

# Right Now

The expanding Harvard universe

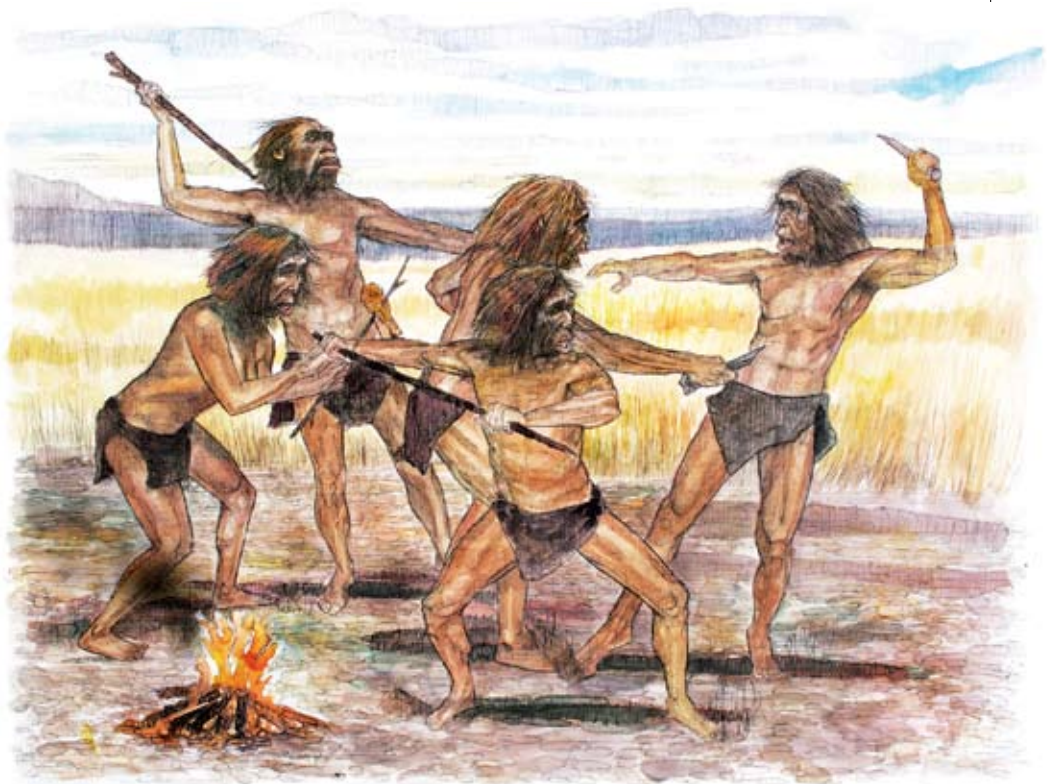
PRIMITIVE PROTECTION RACKET

## Evolution by Fire

**A**NTHROPOLOGISTS and evolutionary biologists have long sought to understand what makes humans special. How did we develop large brains, for example? Moore professor of biological anthropology Richard Wrangham offers a fresh perspective in his new book, *Catching Fire: How Cooking Made Us Human*, in which he argues that cooking—because it made more calories available from existing foods and reduced the caloric cost of digestion—was the breakthrough technological innovation that allowed humans to support big brains. He also suggests that cooking shaped the human mating system, among many other effects.

Wrangham observes that chimpanzees, from whom humans diverged millions of years ago, eat many things raw that humans can't, suggesting that *Homo sapiens* evolved away from this ability. In fact, he notes that people who choose to consume only raw food generally don't get enough calories unless they do something that essentially pre-digests it, such as running it through a blender. Women on such a diet typically stop menstruating.

That is because cooking—thanks to chemical processes that differ for starches, meats, and connective tissue—increases the number of calories in the food available to the human digestive system. Cook-

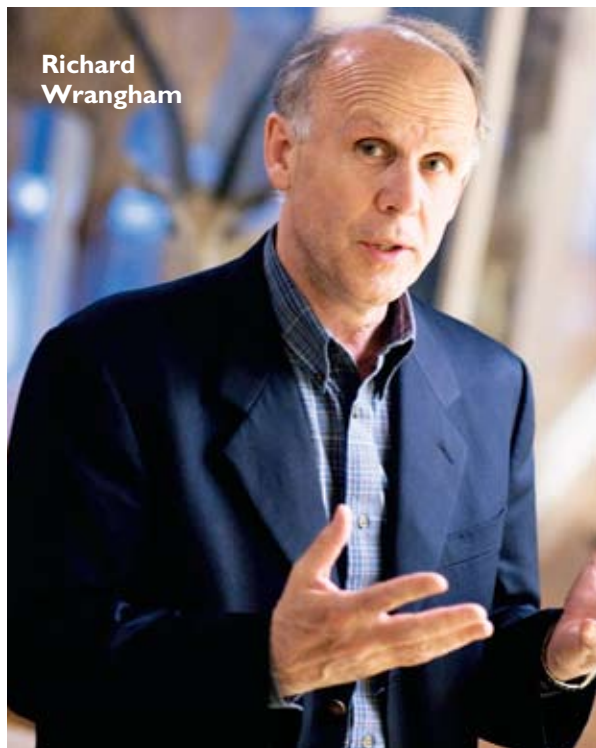


ing also reduces the energy cost of digestion: gorillas, for example, must chew all day to absorb enough nutrition. Cooking makes more metabolic energy available for other things: the development of a large brain relative to gut size, or later, in prehistoric societies, more time available for hunting.

Wrangham believes that the control of

fire and physiological changes resulting from a cooked diet would have occurred relatively quickly, citing the famous example of the beaks of finches in the Galápagos, which have changed rapidly from generation to generation in response to environmental cues. The taming of fire, through cooking, would have changed everything about us, he says, from the size of

Richard Wrangham



STEPHANIE MITCHELL/HARVARD NEWS OFFICE

## Cooking shaped social relations between human males and females, from the sexual division of labor to a mating system based not on sex but on food.

Wrangham's ideas is that cooking shaped social relations between human males and females, from the sexual division of labor to the mating system itself, which, he argues, is based not on sex but on food. Among other primates, males and females looking for food collect the same things. Wrangham believes cooking, by providing quick calories, allowed human males to focus on hunting, leaving gathering and cooking to the females. This would explain the eventual sexual division of labor and our practice of sharing food.

But it also left cooks vulnerable to exploitation. Cooking, he points out, "is a conspicuous and lengthy process."

In the bush, the sight or smell of smoke reveals a cook's location at a long distance, allowing hungry individuals who have no food to easily locate cooks in action...The effect among *Homo erectus* is easily imagined. Because females were smaller and physically weaker, they were vulnerable to bullying by domineer-

ing males who wanted food. Each female therefore obtained protection from other males' wheedling, scrounging, or bullying by forming a special friendship with her own particular male. Her bond with him protected her food from other males, and he also gave her meat. These bonds were so critical for the successful feeding of both sexes that they generated a particular kind of evolutionary psychology in our ancestors that shaped female-male relationships and continues to affect us today.

Wrangham describes the resulting pair-bond as a "primitive protection racket" in which husbands "used their bonds with other men in the community to protect their wives from being robbed, and women returned the favor by preparing their husbands' meals." Cooking brought many benefits to humans, he concludes, but it "trapped women into a newly subservient role enforced by male-dominated culture. Cooking created and perpetuated a novel system of male cultural superiority. It is not a pretty picture." —JONATHAN SHAW

our faces and our brains to our social organization.

When this great leap forward took place is hard to say, even roughly. Wrangham favors a period 1.8 million years ago, when *Homo erectus* emerged. But as his colleague, MacCurdy professor of prehistoric archaeology Ofer Bar Yosef, has pointed out, there is still no evidence for the use of fire before 800,000 years ago.

Perhaps the most provocative of

### TEST AND DIGEST

## Learning by Degrees

THE IMAGE IS GRIM: "binge and purge" learning. It's what students do when they cram for a test: consume subject matter in a large lump (binge) and then spit it back on the exam (purge). This mode of study doesn't seem to produce durable learning. During the past four years, associate professor of surgery B. Price Kerfoot, M.D.

'96, Ed.M. '00, has developed a scheme that's more like grazing: "spaced education." More than 10 rigorous studies on medical students and residents using randomized trials have shown its efficacy: it can increase knowledge by up to 50 percent, and strengthen re-

**The SpacedEd course catalog, at right, offers students the chance to "Learn most anything in 3 minutes a day." Although most courses at the moment are on medical subjects, there are also offerings in bartending, basic music theory, and fantasy football.**