providing much of an overview of large-scale sources and sinks. However, the "Control measures" chapter benefits from this level of detail, providing a valuable review of the strengths and weaknesses (and context-specific appropriateness) of numerous stormwater-management approaches (including best-management practices, low-impact development, sustainable urban water management, and sustainable urban drainage systems). However, this last chapter is highly technical and may be difficult for some policymakers to access, calling into question their role as a target audience addressed in the book's subtitle.

Although the book provides great detail on the science and technical management of stormwater, the drivers of stormwater (e.g., poor land use planning, perverse economic incentives, and inadequate or ineffective policy implementation) are glossed over. A two-page appendix provides a very superficial history of stormwater policies in the United States since the 1800s without discussing any of the complexity of Clean Water Act implementation. Scientists and civil engineers will be the most comfortable with the text and are likely to find it incredibly useful, either for practice or in seminars for science and engineering students—as the author designed it. However, for courses or readers who need to understand the social, economic, and policy drivers that generate excess stormwater (and its pollutants), *Stormwater* is likely to come up short. I highly recommend combining this book with more policy-focused readings such as *Economic Incentives for Stormwater Control* (Thurston 2011).

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DIVIDING THE PLEISTOCENE PIE

The Origins of Fairness: How Evolution Explains Our Moral Nature. Nicolas Baumard. Oxford University Press, 2016, 272pp., illus. $74.00 (ISBN: 978-0190210229 cloth).

The sense of fairness is a central aspect of human moral psychology. Intuitions about fairness lead to many widespread moral beliefs, such as the belief that the punishment should fit the crime or the belief that one deserves a fair share of what one has earned. In *The Origins of Fairness*, Nicolas Baumard sets out to shed light on the evolutionary origin of these intuitions. He argues that the human sense of fairness is innate and universal, and he offers an account of its evolution that highlights the role of bargaining in early human "cooperation markets."

The book is a translation into English of a book published in French as *Comment Nous Sommes Devenus Moraux* [How We Became Moral] in 2010. There is much to like about it: It is ambitious, wide ranging, and accessible. The translator, Paul Reeve, has done an excellent job. Such a book deserves to be read—and to be subjected to scrutiny. Here, rather than providing a chapter-by-chapter summary, we will discuss the evolutionary account at the heart of the argument.

An evolved sense of fairness

Baumard's big idea is that early humans, living in small-scale, hunter–gatherer societies in the Pleistocene epoch, routinely faced the problem of choosing partners with whom to collaborate (e.g., for the purpose of hunting big game). This led to simple bargaining situations, in which potential social partners would negotiate over how to divide the fruits of their cooperation (let us call it *the pie*), with the *outside option* of walking away and choosing someone else if the division were unappealing.

Over the last few years, Baumard and colleagues have made various evolutionary models of these bargaining situations, with the aim of studying how the outside options available to each agent affect the way the pie is divided. The overall message of their work is that when two agents are equal in their reputation and therefore have equally good outside options, agreeing on an equitable division of the pie is mutually advantageous. However, when there is a reputational asymmetry, such that one agent has better outside options than the other, this agent has greater bargaining power and can therefore command a larger share of the pie.
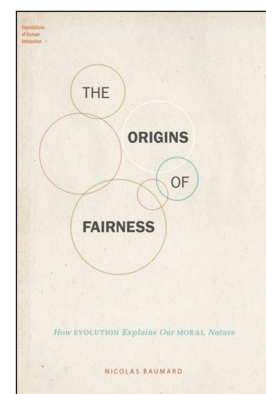
The most successful agents in the cooperation market would therefore

have been those who demanded a share of the pie that accurately reflected their relative bargaining power. But the stakes would have been high. Misjudging one's relative bargaining power or that of a prospective collaborator would have been costly. Those who demanded too much—in the eyes of their prospective social partners—were shunned, whereas those who demanded too little were exploited.

Clearly, success in a cooperation market calls for subtle calculations. One needs an accurate sense of one's own bargaining power and of the bargaining power of others. Baumard's hypothesis is that given the adaptive importance of getting these calculations right, we should expect a dedicated, innate mental faculty to have evolved for this task—and that faculty is the sense of fairness. Roughly, a division of the pie that accurately reflects the agents' relative bargaining power is intuitively judged to be fair, whereas a division that gives agents more or less than their relative bargaining power commands is intuitively judged to be unfair.

Fairness versus bargaining power

It is a fascinating hypothesis. On the face of it, however, it seems to posit too close a link between bargaining power and intuitive judgments of fairness. If our sense of fairness evolved to help us avoid exploitation and exclusion in cooperation markets, we should intuitively judge a division of the pie to be fair when all agents receive a share that accurately reflects their relative bargaining power. This appears to be the basic qualitative prediction of Baumard's approach. However, as DeScioli (2013) has noted, this often seems not to be the case. Bargaining power is sensitive to supply and demand, whereas our judgments of fairness seem much less sensitive to supply and demand.

For example, suppose five hunters divide the labor of hunting a deer: Four do the legwork of pursuing the prey for hours until it is exhausted, and the fifth does the job of killing the exhausted animal with a spear. Suppose that although running is harder work than spear throwing, running is in much greater supply: Running is a skill that many people have, whereas spear throwing is a rare, highly valued skill. Because of this, the skilled spear thrower has many more outside options than the runners—and much greater bargaining power—and accordingly commands a much larger fraction of the meat. Baumard's theory appears to predict that we should intuitively judge this division to be fair.

But do we? Intuitively, the runners deserve a share that reflects the amount of work they put in. They do not deserve less food, morally speaking, simply because their skills are in greater supply. And the spear thrower does not deserve more food, morally speaking, simply because his skills are in shorter supply. At face value, it seems that Baumard's evolutionary account cannot make sense of this: It cannot explain why intuitive judgements of moral fairness so often fail to track facts about relative bargaining power—and, in particular, why these intuitive judgments are not affected by supply and demand in the same way that relative bargaining power is affected.

In other work, Baumard has resisted the idea that his theory predicts that fairness is "nothing but a translation into moral norms of the relative bargaining power of individuals" (Baumard et al. 2013, p. 104). His response, in brief, is that it is the long term rather than the short term that matters, and fluctuations in supply and demand tend to wash out over the long term. A division is intuitively judged to be fair when it sets a norm that will prove mutually advantageous over the long run. Sometimes, an intuitively fair division involves one agent waiving a short-term bargaining advantage, with the understanding that the other agent would likewise waive any short-term advantages that come their way in the future. For example, it is not intuitively fair for a hardware store to raise the price of snow shovels because there has just been a snowstorm, nor is it in the store's long-term interest to do so, because it would risk terminating long-term mutually advantageous interactions with customers (an example discussed in the third chapter of the book).

However, this still seems to suggest that fairness is, for Baumard, nothing but a translation into moral norms of the *long-term average* of the relative bargaining power of individuals, and this still seems to be a prediction that is hard to square with our actual intuitions about fairness. Do we really judge that it is unfair to give a large fraction of the meat to the spear thrower because we implicitly expect his short-term bargaining advantage to wash out over the long run? Nothing of that sort is implied in the example. It may be that this particular team of individuals will never interact again. It may also be that because of a long-term shortage of raw materials, innate skills, or specialist knowledge, spear throwers are permanently in short supply relative to runners. But these pieces of background information about the constraints on supply and demand do not seem to shift our intuitive judgments of fairness—or at least not as much as Baumard's theory seems to predict.

Conclusions

In summary, we are not convinced that the relationship between judgments of fairness and bargaining power is as close as Baumard suggests. Partner choice in early human cooperation markets might have led to the evolution of a *market sense*—a faculty for making fast, intuitive judgments about bargaining situations—and it is not implausible that the output of this market sense feeds through, in some way, into our intuitive judgments of fairness. But we think there must be more to the story than markets alone.

The origin of fairness is, of course, a subject of ongoing debate, and that debate will run and run. Given that Baumard himself has made significant contributions since the publication of *Comment Nous Sommes*

Devenus Moraux in 2010, it is a little disappointing that there is no epilogue or new chapter discussing how the literature has progressed in the past 6 years. Nevertheless, researchers with an interest in the nature of morality, whether they approach the topic from a philosophical, biological, psychological, or anthropological angle, will want to consult this book, which makes a sustained case for a novel account of the origins of the sense of fairness. Its publication in English should be warmly welcomed.

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