, trading exhaustivity for a detailed discussion of the theories reviewed here. Particularly, we review neither the literature in social psychology that treats racial prejudice as a special kind of prejudice (Yzerbyt et al., 2001; Crandall and Eshleman, 2003) nor the literature that explains racial classification on the basis of our perceptual categorization system (Aboud, 1988; Vaughan, 1987).

⁵ Lieberman and Kirk (2002), Kaszycka and Strkalj (2002), and Wang et al. (2003) study respectively the use of the notion of race in American, Polish and Chinese anthropology.

⁶ See Diamond (1994), Boyd and Silk (2000), Brown and Armelagos (2001) and Whitehead et al. (2002). There is an on-going debate about the possibility of applying some concept of race to human beings (Andreasen, 1996, 2000; Gannett, 2001, 2004; Glasgow, 2003). This issue is orthogonal to the point that is made above.

⁷ Lewontin (1972) has shown that differences between races account for only 6% of genetic variation in the human species. In a recent review of the literature, Brown and Armelagos (2001) confirm this figure. This figure is also consistent with what we know about the evolution of *homo sapiens* (Boyd and Silk, 2000, p. 545). Notice that things are different in many species of apes: for example, there is more genetic variation between chimpanzee populations than within (Boyd and Silk, 2000, p. 481).

northern Indians, and several milk-drinking black Africans. Hence, assigning an individual to a race does not buy the inferential power one is usually warranted to expect from a biological kind term.⁸

Biology has thus fuelled the ‘racial skepticism’ of social constructionists, i.e., the view that races do not exist. As Appiah, one of the leading advocates of this approach, puts it: “*the truth is that there are no races*: there is nothing in the world that can do all we ask ‘race’ to do for us” (1996, p. 75).⁹

Social constructionists about race are not mere skeptics. They usually also underscore the instability and diversity of human beings’ concepts of races. For instance, Omi and Winant (2002) remark that an “effort must be made to understand race as *an unstable and “decentered” complex of social meanings constantly being transformed by political struggle*” (p. 123; our emphasis). Others suggest that the notion is a modern invention, rooted in the 18th century taxonomies of Linnaeus and Blumenbach. How should we understand such statements? A careful examination of the underlying thesis of social constructionism is in order.

1.2. Races are Interactive Kinds

In this section and in the next one, we use some analytical distinctions made by the philosopher Ian Hacking¹⁰ to clarify the social constructionist position about races. Once these distinctions in place, it will be easier to identify the strengths and shortcomings of this approach.

Hacking defends a new brand of nominalism, called “dynamical nominalism”. This new form of nominalism is more selective than its historical predecessors, for it applies only to

⁸ That is not to say that you are not getting any inferential power at all. But this power does not come from the fact that you have isolated a biological natural kind. Rather, it comes from the fact that the *concept* of race “continues to play a fundamental role in structuring and representing the social world” (Omi and Winant, 2002, p. 124). For instance, as Root points out, “[r]ace affects income, housing, and healthcare, and these, in turn, affect health ... As a result race can enter into many statistically robust biomedical generalizations even though there are no biological races” (2000, p. S629).

⁹ In what follows, the term “race” will be used to refer to the groups that are identified as racial by some society. Although there are no races – meaning that there are no groups that can be both be identified by a set of phenotypic properties, like skin color and hair appearance, and have a biological reality, there are groups that are identified as races, e.g., Blacks, Whites etc.

¹⁰ Though he refuses his position to be labeled “social constructionism” (Hacking, 1999), we think that it captures the core insights of this approach. Hacking resists the label mostly because some social constructionists say that the categories they see as socially constructed are not real. Hacking opposes strongly this view, adopting what he termed an ‘historical ontology’ (2002), according to which the objects that are constructed really exist. We will leave the ontological question on the side for today.

kinds of human beings, the human kinds.¹¹ As Hacking puts it:

“I hold that strict nominalism is unintelligible for horses and planets. ... Gloves are something else: we manufacture them. I know not which came first, the thought or the mitten, but they evolved hand in hand. ... My claim about making up people is that in a few interesting respects multiple personalities (and much else) are more like gloves than like horses.” (1986, p. 229)

In the case of most, if not all, human kinds, including those that are picked out by social sciences, “our classifications and our classes conspire to emerge hand in hand” (1986, p. 229). This claim draws on Hacking’s distinction between “indifferent kinds” and “interactive kinds”. Members of indifferent kinds, e.g., rocks and genes, are not affected by the way we categorize them. On the contrary, we, human beings, react to the categories that are used to classify us. We care about and can be transformed by the way we are categorized. We form interactive kinds. As a result, the similarities among human kind members are responsive to labels, concepts and beliefs about the kind. In that respect, human kinds are similar to artifacts. As Hacking puts it:

“Author or brother are kinds of people, as are child viewer and Zulu. People of these kinds can become aware that they are classified as such. They can make tacit or even explicit choices, adapt or adopt ways of living so as to fit or get away from the very classification that may be applied to them ...” (Hacking, 1999, p. 34)

For Hacking, races are among the paradigmatic interactive kinds. They are the result of grouping individuals in a non-natural way for social purposes. For, as we saw, there is no nature to be carved out, no fact of the matter that would define races independently of what we believe about them. Thus, they are created together with the concepts that refer to them and the beliefs about them. Root accurately contrasts the two types of kinds:

“With sex and blood type, how people are classified, the category they belong to, does not depend on their self-conceptions or on whether they recognize the category, while with social classification self-conceptions are central. *A group of people must divide themselves by race but not blood type in order to have one.*” (Root, 2000, p. S632).

Hacking’s notion of interactive kind captures an important aspect of the social constructionist’s view of races. For social constructionist, when the concept of race is applied to us, it changes the way we think about ourselves. As a result, racial identities are constantly shaped by our concepts of and our beliefs about races. Omni and Winant call this phenomenon “racial subjection”. Similarly, Appiah claims that racial labels affect not only the social and political environment of those falling under those concepts, but also the way people see themselves (see also Holt, 1995; Mallon, forthcoming):

“[racial labels] have not only social effects but psychological effects as well: *and they shape the ways people conceive of themselves and their projects.* In particular, the labels can operate to shape what I

¹¹ Hacking (1995a) uses “human kind” to refer to the kinds picked out by social sciences. We use this expression in a more liberal way to designate any category intended to group humans. There is no reason to restrict the effects described by Hacking to the social sciences kinds.

want to call *identification*: the process through which an individual intentionally shapes her projects — including her plans for her own life and her conception of the good— by reference to available labels, available identities.” (Appiah, 1996, p. 105; our emphasis)

1.3. Races are Transient Kinds

Hacking draws also a distinction between “transient” and “permanent” kinds. A kind is transient if its reality depends on a cultural niche, that is, on the ideas and social practices that are prevalent in a given society. The dependence is such that were the niche of a transient kind to disappear, the kind would disappear as well. He suggests, for instance, that this happened with hysteria at the beginning of the 20th century. By contrast, permanent kinds, basically natural kinds like tigers, do not depend on a given culture for their existence. Even if the stereotypes used to refer to them may change (Hacking, 1999, chap. 4), they are transcultural.

Human kinds depend typically on culture- and time-specific beliefs. Thus, they are typically transient kinds. As Hacking puts it: “The chief difference between natural and human kinds is that the human kinds often make sense only *within a certain social context*” (1995a, p. 362; our emphasis). The notion of transient kind is useful to clarify an important aspect of the social constructionist view of race. As we saw earlier, most scientists nowadays, social constructionist or not, recognize that human races are not natural kinds. In addition, social constructionists believe that races should be conceived as transient kinds. There are different ways of cashing out this idea, some more radical, some less.

Many constructionists insist on the cultural and historical differences between culture-specific and time-specific conceptualizations of race membership. Like other concepts of transient kinds, any concept of race depends on a particular cultural niche; therefore, its content is historically or culturally specific. For example, Pascoe (1996) has described in detail the *history* of the conceptualization of race membership in the U.S.A. She insists on the prevalence of a dichotomous conceptualization of race membership after the abolition of slavery. In that racist view, race membership cannot be mixed or graded. The one drop of blood rule, according to which one is black if one of one’s ancestors was black, and the infamous miscegenation laws, that forbid inter-racial sex and marriage, illustrate this conceptualization. This conceptualization was weakened in the fifties and sixties. Sociologists have also shown that more and more Americans use nowadays mixed racial categories to describe their racial membership (Skidmore, 1993; Aspinall, 2003). They propose that this evolution is related to new forms of immigration and to various social practices (e.g., writings emphasizing mixed racial identities – Aspinall, 2003, p. 271).

Many studies illustrate also the differences between *culture-specific* conceptualizations of race membership. A classic example is the difference between the Brazilian and the American concepts of race (Harris, 1963; see the nuanced review in Skidmore, 1993 and the critical discussion of Gil-White, 2001b). The system of race relations in the U.S.A. was supposed to be bi-racial, while the Brazilian system was supposed to be multi-racial. According to Skidmore (1993), ‘mixed blood’ offspring were common in both countries. However, in the U.S.A., because of slavery, these offspring were assigned to the black category. For, a slave master could thus increase his labor force by having (often forced) sexual intercourses with his female slaves. In Brazil, there were on the contrary a large number of free Blacks. As a result, a dichotomous conceptualization of race membership did not guarantee an increase of slave owners’ working force. According to Skidmore (1993, p. 377-378), these social differences explain why race membership has been conceptualized in two different ways.

We say that these intra-cultural and inter-cultural social constructionist’s projects are moderate, for they claim only that the concept of race goes through many different elaborations. This is compatible with the idea that there is something common to these different elaborations. These commonalities could result from some universal aspect of human cognition. Moderate social constructionism is thus consistent with the idea that because of some cognitive system, humans tend to classify people into races when they meet other people with different phenotypes.

Some constructionists go further. As we pointed out earlier, they believe that the concept of race is a recent, Western invention. To put it bluntly, according to them, there were no white or black person until theories of race appeared in Europe in the 18th or 19th century. Greeks, for instance, might have divided people in some categories, but they relied on non-racial categories. We are told that they were indifferent to skin colors; instead, they were more preoccupied by geographic origin (Graves, 2001; Kamtekar, 2002; Ward, 2002)¹². Thus, Michael Banton writes (see also Dominguez, 1998):

“I am not persuaded that it is proper to speak of race-consciousness or racism in times or places where people do not employ a concept of race. The sentiments Romans felt towards Celts, for example, are indicative of ethnocentrism and of antipathy towards a certain kinds of strangers, but there is no warrant for calling them racial.” (1970, p. 18; our emphasis)

According to these constructionists, racialism results from the application of the principles of scientific biological classification to humans. During the 18th century, scientists like Linnaeus and Blumenbach developed the principles of biological classification. These principles were

¹² As Ward (2002, p. 15) puts it, Greeks might have “... lack interest in a marker of skin color as indicator of moral or intellectual differences.”

quickly applied to humans on the basis of their phenotypic properties (Gould, 1994). Scientists, like biologists, geographers and, in the nineteenth century, anthropologists are responsible for this illegitimate use of these principles. This is known as scientific racialism. According to many, scientific racialism became part of the European culture. For it provided a justification of the European colonization of the rest of the world.¹³

We view this kind of constructionism as much more radical as it affirms that the concept of race and its recent different forms, are primarily the product of historical and cultural factors. It claims that humans do not tend to classify people into races when groups with different phenotypes meet, save for particular historical circumstances.¹⁴

1.4. Problems

The social constructionist approach is obviously important. Constructionists have correctly insisted on the cultural aspect of humans' concepts of race: the content of these concepts is, at least partly, determined by their cultural niches. Some constructionists have illustrated the diversity of humans' concepts of race (Skidmore, 1993; Pascoe, 1996). It is obviously important to distinguish between different time-specific and culture-specific conceptualizations of race, if only because they determine what kind of identity is available for individuals at a given time and place. Indeed, constructionists have underscored the effect of the racialist classifications on the individuals that are thus classified. Finally, they have shown that racialist distinctions have been used for social and political purposes.

However, social constructionism is not without difficulties either. It does not explain why so many cultures have developed some concept of race and some classification based on phenotypic features. This is a problem for the moderate and the radical versions of social constructionism. According to the radical form of constructionism, it should not be the case that different cultures at different points of history have developed racial classifications (except for coincidence). Hence, if something like the concept of race appears in many non-related cultures, the radical thesis has to be abandoned. The moderate form of social constructionism has a different kind of problem. It has focused its attention on differences between cultures or times, but it has left unexplained what could cause the commonalities between the concepts of race.

¹³ Although we do not deny that the European 18th and 19th centuries conceptualization of race membership is specific, we reject below the idea that racialism is a mere invention of the 19th European century.

¹⁴ It has to be recognized that 'that different phenotypes' is somewhat vague. It is unclear whether Chinese and Japanese or Frenchmen and Italians or Irishmen and Englishmen count as having different phenotypes.

Contacts between groups characterized by different phenotypes are plausibly a relatively recent phenomenon. However, there is some historical evidence that when these contacts happened, humans tended to classify racially. Let's consider an historical example, the 12th century Chinese. Around the 12th century when maritime activities and contacts with foreigners increase, Chinese's color-consciousness seems to have strongly heightened:

“In Chinese eyes, Europeans were just another variety of physically defective creatures, comparable to albinos in the Western mind: they provoked curiosity mingled with a feeling of repulsion and pity. Their complexion was not merely white [Chinese referred to themselves as being white back then], it was ‘ash-white’ (*huibai*), the exteriorization of the demonological forces that drove the foreign devils to undertake their expansion overseas.” (Dikötter, 1992, p. 13-14)

Dikötter (1992, p. 17) notes also that Chinese had made the equation of black and slave at a quite early stage of their history, even earlier than the Europeans. Moreover, Isaac (2004) has recently provided some convincing evidence that racialism and racism did exist as well in Classical Greece and Rome¹⁵. His views are consistent with the moderate form of social constructionism.

Though there are few cross-cultural studies of race, we think that such examples could be multiplied. If this is the case, one has to explain why in so many cultures, we find some concept of race and why the idea of distinguishing people into races invades so easily the human mind. This, we saw earlier in this section, seems to be beyond the explanatory reach of radical social constructionism. We view that as a refutation of this position. Besides, moderate social constructionism does not explain the commonalities between all these concepts, although the content of human beings' folk concepts of race seems to be tightly constrained (Hirschfeld, 1996). Moreover, the moderate social constructionist approach illustrates the diversity between concepts of race, but does not provide a convincing framework to explain the evolution of diverse conceptualizations. These questions have not been addressed by social constructionists.

There is a growing literature in evolutionary psychology and evolutionary anthropology that tries to address these very questions. Although no consensus has yet emerged, several proposals have been recently put forward that attempt to describe the underlying cognitive mechanisms responsible for the production of racial concepts (Hirschfeld, 1995, 1996, 1997a,

¹⁵ For instance, Isaac quotes Vitruvius who was influenced by the environmental determinism of his predecessors (i.e. Hippocrates, Aristotle). According to Vitruvius, the climate is « [...] also the reason why the races that are bred in the north are of vast height, and have fair complexions, straight red hair, gray eyes, and a great deal of blood, owing to the abundance of moisture and the coolness of the atmosphere. [...] On the contrary, those that are nearest to the southern half of the axis, and then lie directly under the sun's course, are of lower stature, with a swarthy complexion, hair curling, black eyes, [strong legs], and but little blood on account of the force of the sun. » (quoted by Isaac, 2004, p. 83)

2001; Kurzban, Tooby and Cosmides, 2001; Cosmides, Tooby and Kurzban, 2003; Gil-White, 1999, 2001a, b, 2002). We will review them in the next sections.

2. Is Racism a Byproduct of a Human Kind Module?

In this section and the next, we focus on Hirschfeld's claim that racism is a by-product of a *human kind module* as well as Kurzban, Cosmides and Tooby's view that it is a by-product of a *mechanism to detect coalition*. Both theories view races as coalitional groups. In section 4, we will present Gil-White's alternative view, which rests on a distinction between kin-based groups, coalitions and ethnic groups. He believes that ethnicities have raised specific evolutionary challenges that were solved by a dedicated evolved cognitive system (Gil-White 1999, 2001a, b). Racism would be a by-product of this mechanism. This, we think, might be a step in the right direction.

Before seeing how those theories differ and what their limits and problems are, let us emphasize what they have in common. They all endorse the four following claims:

- *There are no races.* Social constructionists and proponents of the cognitive cum evolutionary approach are equally committed to racial skepticism.
- *Racism does not result from our domain-general, perceptual categorization system.* There is strong evidence against this view (Stangor et al., 1992; Hirschfeld, 1996; Kurzban et al., 2001, p. 15390).
- Racism results from a *domain-specific cognitive system*. However, cognitive and evolutionary-minded scientists disagree on the nature of this system.
- *Racism has not been selected:* it is a byproduct of a cognitive system that has been selected for other reasons.

We turn now to Lawrence Hirschfeld's research program.

2.1. The Nature of Racism

According to Hirschfeld (1996, p. 115; 1997a; 2001, p. 111), young children, across cultures, think of races in way similar to the way they think about animal species, although racial cognition is not derived from our biological cognition (so we should expect some differences between the performances in the two domains). This includes primarily a belief in a bundle of race-typical properties, e.g., phenotypic properties, like skin color, body appearance, but also behavioral and psychological properties. Moreover, it includes the fact that races are essentialized: people assume that races are defined by immutable, natural, and often unknown essences that are passed down from parents to children (e.g., Hirschfeld, 1996,

p. 85-6).¹⁶ These essences cause people to possess race-typical properties. As a result, these race-typical properties are believed to be inherited and to be insensitive to people's rearing environment.

This essentialist commitment elicits many inductive generalizations (Hirschfeld, 1996, p. 13). People expect members of a given race, e.g., Whites, to have many properties in common. Because of this bias, people draw inductions from a limited number of instances. Properties that are true of most members of a race (say, poverty) can also be explained in racist terms (as the natural effect of a hidden essence).

Children manifest this view of race early in their life (Hirschfeld, 1996, chap. 4). It does not result from their parents' explicit teaching. Most parents do not teach explicitly racist distinctions, though both children and parents end up with similar racist distinctions. When parents do teach children about race, children's racist attitudes tend not to reflect their parents' (Hirschfeld, 2001, p. 110; but see Crandall and Eshleman, 2003). Moreover, children do not acquire their concepts of races from people's physical appearances (Hirschfeld, 1996, chap. 6). Thus, their concepts are not derived from the domain-general, perceptual processing of categories. On the contrary, young children seem to rely on linguistic cues to form concepts of races. Hirschfeld concludes that racism results plausibly from an *innate, domain-specific* and *universal* cognitive system.

2.1.2. The Human Kind Module

Now, what is this cognitive system? According to Hirschfeld, human beings have evolved a folk sociology that is part of a human kind module (1996, p. 196; 2001, p. 111; Sperber and Hirschfeld, 2004, p. 44). The proper domain of this module¹⁷ consists of the social groups that constitute a society. It includes kin-based groups and coalitions. In more recent elaborations, Hirschfeld has emphasized coalitions among the proper stimuli of this module (2001, p. 113). He claims that coalitions are much more important in the human species than in any other animal species and highlights three differences between human coalitions and coalitions in other primates: their number, their complexity, their instability. Humans belong to an astonishing number of coalitions that cross-cut each other and that are very often shifting.

¹⁶ See the psychological essentialism hypothesis in Medin and Ortony (1989), Atran (1990), and Gelman and Hirschfeld (1999).

¹⁷ That is, the stimuli that the module evolved to deal with. The proper domain of a module contrasts with its actual domain, that is, the stimuli that it deals with now, even if it has not evolved to do so (Sperber, 1996; Sperber and Hirschfeld, 2004).

This has created some evolutionary pressures for a cognitive system dedicated to track these coalitions (Hirschfeld, 1997, p. 75; 2001, p. 113).

This human kind module does not determine which groups, particularly which coalitions are relevant in a society. It interacts with specific cultural environments, in which some specific types of groups are salient. These are the culture-specific groups that are essentialized. Hirschfeld writes (1997, p. 78-79):

“The readiness to categorize humans into human kinds would necessarily underdetermine any particular system of social referencing. Social belief does not spring from a human kind module, it is enabled and guided by it. In order to produce a system of social belief, the human kind module must make contact with a cultural environment. The analytic trick is to understand how, when, and in what way cultural, political, and other ideological systems recruit innately guided strategies for acquiring knowledge of human kinds.”

Thus, we are not innately predisposed to adopt racialist classifications. However, in some societies, at some times, coalitions are formed on the basis of superficial phenotypic properties, for example skin color (‘skin color’ is used here as a shorthand for a cluster of physical traits). In those societies, children pick out the groups that are formed on this basis, i.e., races, and conceptualize them in an essentialist manner. If such groups were not coalitions in our societies, children would not draw racialist distinctions. Instead, they would pick out other coalitional groups. For example, Hirschfeld reports that Indian children essentialize and naturalize caste and occupation (1997, p. 86-87; 2001, p. 114).

2.2. Hirschfeld’s Experimental Evidence

This ambitious theory is supported by several experiments that are described in Hirschfeld (1996). We describe the two most important ones¹⁸.

The first experiment concerns the content of children’s concept of race (1996, chap. 4). Children are presented with a drawing that depicts an adult and two children. In one case, one child has the same skin color (black or white) as the adult, but a different body built, while the other child has the same body built as the adult, but a different skin color. In a second case, one child has the same skin color, while the other wears the same professional uniform as the adult (e.g., a police uniform). In the third case, one child has the same body built as the adult, while the other has the same uniform. Thus, three properties are contrasted, a racial characteristic, a physical characteristic and a profession.

Figure 1 from Hirschfeld: ask for authorization

¹⁸ Another of Hirschfeld’s very important experiment is the “switched at birth” experiment. Since Gil-White is using this method extensively, for the sake of space we will present it in the section in which we discuss Gil-White’s work.

Children are divided into three groups. Each group is asked a specific question:

- 1) Which of the comparison pictures was the target as a child?
- 2) Which of the comparison pictures was the target's child?
- 3) Which of the comparison pictures looks more like the target?

The results are the following (Hirschfeld, 1996, p. 97-101). For the first question, race is chosen over occupation and body built. Although younger children are less likely than older children to choose race over occupation and body built, three-year-olds choose race over body built significantly above chance, and four-year-olds' choice of race over occupation is also significantly above chance. The same pattern is found for the second question, but not for the similarity question.

Hirschfeld concludes from this and other studies that even very young, Occidental preschoolers believe that at least one racial characteristic, skin color (and the cluster of physical trait associated with it), is constant during growth and transmitted by descent (but see Solomon et al., 1996, p. 168). This is not the case for other properties, like body built and profession (Hirschfeld, 2001, p. 114-115). Since this kind of reasoning is assumed to be built on a belief in essences (Gelman and Wellman 1991, Atran 1990, Hirschfeld and Gelman 1999), Hirschfeld infers that children essentialize race membership: they believe that races are defined by essences transmitted by descent and causing the possession of the racial phenotypes.

The second experiment concerns the origin of the racialist classification (Hirschfeld, 1996, chap. 6). In the first part of the experiment, children are told a story about a child who has to buy a scarf for his mother. The child asks four adults for help. Each adult is described twice in terms of race, occupation and body type. Children are given a free recall test immediately afterward. The point is to see what kind of information has been encoded. The results show that even three-year-old children encode each of the dimensions (behavior, occupation, gender, race, body type). However, not all types of information are equally encoded. Four-year-old children encode occupation more than race, and race more than gender and body type.

These results are to be compared with those of the second part of the experiment. Children are shown a set of drawings that tell a story that is similar to the story used in the first part of the experiment. They are asked to describe the events portrayed by the drawings. Their memories of the story are also probed. The results are the following. When they describe the drawings, three-year-old and four-year-old children mention the characters' gender more than

their profession. Race is almost not mentioned. In the recall task, children mention mostly the behaviors of the characters, their gender, and their clothes. Race is very rarely mentioned. Thus, both tasks reveal very few references to the characters' race. There was no age difference.

Hirschfeld concludes from both parts of the second experiment that external, physical appearances are not a crucial component of children's initial concepts of races. WHITE, BLACK, CHICANO etc., are not perceptual concepts. For, if they were, race membership would be visually salient. Race would be mentioned in a visual description task and in a visual memory task. This is not the case. On the contrary, race is a salient property in a verbal task.

Hirschfeld infers that concepts of races are not derived from the perceptual categorization system.¹⁹ Otherwise, the perceptual information would be encoded. As he puts it:

“[T]hese findings suggest that a single learning strategy, dominated by attention to appearances, does not operate over the development of all social categories, even those that are marked by physical correlates”. (1996, p. 157)

Hirschfeld takes this to imply that concepts of races and our conceptualization of race membership result from a domain-specific cognitive system that is preferentially triggered by verbal cues – the human kind module.

2.3. Merits and Problems

We view Hirschfeld's research as an important contribution to the understanding of racialism. He has provided a large set of data that have to be taken into account by any theory of racial cognition. He has also put forward some important theoretical points. Let's summarize quickly what has to be kept in mind:

- 1) *Racialist cognition is similar to our folk biological cognition.* Although Hirschfeld insists that racial cognition does not derive from our folk biology and rests on a specific cognitive mechanism, his evidence shows that in several respects, people reason about races as they reason about animal species.
- 2) *There is some evidence that children manifest very early this bias* (as soon as 3-year-old in some tasks).

¹⁹ Hirschfeld (1996, p. 135) claims that a perceptual origin of our concepts of races is inconsistent with the continuous variation in human appearances and with the independence of various racial features (skin color, body built...). However, continuity is no objection to the formation of categories by the perceptual categorization system, provided that most members of different races have a different skin color or body appearance. Independence could also be explained away by tenants of a perceptual approach to racial categories.

3) Children's racist cognition is *not derived from the domain-general categorization system that processes visual inputs*. The linguistic inputs may be crucial.

4) Points 1 to 3 suggest that racism results from *some domain-specific cognitive system*.

Despite its importance and its impressive record, Hirschfeld's approach is nonetheless problematic. We focus first on some theoretical problems and turn then to some empirical ones.

First, the hypothesized human kind module is underspecified. It is unclear why our social cognition is similar in certain respect to our biological cognition. Moreover, it is unclear whether the module is supposed to deal with any kind of group, from kin groups to coalitions, from firms to poker partners etc. or with a specific kind of groups. Hirschfeld claims that this module picks out social groups that are salient in a given society suggests that this module can be applied to any social group (1996, p. 72, 196-197). Now there are plenty of salient social groups, e.g., firms, neighborhoods..., that are not thought of as animal species are. This suggests instead that this module ought to pick out a specific kind of groups. In more recent articles, Hirschfeld has suggested that the function of this module is really to track coalitions (Hirschfeld, 2001). However, as we shall see in the discussion of Kurzban et al.'s similar proposal (section 3), this is not satisfactory. We will conclude that racism results probably from another kind of cognitive system.

Second, Hirschfeld's proposal does not really account for the data provided by the social constructionists. He has little to say about the cross-cultural diversity of humans' concepts of race. He is aware of this diversity and pays lip service to the project of integrating the social constructionist evidence with the cognitive cum evolutionary approach. However, in fact, little is done to really integrate the two perspectives.

Third, Hirschfeld's proposal is committed to the theory of psychological essentialism (Medin and Ortony, 1989; Hirschfeld and Gelman, 1999; Gelman, 2003; Medin and Atran, ms). According to this theory, people believe that many categories are characterized by an essence (see section 2.1.). Such a folk belief is supposed to explain several reasoning patterns, including category-based induction (Gelman and Markman, 1986, 1987) and a commitment to the transmission of properties by descent (Gelman and Wellman, 1991). We remain unconvinced. We doubt that most people believe in some inner, maybe unknown, property that defines the identity of categories and explains the possession of observable properties (appearances, behaviors). People do not have to believe in essences in order to display the

reasoning patterns mentioned above (Strevens, 2000, 2001; see the reply by Ahn et al., 2001). Believing that by virtue of belonging to an animal species, conspecifics possess some properties that are inherited from their parents and that are impervious to rearing environments is one thing, believing in essences is another. The latter implies the former, but is not necessary for it. Hence, we are reluctant to infer any folk commitment to essentialism from the kind of reasoning pattern that is presented by Hirschfeld. Thus, Hirschfeld's results show that races are thought of as animal species are. But this fails to entail that people are committed to essentialism. Instead of showing that races are thought of in an essentialist manner, the evidence shows that they are thought of *biologically*.

Let's focus now on Hirschfeld's empirical evidence. First, we are puzzled by some of Hirschfeld's main experiments (1996, p. 102-107). Consider for example the first experiment described above. Hirschfeld is asking children whether a profession, which is symbolized by a professional outfit, is more likely to be transmitted by descent and to be constant over life than skin color or body built. We wonder how children understood this question (for an intriguing comment on children's answers, see Gil-White, 2001a, p. 548-549). Could they really believe that a child has a profession?

Second, we are astonished by the discrepancy between Hirschfeld's ambitious theory and his empirical evidence. More predictions should be derived from his theory and they should be submitted to more stringent tests involving various experimental paradigms. Solomon et al. (1996) have for example provided some empirical evidence that before seven, children may not understand that skin color is inherited from one's biological parents. In their review, Crandall and Eshleman (2003) mention some research that is *prima facie* inconsistent with Hirschfeld's claim that children's racialism is little affected by parental explicit teaching. Thus, it seems too early to be fully convinced by the empirical evidence adduced to by Hirschfeld. Moreover, Hirschfeld claims that the hypothesized human kind module is universal. However, he provides little cross-cultural evidence to support this claim, relying instead on children from two industrial societies, France and the USA.

Third, in most experiments, not all children behave or answer identically. Consider, for example, the first experiment reported in section 2.2. Hirschfeld underscores the fact that around 80% of the seven-year-old children believe that a racial property, skin color, is more likely to be constant over life than a profession (symbolized by a professional outfit). However, it remains that 20% of the seven-year-old children give the opposite answer. In conformity with the mainstream explanatory tradition in psychology, Hirschfeld focuses on

the majority answer in his aggregated data. He does not say much about the minority answer, treating it in fact as noise. We feel that this approach is mistaken. For, individual differences may provide some crucial information about the nature of the cognitive system that underlies racialism. Particularly, it could cast some light on the kind of inputs that affect its development – for example, on the importance and nature of the cultural inputs. Moreover, it is a crucial piece of evidence for evaluating claims about the innateness and evolved nature of cognitive systems. To be fair though, this kind of mistake is not unique to Hirschfeld's strategy, but to many developmental studies.

Hirschfeld's account has other problems. Since it shares them with Kurzban, Tooby and Cosmides' account, we will present them in the next section. To anticipate, Hirschfeld does not explain why races are so often salient and cooperative groups. Besides, we have strong doubts about Hirschfeld's ultimate, evolutionary account of the racial cognition.

To conclude, Hirschfeld has provided some striking evidence that racialism results from a domain-specific cognitive system. He has also shown that patterns of reasoning about races are similar to patterns of reasoning about animal species. More evidence is however needed to fully support this theory. Moreover, his description of this cognitive system is unsatisfactory from many points of view and his account of its evolution is dubious.

3. Are Races Mere Coalitions?

3.1. Races and Coalitions

In two recent papers (Kurzban, Tooby and Cosmides, 2001; Cosmides, Tooby and Kurzban, 2003), Kurzban, Cosmides and Tooby have proposed that the categorization of people into races is a by-product of a mechanism in charge of detecting and tracking coalitions. Since in multi-racial, not integrated societies, races are coalitions, they are picked out by the coalitional mechanism.

According to Kurzban and his colleagues, there are good evolutionary reasons to think that we have evolved some dedicated mechanisms that track people's age and gender, for age and gender are objective facts that are evolutionary important. But is it plausible, using the same logic, to posit a race module? First, if racial skepticism is right, how could a mechanism specialized in tracking races have evolved? Second, given that during the evolution of our species, our ancestors had meager chance to meet people with a different skin color, "there could have been no selection for cognitive adaptations designed to preferentially encode such a dimension, much less to encode it in an automatic and mandatory fashion" (2001, p. 15387).

Hence, there is no evolutionary reason to think that we have evolved a race module. Instead, Cosmides et al. (2003) make the following proposal:

“We hypothesize that the (apparently) automatic and mandatory encoding of race is instead a byproduct of adaptations that evolve for an alternative function that was a regular part of the lives of our foraging ancestors: detecting coalitions and alliances.” (p. 15387)

Cosmides and Tooby have emphasized in many places the importance of coalitions and alliances as a factor in human evolution (Cosmides and Tooby, 1992, p. 163). Of the many mechanisms in charge of dealing with the social world, one of them would be in charge of detecting coalitions and alliances. According to them, this mechanism would have to be sensitive to 1) patterns of coordination of actions, cooperation and competition and 2) cues that predict group allegiances. In other words, the mechanism would have to be sensitive to cooperative behaviors and to cues that correlate with them, but that are more easily accessible.

Thus, this putative mechanism ought to have the two following properties:

- (1) Any observable feature (dress, badges, manner, dialect, skin color, etc.) can be used to track allegiance;
- (2) Since coalitions are shifting and not necessary stable, the mechanism needs to compute and revise dynamically its outputs.

A prediction follows from this description:

“If the human brain contains neurocomputational machinery for tracking coalitional alliances, then constructing a new social environment in which coalition is uncorrelated with race should weaken the preexisting weight given to race as a cue to coalition within that context.” (Kurzban et al., 2001, p. 15389)

On the contrary, if the human brain has a neurocomputational machinery for tracking race, the functioning of the module should not be affected by the manipulation of the social environment.

3.2. Empirical Evidence

To test the prediction that a change in social environment would weaken the weight given to race as a cue to coalition, Kurzban et al. (2001) used the memory confusion protocol developed by Taylor et al. (1978). This test is used to reveal whether subjects are categorizing individuals into groups and if so, which categories are used. The test has two parts. In the first, individuals are presented (for 8.5 sec) with a sequence of sentences paired with pictures of the individuals who said them. They are asked to form an impression of these speakers. In the second part, subjects are given a surprise recall task where they have to recall who said what. It is thought that misattribution reveals encoding. Indeed, according to Taylor et al. (1978), subjects tend to confuse individuals that they encode in the same category more than

individuals that they sort in different categories. For instance, if the subjects have encoded the gender of individuals while being given the first part of the task, they should misattribute more often a sentence that a man said to another man than a sentence that a man said to a woman. The experimenter will find that $p(\text{within category error})$ is bigger than $p(\text{between category error})$ for any category that the subject encodes, while the errors should be random for the categories the subject does not encode. On previous experiments, it has been shown that race is one of the categories spontaneously encoded by subjects and efforts to reduce this spontaneous encoding had been largely unsuccessful.

In Kurzban et al.'s first experiment (1), subjects are presented with 8 sentences paired with the pictures of 8 speakers. The pictures represent young men dressed identically. From the sentences, one can infer that they divide into two groups that have been involved in some kind of fight. Their races (White and Afro-American) can be seen on the pictures. Subjects are given a surprise recall task, the pictures being still displayed in front of them. Kurzban et al. wanted to know whether subjects could encode the coalition membership solely on the basis of the content of the utterances (no visible cues was correlated with the allegiance). The second experiment (2) was identical to (1), except that Kurzban et al. used an arbitrary and non-permanent marker (the color of a tee-shirt) as a cue to track allegiance. If races are mere coalitions, providing relevant coalitional information should decrease the reliance on races a proxy for coalitional affiliation. Thus, race encoding should decrease. Experiments (3) and (4) replicate experiments (1) and (2), except that the gender of the speakers varies, while race does not vary. The prediction is that gender should not be affected by coalition encoding.

Results of experiment (1) showed that subjects were encoding a new dimension (coalition). However, the effect of race was twice as large as the effect of coalition. On the contrary, in experiment (2), when coalitions are marked by visible cues, the effect of coalition encoding increased (more than 200%), while the effect of race decreased (roughly 25%). Coalition membership encoding was higher than race coalition. Kurzban et al. think that this is striking effect, since the subjects were exposed to this new social environment for only four minutes as compared to a life-long experience with races. Finally, in experiments (3) and (4), it was showed that the encoding of gender was not significantly affected by coalition cues.

They conclude from these studies that “the sensitivity of race to coalitional manipulation lends credence to the hypothesis that, to the human mind, *race is simply one historically contingent subtype of coalition*” (Kurzban et al., 2001, p. 15391).

3.3. Merits and Problems

Cosmides, Tooby and Kurzban's result seems to be good news: racist classifications, on which racist cognition and behaviors depend, could disappear given some social re-engineering. We think that their results suggest that concepts of races can indeed be used by an evolved cognitive system whose function is to track coalitions. Thus, it may be true that the extent to which people classify into races is affected by the extent to which race is believed to be a proxy for coalition. Nonetheless, we remain unconvinced by their main claim that categorization by race is a byproduct of this system.

Their theory shares several problems with Hirschfeld's (section 2.3). It is insufficiently supported by their data. Kurzban and colleagues' ambitious theory relies on two experiments with American undergraduates students. A single experimental paradigm is used to test a single prediction derived from their theory²⁰. No cross-cultural evidence is provided. Finally, they do not consider integrating with their proposal what we know about the cross-cultural diversity of the concepts of race. This important challenge remains unaddressed. It should however be noticed that their approach fits well with the radical version of social constructionism (section 1). For Kurzban and colleagues could say that for political reasons, coalitional groups have emerged along phenotypic lines in the nineteenth century (they indeed say exactly that in their 2001). As a result, these groups have been included in the actual domain of our coalitional cognitive system.

Moreover, Kurzban and colleagues have failed to test a plausible interpretation of their results. It may be that gender is a primitive dimension whose encoding relies on a domain-specific cognitive system. We agree with Kurzban, Cosmides and Tooby that the existence of such a system is evolutionary plausible. However, race and coalitional membership may both be encoded by a domain-general cognitive system. Because the quantity of information we can encode is limited, increasing the salience of coalitional membership via some visual marker (experiment 2) would decrease race encoding. Gender encoding does not significantly decrease (experiment 4), because it does not result from a domain-general cognitive system, but from an evolved domain-specific cognitive system. Thus, the difference between experiments 2 and 4 does not show that race is treated by our minds as a kind of coalitions.

²⁰ In reply, Kurzban (personal communication) emphasizes that his work is aimed at falsifying social psychologist's tenet that race is automatically encoded. For this purpose, a single experiment is indeed sufficient. This is certainly an important aspect of both Kurzban et al. (2001) et Cosmides et al. (2003). However, both papers put forward a positive claim, namely that categorization by race is a byproduct of the coalitional cognitive system.

How to test this alternative interpretation? We suggest reproducing experiments 1 and 2 with a new dimension instead of race. This dimension should not be a plausible proxy for coalitional membership. For example, half of the characters could be bearded (or bold...). Being bearded, like being Afro-American or White in experiment 1, would be orthogonal to coalitional membership. If we were to obtain a similar result with this dimension – namely, an encoding of the category of bearded people in the replication of the first experiment and a decrease of this encoding when coalitional membership is marked by visual cues (replication of experiment 2), we would have to conclude that Kurzban and colleagues' interpretation was too hasty.

Another shortcoming of Kurzban, Tooby and Cosmides' proposal concerns the assumed racial coalitions. According to them, races trigger the coalitional cognitive system because they happen to be coalitions in some societies (see also Hirschfeld, 2001). First, it is not clear that races are really cooperative groups (Gil-White, personal communication), contrary to nations or, sometimes, neighborhoods. Notice first that this is not always the case. Black slaves in the US came from various cultures in Africa and probably did not form immediately a cooperative group. And white Europeans who came to Japan did not form a coalition either. Quite the contrary, they were divided into hostile nations. At war, individuals are ready to put themselves at risk in order to defend their fellow citizens. Now, few people are putting themselves at risk for the benefit of the members of their race. Racist White Frenchmen can purport to help other White Frenchmen, not Whites at large. Afro-Americans may feel committed to other Afro-Americans. Few put themselves at risk for African Blacks. Moreover, even if races were often coalitions, this would suggest that skin-deep features (like skin color, body shape, hair appearance) bootstrap coalitional groups. And this fact would remain entirely unexplained by their theory.

Kurzban and colleagues could reply that this objection misses the point. The claim is that because members of a race *within a given society*, say Afro-Americans *in the USA*, form a cooperative group, people pay attention to racial membership. An individual uses race to categorize the individuals she meets, because *around her*, race is a cue to coalitional affiliation. The argument does not require Blacks at large to form a cooperative group. This reply is convincing. Kurzban and colleagues suppose that it is an historical, contingent fact that in some societies, races are coalitions (Kurzban et al., 2001, p. 15388). However, as we saw in the first section, there is evidence that racialism has repeatedly appeared during human history when humans with different phenotypes have met. For the sake of consistency,

Kurzban and colleagues would have to say that in all these cases, races were coalitions. However, this would suggest that skin-deep features (like skin color, body shape, hair appearance) bootstrap coalitional groups. And this fact would remain entirely unexplained by their theory.

Hirschfeld's account faces a similar problem. As we already pointed out, in his book (1996), he claims that the hypothesized human kind module picks out the social groups that are salient in a given society. He seems to have in mind some historical explanation for the saliency of races in our societies. However, this fails to explain why racialism tends to occur when groups with different phenotypes meet. He cannot reply that races are perceptually salient, since he explicitly rejects any perceptual account of racial classifications (Hirschfeld, 1996, chap. 6; see section 2). More recently, he has claimed that the human kind module picks out coalitions and that races are coalitions in various societies (Hirschfeld, 2001). However, this account falls prey of the objection put forward in the previous paragraph. Ironically, like the social constructionists, Kurzban, Cosmides and Tooby and Hirschfeld fail to explain the prevalence of racialism across cultures and times. This cross-cultural and cross-historical recurrence of racialism needs to be explained. The only option available for them is to put forth the idea that people prefer interacting with those who share similar skin-deep features (skin color...). But their theories do not have the resources to explain such preferences.

The main difficulty for Kurzban and colleagues is raised by Hirschfeld's results. Children seem to think spontaneously about races in a way that is similar to our folk biology (see section 2). It is plausible that this aspect of racialism is *not* culturally specific (section 1; Hirschfeld, 1996, 2001; Gil-White, 1999, 2001a, b). Now, Kurzban, Tooby and Cosmides' hypothesis does not explain this phenomenon. For it is not the case that all coalitions are thought of in a way similar to the way animal species are: firms, coalitions of nations, poker partners etc. are not universally, if ever, thought as similar to biological species.

Kurzban and colleagues could reply that races are thought of as coalitions *and* are thought of biologically. We pay attention to race, because they are coalitional groups, *and* we conceptualize them biologically. In their more recent article, Cosmides, Tooby and Kurzban seem to be making a similar claim (2003, p. 178):

“... folk beliefs about race (...) can be a byproduct of different evolved inference mechanisms in different subpopulations within a culture, depending of the history and local distribution of beliefs. A facet of ‘race’ might be understood using a ‘living kinds’ concept in some places and times; in others, coalitional concepts or ethnicity templates might guide inference.”

Kurzban and colleagues' experiments suggest that the availability of racist concepts is selectively affected by additional coalitional information. This is consistent with the claim that concepts of races are used by a cognitive system that tracks coalitions. Although more evidence would be required, we are ready to concede that point (but see the first problem above).

However, even if our concept of races, e.g., BLACK, are indeed used by an evolved system whose function is to track coalitions, to support the claim that racial cognition is a byproduct of the coalitional system, what matters is *not* how people *use* their concepts of races. For, Kurzban and colleagues recognize themselves that once a concept of race has been produced, it may be used by various cognitive systems, including, in some environments, a coalitional cognitive system (see the quotation above). In societies where races happen to be very strong coalitions – which is arguably the case in many segments of the American society, racial membership may be used as a proxy for coalitional affiliation. Concepts of races could thus be recruited by a coalitional cognitive system. The subjects that were run by Kurzban and colleagues, i.e., American undergraduates from the University of California, Santa Barbara, may indeed use races as a cue to coalitional affiliation. This would explain why emphasizing relevant coalitional cues leads to a selective decrease of race encoding. Concepts of races would simply be less used by the coalitional system.

Since concepts of race are not used exclusively by coalitional cognitive system, what matters to support Kurzban and colleagues' claim about the origin of racial cognition is their content, that is, how race membership is conceptualized. For, our concepts' content is plausibly determined by the cognitive systems that produce them. However, Kurzban and colleagues have nothing to say about the biological content of humans' concepts of race — that is, about the fact that the way we think of races is similar to the way we think of biological categories (Hirschfeld, 1996; Gil-White, 2001a). Thus, Kurzban, Tooby and Cosmides fail to address the relevant question for explaining the origin of racialism. As a result, their findings are irrelevant to support their claim that racial cognition is a byproduct of an evolved coalitional system.

Finally, Hirschfeld's as well as Cosmides, Tooby and Kurzban's ultimate, evolutionary explanation of racial cognition is inadequate (Hirschfeld, 1996, 2001; Kurzban et al., 2001; Cosmides et al., 2003). Their proposals are similar. Coalitions have raised a specific adaptive problem for our ancestors. As a result, we have evolved a specific cognitive mechanism to track them and to deal with them.

Neither proposal considers the possibility that racialism could be a by-product of a cognitive system that would not be dedicated to small-scale social groups, but to a different type of social group. Hirschfeld (2001, p. 112) even excludes this possibility. According to him, our ancestors lived in small, shifting coalitions. This is, however, an oversimplified view of the social life of our ancestors. It is important to distinguish different sorts of groups (Gil-White, 2001a). The small, coalitional groups may have been included into larger, more stable social groups. These different types of groups may have created different evolutionary pressures on our ancestors, which may have selected for different cognitive mechanisms. Racialism could thus be a by-product of a cognitive system dedicated to solve the problems raised by this other type of social groups.

Race membership seems indeed different from coalition membership. During human evolution, small groups were probably labile; as a result, categorization within these groups would plausibly require a constant updating. Being a member of this kind of group would not be conceived as an inherent property. On the contrary, race membership is not conceived as labile, but as inherent. Moreover, as we shall see in the next section, evolutionary reasoning and paleoanthropological evidence support a distinction between different types of social groups. As Tooby and Cosmides themselves have argued at length, it is likely that different adaptive cognitive problems are solved by different domain-specific cognitive systems (Cosmides and Tooby, 1992, 1994). Ironically, in this case, Tooby and Cosmides may have failed to be sufficiently modularist! Distinguishing between different sorts of groups may thus be the key for understanding racialism.

We conclude that Kurzban and colleagues' proposal and Hirschfeld's are problematic, for they fail to explain why racial features bootstrap coalitional behaviors. Kurzban and colleagues' empirical evidence shows plausibly that races are taken as proxy for coalitions. However, this falls short of showing that racial cognition is a byproduct of the hypothesized coalitional cognitive system. To explain where racialism comes from, the content of our concepts of race has to be the main focus of inquiry. Finally, Hirschfeld's and Kurzban et al.'s evolutionary hypotheses are unsatisfactory, for they fail to distinguish different kinds of groups that have raised specific evolutionary challenges during the evolution of human social cognition.

4. Is Racialism a Byproduct of an Evolved Ethnic Cognitive System?

4.1. Ethnies are Not Mere Coalitions

Several anthropologists, including Boyd, Richerson and their colleagues, have suggested that kin-based groups and coalitions are not the only evolutionary important social groups. Our ancestors have also belonged, for an evolutionary significant time, to larger groups, called ‘tribes’ or ‘ethnies’ (Richerson and Boyd, 1999; Boyd and Richerson, 2001, forthcoming).

Ethnies are large groups that can be made from 500 to some thousands of people. In recent times, the Nuer and the Dinka in Sudan or the Iroquois in North America illustrate this type of social groups. Ethnies are divided into smaller units, sometimes called ‘bands’. Various properties (social stratification, accumulation of wealth etc.) have been put forward by anthropologists to distinguish the ethnic level of human social organization from the band level. Very few properties are common to all ethnies (Dentan, 1991; Knauff, 1991, p. 418). However, Boyd and Richerson underscore that ethnies form cultural units. Many culturally-transmitted norms, including norms of cooperation, are recognized by all the members of a given ethnies and these norms differ from the norms that prevail in other ethnies (Richerson and Boyd, 1998, 1999).²¹ This level of social organization is specifically human.²² The first ethnies appear in the archaeological record 50 000 years ago (Klein, 1999) and may have existed earlier.²³

An important aspect of ethnies is the existence of ethnic markers (Richerson and Boyd, 1999; McElreath et al., 2003). Coethnics have in common various types of symbolic signs, e.g., body paintings, clothes, jewels, accents etc., that signal their ethnic membership. These markers vary across ethnies. Signs that may have functioned as ethnic markers are well attested in Europe 40 000 years ago. According to some paleoanthropologists, ethnic markers may have existed much earlier in Africa (McBrearty and Brooks, 2000, p. 531).

It has been hypothesized that this level of social organization has created *sui generis* adaptive forces (Boyd and Richerson, 2001; Richerson and Boyd, 1998, 1999). For example, according to Boyd, Richerson and their colleagues, beside the cognitive mechanisms that evolved to deal with kin and coalitions, Mother Nature has endowed us with specific

²¹ Of course, some norms are specific to sub-ethnic groups and others are common to several ethnies. Ethnies should not be thought of as homogenous, isolated groups that differ linguistically and culturally *in toto* from other ethnies (Richerson and Boyd, 1999).

²² We will not review the evidence for this hypothesis (Bettinger, 1991, p. 203-205; Rodseth et al., 1991; Richerson and Boyd, 1998, 1999; Boyd and Richerson, 2001; Hublin, 2003; Richerson et al., 2003, p. 369).

²³ But see Knauff (1991, p. 392), for whom the ethnic level of social organization is a relatively recent phenomenon (around 12 500 years ago).

cognitive mechanisms whose evolved function is to commit us to respect the norms of our own ethnies (particularly, the group-beneficial norms).

Ethnies may thus have been an environment that produced new selective pressures. These pressures may have selected for an ethnic cognition beside our kin and coalitional cognition. Gil-White suggests convincingly that this is the key for understanding racial cognition.

4.2. An Adaptive Scenario: Ethnic Cognition and the Exaptation of Human Folk Biology

Gil-White endorses the picture presented above (2001a, pp. 518-519; see also Machery and Faucher, forthcoming). On this basis, he proposes the following evolutionary story. Humans have evolved an ethnic cognitive system that is based on our folk biology (Gil-White, 1999, 2001a). That is, humans have evolved to apply their folk biology to ethnies: they are disposed to think of ethnies as if they were biological species. Our evolved folk biology contains the innate knowledge and the reasoning biases that are generally applied to biological species (Atran, 1990, 1998; Medin and Atran, 1999, ms). According to Gil-White, this module includes particularly a belief in essences (2001a, p. 518, 524 sq.).

Ethnies triggered our ancestors' folk biology, because ethnies and species have several important characteristics in common. First, ethnies are characterized by clusters of stable, culturally transmitted behavioral norms and different ethnies have often very different norms (Boyd and Richerson, 1992; Kelly, 1995; Henrich and Boyd, 1998). Thus, coethnics behave similarly, and members of different ethnies behave differently (Gil-White, 2001a, p. 518-519). Besides, when members of two different ethnies interact, they decrease the payoff of their interactions, since they have different behavioral norms. Humans are sensitive to such costs (McElreath et al., 2003). Thus, norm boundaries tended to coincide with social interactions, particularly with mating preferences. As a result, mating and reproduction tend to take place within ethnic boundaries (Gil-White, 2001a, p. 519). Endogamy and descent-based ethnic membership result from people's sensitivity to the costs of cross-ethnic mating and reproduction. Finally, as we saw, ethnies are distinguished by external markers. Our ancestors tended to broadcast their ethnic membership and to pay attention to these signals (dress, scarification etc.). Parents and children usually display the same markers (Gil-White, 2001a, p. 519). To summarize, ethnies may have triggered our ancestors' evolved folk biology because they share the following characteristics with species: coethnics display the same physical markers, coethnics have many behaviors in common, ethnic membership is based on descent, and reproduction is endogamous.

This application of our folk biology to ethnies is an exaptation (and not a misfiring): that is, applying folk biology to ethnies was adaptive and was selected for. For thinking about ethnies as if they were species may be good epistemology – though bad science: this belief justifies inductive generalizations on the basis of limited (probably fruitless) contacts. Since members of other ethnies have many behaviors in common, such wild generalizations may tend to be true (Gil-White, 2001a, p. 518, 530-532). If our ancestors occasionally interacted with members of other ethnies, this cheap learning strategy may have been adaptive. Moreover, a species view of the ethnic world plausibly reduces the frequency of interactions across ethnic boundaries whose success requires shared norms – particularly mating across ethnic boundaries.²⁴ Conceptualizing ethnic membership biologically may be the basis for a preference for shared norms-based interactions with co-ethnics and for a reluctance to interact, particularly to mate, with members of other ethnies (Gil-White, 2001a, p. 532). Thus, ethnies may have been adaptively included in the proper domain of our folk biology (for other considerations, see Machery and Faucher, ms).

According to Gil-White, races would trigger by mistake our ethnic module. For the physical properties that define race membership are similar to some ethnic markers (Gil-White, 2001a, p. 533-534). Moreover, they are shared by parents and children, like ethnic markers. Our folk biology has not been exapted to be applied to races, because it is not adaptive to view them as ethnies. More generally, Gil-White's theory makes the strong prediction that groups in which endogamy and descent-based membership, e.g., aristocracy, prevail will be likely to trigger this hypothesized ethnic cognitive system (Gil-White, 2001a, p. 547).

4.3. Gil-White's Empirical Evidence

Gil-White studied Torguuds and Kazakhs. Both groups have similar ways of life: they are semi-nomadic pastoralists, belonging to the same social class and living in the same environment, although they are territorially segregated. In both groups, children inherit their ethnicity from their father (Gil-White, 2001a, p. 522 sq.).

Gil-White used the following questionnaire, which he administered first to 59 participants in 1997, then (with some modifications and a random order of the questions) to 41 in 1998 (2001a, p. 522 sq.; 2002). This questionnaire is largely inspired by Hirschfeld's

²⁴ Of course, migrations, cultural influences, and economic exchanges occur between ethnies (on economic exchanges, see Terrell et al., 1997; McBrearty and Brooks, 2000, pp. 513-517, p. 531; on cultural influences, see Terrell et al., 1997; Boyd and Richerson, 2002). Interethnic alliances are also known. However, exchanges across ethnic boundaries are very different from exchanges between coethnics.

developmental experiments (1996, chap. 4) and by Gelman and Wellman's (1991) research on children's folk biology. The point is to determine whether the ethnic ascription is sensitive to the rearing environment or is transmitted by descent.

“Question (1) If the father is Kazakh and the mother Mongol, what is the ethnicity of the child?;

Question (2) The father is Kazakh, the mother Mongol, *but* everybody around the family is Mongol and the child *has never even seen a Kazakh*, outside of the father. The child will learn Mongol customs and language. What is the ethnicity of he child?;

Question (3) A Kazakh couple has a child that they don't want. They give it in adoption to a Mongol couple when the child is under a year old. Around the Mongol family there only are Mongols and the child grows up *never meeting or seeing a single Kazakh*. He is never told of the adoption *and thinks that his biological father and mother are the Mongol adopters*. He grows up learning Mongol costumes and language. What is the ethnicity of this child?” (Gil-White 2001a, p. 522; emphasis in the original text).²⁵

For the first question, 90% in 1997 and 100% in 1998 of the participants said that the child was Kazakh, which suggests that ethnic membership is patrilineal; for the second one, 80% and 83% concluded that he was Kazakh; finally, for the last one, 59% and 76% concluded that the child was Kazakh. Gil-White distinguished three groups (2001a, 2002). Those who answered “Kazakh, Kazakh, Kazakh” were called “hard primordialists”; those who answered “Kazakh, Kazakh, Mongol” were called “soft primordialists”; finally, those who answered “Kazakh, Mongol, Mongol” were called “soft circumstantialists”. Clearly, these results suggest that a large majority of Gil-White's subjects expected ethnic membership to be impervious to the rearing environment. According to Gil-White, these cross-cultural results support the claim that human ethnic cognition is essentialist²⁶.

Gil-White went further (2001a, p. 526; 2002). He tried to see whether people associate ethnic membership with the possession of an essence. As we saw, essentialist thinking posits that category members share a hidden essence that determines what they really are. Thus, a child may still be a Kazakh, even if he appears in terms of language, tradition, dressing, etc. like a Mongol. This should be manifest somehow in his behavior. Essentialists should thus deny that the child could ever become exactly like his adoptive parents.

Gil-White asked to some hard primordialists whether an adopted child would look like his adoptive Kazakh parents or whether he would be somewhat different. Most subjects answered that the child would look like a Mongol. He went on asking whether the child could *behave*

²⁵ In the 1998 questionnaire, the father is Mongol and the mother Kazakh, the child is a daughter and the order of the questions is randomized.

²⁶ Scupin (personal communication) has run a similar experiment with university students from Thailand. The results are mixed. Scupin used two sets of questions. For the first set of questions, only 50% of the students gave primordialist's answers to question 2 and 3. For the second set of questions, answers to question 2 suggest that most students are circumstantialist, while answers to question 3 suggest that most students are primordialist.

exactly like the Kazakhs or somewhat differently. 74% of the hard primordialists' replied that the child would behave somewhat like a Mongol. Asking how many generations were required to have the blood of the other ethnic "erased", more than one half of the primordialists replied "never". This is seen as confirming the essentialist prediction. According to Gil-White, these replies show that the descent-based ethnic membership is more than a mere labeling of one's ascent. It implies developing some bodily and behavioral properties of one's ethnic group and a limited influence of the rearing environment. He concludes that this is consistent with a commitment to ethnic essentialism (2001a, p. 526).

Moreover, in informal discussions with some hard circumstantialists, he discovered that their explicit non essentialist answers differed from some other beliefs (2001a, p. 526-529). For example, some soft circumstantialists claimed, on one hand, that the child would belong to his rearing ethnic and, on the other hand, that she would be unable to do some things that were characteristic of their rearing ethnic (e.g., sorcery). This second answer is taken to imply a commitment to essentialism. This suggests that people's implicit view of ethnic membership may differ from their explicit view.

Finally, Gil-White replaced ethnic names by the names of clans, i.e., sub-ethnic groups, in the questionnaire presented above (2001a, p. 529-530). Crucially, the answers differed markedly from the answers triggered by the ethnic questionnaire.

4.5. Merits and Problems

Gil-White's theory is not entirely new. He endorses the most convincing points of Hirschfeld's account. He endorses the evolutionary picture of the evolution of human social behavior and cognition that is put forward by Boyd, Richerson and colleagues. However, to our knowledge, he is the first to synthesize these disparate ideas, to provide a rather compelling evolutionary hypothesis and to build a seductive explanation of racialism on this basis. We are convinced by many aspects of Gil-White's theory. The hypothesis of an evolved ethnic cognitive system is particularly convincing. We also believe that he made a convincing case that this system underlies racialism. Nonetheless, several problems remain.²⁷ In a companion paper (Machery and Faucher, ms), we address some of these issues, developing thereby Gil-White's theory.

First, Gil-White's theory shares several problems with Hirschfeld's. This is not very surprising, since his psychology of racialism is partially borrowed from Hirschfeld's. He

²⁷ For further criticisms, see the comments on Gil-White, 2001a in the same issue.

interprets the empirical evidence through the psychological essentialism framework, although a belief in essences is not necessary to explain the reasoning patterns he presents. Besides, we disagree with the way Gil-White deals with the diversity of people's answers to his questions. He purports to explain away these differences, claiming that deep down, everybody is committed to a biological view of ethnic membership and that circumstantialists models are superimposed on this biological view. Since differences are explained away, no attempt is made to explain why some individuals would not conceptualize ethnic membership biologically. Gil-White provides certainly some circumstantial evidence that some circumstantialists believe that ethnic membership is an inherent, descent-based property. However, no systematic evidence is provided that *all* or even *most* circumstantialists share this belief. Given that many people deny having a biological view of ethnic membership, we feel that the evidence falls short of establishing Gil-White's bold claim.

Second, it has to be recognized that the evidence for Gil-White's proposal is slight. It is supported by Hirschfeld's developmental data and by his own anthropological data. However, it seems fair to say that the jury is still out. More cross-cultural data are needed (but see Scuin, ms). Gil-White (1999) had tested his hypothesis against the ethnographic record. Particularly, he proposes that the evidence does not support the claim that in some cultures, people can change their identity at will, which would falsify his views. However, this survey of the ethnographic record does not establish that people think about ethnic membership *biologically*. To support this idea, it must be shown cross-culturally that we reason similarly about species on the one hand, races and ethnies on the other.

Moreover, Gil-White relies on Gelman and Wellman's nature-versus-culture experimental paradigm (Gelman and Wellman, 1991). This paradigm was developed to determine which properties are believed to be inherited and impervious to rearing environments. This paradigm has been intensively used, particularly by Hirschfeld in order to study children's conceptualization of racial properties, like skin color (Hirschfeld, 1996, chap. 4; Solomon et al., 1996; Astuti, 2001a; Scupin, ms). We suggest that other experimental paradigms should also be used (in agreement with Gil-White, personal communication). Converging results resulting from several experimental paradigms would lend greater support to Gil-White's promising development of Hirschfeld's ideas.

Third, Gil-White proposes that our evolved folk biology is a skeletal commitment to essentialism that is filled in by culturally transmitted biological beliefs (Gil-White, 2001a, p. 551, personal communication). That is, children believe that species are characterized by an

essence, but have no specific belief about the nature of this essence or about its transmission (Medin and Ortony, 1989). Beliefs about these matters are learned. We agree with Gil-White that most folk biological beliefs are culturally transmitted.

There are two points of contention. First, there is some convincing evidence that we are disposed to think of species in a hierarchical way (Atran, 1990, 1998; Malt, 1995; Medin and Atran, 1999, ms) and to reason inductively about them in a peculiar way (category-based induction, see Gelman and Markman 1986, 1987; for a general review, Medin and Atran, 1999, ms). Correlatively, we may also have evolved to believe that there are species-specific properties. But our evolved folk biology may contain little more. Particularly, if a commitment to the existence of essences is properly distinguished from the reasoning patterns it is supposed to explain (see section 2.3), essentialism may be culturally-transmitted and culturally specific (Malt, 1994; Fodor, 1998; Strevens, 2000; but see Gelman, 2003; Medin and Atran, ms). A stronger form of this objection could be addressed to Hirschfeld's hypothesis. Hirschfeld (2001, p. 109) is committed to a large endogenous contribution to the conceptualization of race. There is evidence that most of our folk beliefs are instead culturally-transmitted. For example, Solomon et al. (1996) present some evidence that before seven, children do not understand that birth mediates the transmission of biological properties – which is consistent with the idea that this knowledge is culturally transmitted.

Moreover, Gil-White suggests that we are predisposed to learn specific beliefs, for example, the beliefs that conspecifics naturally mate with each other and that they engender conspecifics (Gil-White, 2001a, p. 551, personal communication). We are not convinced. Notice first, that lack of cross-cultural variation does not support Gil-White's hypothesis. Everybody believes that the sky is blue. But, surely, we have not evolved to learn this belief. It is a true belief that is easily learned by each individual. Similarly, universal folk biological beliefs may simply be true beliefs that are easily learned either by individuals or by cultures. There is no need to suppose that we have been disposed by design to learn them. Second, the adaptive function of these beliefs is far from obvious. Certainly, once animal domestication was included in humans' behavioral repertoire, these beliefs were useful. However, animal domestication is a very late phenomenon in human evolution. And outside domestic breeding, we do not see what adaptive advantage could be conferred by them.²⁸ Thus, it is not clear that

²⁸ Does this simply expose our lack of imagination? If it does, it cannot count as an argument (Gil-White, personal communication). We believe this is a good argument. For, it is usually fairly easy to come up with some adaptive function for any psychological trait. This is a standard problem with evolutionary psychology. The fact

we have evolved to entertain them. Moreover, there is some cultural variation concerning these beliefs. In some cultures, people believe in the possibility of cross-specific fertile reproduction (Atran, personal communication). What about the claim that we evolved to learn the belief that a potential to develop species-specific properties is transmitted by descent? Again, it is obscure how this belief could increase our ancestors' reproductive success?

Fourth, the dynamic aspect of Gil-White's model has to be developed. For him, races trigger the ethnic cognitive system, because the relevant bodily properties, like skin color, are similar to ethnic markers and are transmitted from parents to children. He recognizes also that for various historical reasons, other social groups can acquire some characteristic properties of ethnies, particularly, endogamy and descent-based membership. As a result, they may trigger the ethnic cognitive system – thereby, being thought of biologically. This explains why various kinds of groups, for example social classes, are thought of in a biological way (Rothbart and Taylor, 2001, p. 545; Gil-White, 2001, p. 547). Moreover, we suggest that this could lead to a complete ethnicization of these groups. They could develop common norms, including norms of cooperation, as well as ethnic markers. We would have some kind of looping effect (Hacking, 1995a), whereby some groups that are partially similar to ethnies end up being ethnies. We suggest that Afro-Americans may illustrate this idea. Plausibly, an ethnic group has emerged from an aggregate of slaves that came from different cultural groups in Africa, but that were compelled to mate with each other.

Fifth, if ethnies and races are thought of as animal species, they are thought of as peculiar species. Interethnic reproduction (e.g., rapes during wars) has probably existed during human evolution and was common for known ethnies. Interracial marriages have been common too during human history. Arguably, it has also been known for a very long time that cross-ethnic and interracial mating is fertile. Gil-White's proposal does not explain this fact (Astuti, 2001b; Boyer, 2001b). In reply, Gil-White (2001a, p. 550) suggests that when species are similar, e.g., donkeys and horses, we do not have the intuition that mating is impossible, simply that it is not natural. This reply is not convincing. For, it is far from clear that during war between ethnies, raping women or kidnapping women in order to mate with them is spontaneously viewed as immoral and unnatural. More generally, our folk biological view of species, our folk view of ethnies and our folk view of races may differ in several respects. For example, we conceptualize species hierarchically (Atran, 1990, 1998; Medin and Atran, ms).

that there is no obvious adaptive function for our folk biological beliefs is a *prima facie* objection against the claim that we have evolved to learn these beliefs in normal environments.

However, ethnies do not seem to be thought of as belonging to hierarchies. More should be said about the differences between these three folk theories.²⁹

Finally, Gil-White does very little to take into account the effect of cultural niches on our concepts of race. He insists that our folk biological view of ethnies constrains the diversity of our racialist concepts (Gil-White, 2001b). But his proposal does not cast much light on the interaction between culture and our evolved ethnic system.

We conclude that Gil-White has shown that we plausibly evolved an ethnic cognitive system and that it underlies racialism. We are however unconvinced by several aspects of his proposal. His explanation assumes an unlikely rich evolved folk biology and is far too static. Finally, the integration of his approach with the social constructionist evidence remains to be done.

5. Conclusion

Most contemporary theories of racialism are inspired either by social constructionism or by a cognitive cum evolutionary approach. Although there is no necessary antagonism between them, there has been little contact between proponents of these two approaches. This chapter purports to inspire theories of racialism that integrate the insights of both approaches (Machery and Faucher, ms). To overcome the prevalent theoretical tribalism, we have reviewed some significant contributions to the recent literature on racialism.

We have first presented the theoretical tenets and some results of the social constructionist research tradition on racialism. The way people conceptualize race membership is strongly influenced by their cultural niche. We have however underscored that the similarities between phenotypic folk classifications across the world and history remain unexplained by this approach. These similarities suggest that racialism results from a universal cognitive system. Three cognitive cum evolutionary theories were then reviewed: all see racialism as a byproduct of an evolved cognitive system. Despite several shortcomings, Hirschfeld's contribution to the understanding of racialism is important. Although more evidence is needed, he has provided some evidence that racialism results from a domain-specific cognitive system, that it develops early and that races are thought of in many respects as animal species are. However, we have rejected his hypothesized human kind module and his

²⁹ This fact is also problematic for Atran's view (Atran, 2001; see also Rothbart and Taylor, 1992)). According to Atran, there is no need to posit any new cognitive system to explain racial cognition: races merely trigger our folk biology, because of their perceptual properties. He would have to explain the differences between human racialist and biological cognitions. Positing an ethnic cognitive system may be instrumental in explaining these distinctions, even if this system is based on an exaptation of our folk biology.

evolutionary hypothesis. Kurzban, Tooby and Cosmides have shown that an evolved coalitional cognitive system may use concepts of races. However, we have rejected the claim that racialism results from this cognitive system. Finally, we have presented Gil-White's theory: humans have evolved an ethnic cognitive system and this system underlies racialism. Despite several shortcomings, we have underscored the merits of this proposal.

On the basis of this critical review, we can put forward eleven requisites for future theories of racialism. Some are uncontroversial, while others reflect our own theoretical commitments.

1. Races do not exist. No theory of racialism can assume the existence of races. This suggests that there is no evolved module for racialism.
2. Racialism varies across cultures and concepts of races are influenced by their cultural niche. A theory of racialism has to accommodate this diversity.
3. Classifications of humans on the basis of phenotypic properties are similar all over the world. These similarities ought to be studied in more details by historians and anthropologists. A theory of racialism has to account for them.
4. The similarities suggest that racialism is the product of a universal cognitive system. Researchers have to specify precisely the cognitive mechanism(s) that underlies racialism.
5. The use of our concepts of races should not be confused with their content and origin. Concepts of races are not proprietary of a single cognitive system.
6. Detailed evolutionary hypotheses about the evolution of this cognitive system should be formulated and confronted to the best paleoanthropological theories of the evolution of human social behavior. Particularly, it should not assume that coalitions are the only evolutionary significant social groups.
7. Researchers should not interpret the empirical evidence through the controversial framework of psychological essentialism. Known reasoning patterns about animal species and other categories do not imply that people believe in essences.
8. Researchers should not assume that our evolved folk theories, e.g., our evolved folk biology, are rich and rigid. It is possible that most of our folk beliefs are culturally transmitted.
9. Theories of racialism tend to be ambitious. In contrast, the evidence that is often adduced tends to be rather slight. Psychologists should derive many predictions from their

theories. Rival theories should not be able to derive these predictions. Researchers should test them using many different experimental paradigms.

10. Cross-cultural data are needed to support claims about the universality of patterns of reasoning etc. Researchers should not rely exclusively on undergraduates from industrial societies.

11. Psychologists should not focus exclusively on the majority answer in their aggregated data. Individual differences can cast some light on the mechanisms that underlie racialism.

Although no current theory of racialism satisfies all these requirements, it should be plain that recent theories have significantly contributed to a fuller understanding of racialism.³⁰

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