The final exam is cumulative but will emphasize later material, which was not covered by earlier exams. This study guide does not cover the lectures, because you can review all of those on the class web site. Instead, it will review the assigned readings.

The study guide does not cover the movie (The Social Brain) either. It is available however at Marriott Library, if you missed the showing in class.

Lewin. Human evolution. Ch 29  Summarizes the genetic evidence on modern human origins. It goes over the mitochondrial evidence that I discussed in lecture. Make sure you understand why genetic evidence tells us about population history. Lewin uses the data to support the Replacement Hypothesis. A few years ago I would have agreed, but now I am skeptical. See the lecture notes for my current views.

Baron-Cohen. Mindblind  Simon Baron-Cohen is famous for his insight that after about age four, all normal humans are “mind readers” in an important sense. Those who fail to develop this ability are, as Baron-Cohen puts it, “mindblind.”

I hope this reading will reinforce and complement the material in The Social Brain, a movie that you saw in class. Be familiar with mind reading and mindblindness, and understand how they relate to autism. What evidence suggests that autism is a genetic disease? Is mind reading common among animals, or is it a uniquely human adaptation? What is it good for?

Diamond. Why do we grow old and die?  Here are some questions to bear in mind as you read this article: (1) Why is aging an interesting problem in the first place? Isn’t it just an inevitable consequence of wear and tear? (2) Diamond emphasizes the distinction between proximate and ultimate explanations, arguing that we need both kinds. Does he convince you? (3) Why do birds and turtles live longer than other animals of similar size? Why do women live longer than men? What is the general principle here? (4) Why does menopause make sense? [(1)]

Haig. Prenatal power plays  In this brief summary, Haig summarizes his views on maternal-fetal conflict. In many species, mother can control the supply of nutrients to fetus. In humans (and some other animals), mothers are essentially unable to do this. Why?

Zimmer. Silent struggle  More detail on maternal-fetal conflict, this time by a well-known science writer. Pay attention to Zimmer’s discussion of pre-eclampsia, which I did not discuss in lecture. Also read carefully the section on the imprinted genes Igf2, Igf2r, and GnasXI. The final section deals with imprinted genes that are active in brains and may influence the behavior of adults. This is a fascinating possibility, but too speculative to cover on the exam.

Ridley. Origins of virtue. Ch 1  What are collectives, and what is a “free rider?” Be prepared with examples from Nature, and understand how these defend against free riders.

Ridley. Origins of virtue. Ch 2  Argues that human cooperation is not about nepotism. It is about specialization and reciprocity. Why is specialization advantageous? How does reciprocity enable humans to enjoy these advantages?
Ridley. Origins of virtue. Ch 3 This chapter introduces several ideas from game theory, organized around the prisoner’s dilemma game (which we played in class). As you read the chapter, make sure to figure out what the prisoner’s dilemma is meant to model. In other words, what sorts of real-life social interactions can plausibly be described as examples of the Prisoner’s Dilemma? The next step is to figure out what natural selection will do in such cases. The answer will involve something called an evolutionarily stable strategy (ESS), a concept that you should definitely understand. There are three cases to consider, depending on whether the game is played (a) just once, (b) a fixed number of times (as in our in-class game), or (c) an indefinite number of times. You should understand the ESS in cases “a” and “b.” Case “c” is most realistic but also most frustrating, for there is no unique ESS. This has given rise to a large literature over the past three decades. Prominent in this literature is a strategy called “tit for tat.” Understand this strategy and why people find it interesting. Ridley mentions several examples from nature.

Ridley. Origins of virtue. Ch 4 This chapter is important and covers a lot of ground. As you read it, look for answers to the following: (1) How common is tit-for-tat (TFT for short) in Nature? (2) What is TFT’s “Achilles heel” (as identified by Boyd and Lorberbaum)? (3) What conditions encourage generosity and cooperation in computer tournaments? (4) What happens when individuals interact in larger groups? (5) What conditions can stabilize reciprocity in larger groups? (6) How does reputation affect the problem? For each of these issues, ask yourself: What is the evidence? Is there any?

Ridley. Origins of virtue. Ch 5 Hunters (along with several other species) share meat more widely than other foods. Why? Ridley discusses several possibilities, including reciprocity, tolerated theft, showing off, direct exchange for sex, and costly signalling. In human societies, hunting is done mainly by males. Why? Is this pattern peculiar to humans? What did we learn from Franz de Wall’s experiments with chimpanzees?

Ridley. Origins of virtue. Ch 6 Ridley argues that sharing probably did not evolve until our ancestors began hunting big game, and he ties this to grasslands and the dart thrower. Be familiar with his argument.

Kaplan and Hill have argued with Hawkes (of our dept) about why hunters share meat, and Ridley covers this disagreement. Issues include (a) what men get in return (sex or status/social attention), (b) whether hunters can direct meat to particular individuals or not, and (c) why men hunt in the first place (to show off, or for nutrition).

Why does Ridley think gifts are useful as weapons? In his view, how are gifts relevant to cooperation?

Ridley. Origins of virtue. Ch 7 Ridley covers the argument of Tooby and Cosmides, to the effect that human brains include a special-purpose mechanism for detecting cheaters. Understand their reasoning.

He then moves on to Robert Frank’s idea that emotions have evolved to solve commitment problems. What is a commitment problem? Be familiar with the reasoning and the evidence on this issue, particularly the evidence involving the ultimatum and dictator games.

Ridley. Origins of virtue. Ch 8 Be familiar with Ridley’s examples of coalitions among individuals in various species of non-human animal. How are these coalitions organized? What are their goals? What do human coalitions have in common with these non-human examples? What makes us different?

Ridley. Origins of virtue. Ch 9 This chapter suggests that human cooperation is an adaptation that enables us to succeed in warfare. It begins with a biological example (seed-harverster ants), which suggests that the idea isn’t silly. How does this example support that case?

The next issue involves group selection. Ridley rehearses the argument against the view that group selection is generally important in evolution. We covered this early in the course, so this should be familiar. He then discusses “cultural group selection,” a new idea that you should pay attention to.

Ridley then proceeds to discuss several experiments that bear on the possibility that cooperation evolved to help us in fights between groups. Pay attention to the summaries of Asch, Sherif, and Tajfel, and understand how their work bears on Ridley’s argument.

Ridley. Origins of virtue. Ch 11 What evidence bears on the question: are humans natural conservationists?
Ridley. Origins of virtue. Ch 12  What is the “tragedy of the commons,” and why is private property often held to be a solution? Ridley reviews several historical and ethnographic examples of “commons” that are not free-for-alls. Be able to summarize at least one of them and explain why it works (for example, the Medieval commons, water management in Valencia, and the Maine lobstermen).

Many anthropologists think that local control of resource management works better than state control. Why? Ridley’s rant against nationalizing resources suggests some reasons, including greater effectiveness of social control in small groups where people know each other, greater legitimacy of local government, and return of benefits to the community that is paying the costs.

In Eleanor Ostrom’s “Voluntary Contribution Experiments” have been extended and modified in many later experiments that were discussed in lecture. Ridley discusses Ostrom’s original work. What did she do? What did she learn?