

over those years run dramatically in the opposite direction? Levine would have done better to address himself frankly to such dis-

parities, rather than to airily proclaim that they do not exist.

—Wilfred M. McClay

Science & Technology

DEMONIC MALES: Apes and the Origins of Human Violence.

By Richard Wrangham and Dale Peterson. Houghton Mifflin. 350 pp. \$24.95

Why are men aggressive? For centuries, there have been only two explanations: original sin and human culture. Now come Wrangham, professor of anthropology at Harvard University, and Peterson, a professional writer, to offer a third possible explanation: the biological heritage we humans share with the great apes.

The authors begin with Wrangham's observation, in 1973, of a party of male chimpanzees raiding a neighboring community and savagely killing a lone male. Not food, not sex, not even territory was at issue; the act was simple murder. Over the years, researchers in four different African locations have identified similarly lethal raids. "In all four places the pattern appears to be the same," write the authors. "The male violence that surrounds and threatens chimpanzee communities is so extreme that to be in the wrong place at the wrong time from the wrong group means death."

While most people know that chimpanzees have humanlike qualities, it is only since 1984, when researchers developed the technique known as DNA hybridization, that chimps have been shown to be genetically closer to humans than to the other great apes. Chimps are more like us than they are like gorillas or gibbons, and not just in killing: males will also rape and batter females. To draw the nexus even tighter, Wrangham and Peterson cite the American anthropologist Napoleon Chagnon's studies of the Yanomamö tribe of the Amazon Basin. Despite having "not yet been pacified, acculturated, destroyed, or integrated into the rest of the world," the Yanomamö "are famous for their intense warfare." Their



frequent raids on neighboring villages produce a rate of violent death among young males that is roughly the same—about 25 percent—as it is among chimps.

Among chimps, the size of each gang is determined by the amount of food available. When the best food is scattered, wider-ranging travel is necessary and the gangs are smaller. Females, weaker and burdened by young, cannot keep up. So, with occasional exceptions, the gangs are all male.

Yet gang formation is not universal among the great apes. Among a rare species, the bonobos, there is no rape, battering, or warfare. The reason, says Wrangham, is the abundance of food in the bonobos' territory, which allows females to travel with males and keep them from forming gangs. The females band together, form their own strong attachments (often involving homosexual behavior), and protect themselves from errant males.

The sole weakness of this book is its neglect of the neurobiology of primate violence. The crucial role of differing serotonin levels in both human and monkey behavior is well known. Individuals with low levels of serotonin exhibit high levels of aggression, and vice versa. It would be useful to know whether similar findings exist with regard to the great apes, but the authors of this otherwise lucid and compelling book do not mention such research.

The authors strongly suggest that human gangs, known to have been present throughout recorded history, are hardly the product of drugs, shoot-'em-up television shows, or bad government policies. Faced with this dispiriting conclusion, the authors explore some ideas about how to control male violence but find few to be effective. Indeed, there is only one reliable method: marriage. When men are married to women, and women have (through countless means, including courts and democratic voting sys-

tems) the ability to protect their claims and control demonic males, society becomes more tolerable. Less exciting, perhaps, but more tolerable.

—James Q. Wilson

WHERE DOES THE WEIRDNESS GO?

Why Quantum Mechanics Is Strange, But not as Strange as You Think.

By David Lindley. Basic Books. 251 pp. \$24

Quantum mechanics is the branch of physics that considers the structure and behavior of the fundamental, unobserved components (atoms, electrons, photons) of the visible world. Given that some world-class physicists have found it difficult to understand and accept the principles of quantum mechanics (Einstein himself was a doubter), it's not surprising that the theories should puzzle the layperson. What is surprising is that a scientist should undertake to explain quantum mechanics to the general reader, and that he should succeed as well as David Lindley has in this compact, patiently argued volume. A certain unease lingers with the reader at the close of the book, but that is nature's fault, not Lindley's.

If a layperson knows anything about quantum mechanics, it is likely to be some variant of the principle that "measurement affects the thing measured." Alas, even that knowledge is flawed, for the statement is misleading. It implies that a quantum object—"the thing measured"—has a definite but unknown state, which is disturbed and altered

by the act of measurement. A more accurate formulation is that measurement itself gives definition to quantities that were previously indefinite. That is, a quantity has no meaning until it is measured. The primal state is indeterminism.

Hence the "weirdness" whose disappearance Lindley traces. The word refers to the ambiguous behavior of the particles that are the basis of everything in our workaday physical world (the world of classical physics). How, Lindley asks, does the unobservable, unstable subatomic world (where particles may be waves, and waves, particles, and photons seem to be in two places at once) provide the basis for a physical world susceptible to measurement and routinely exhibiting the stability lacking in its minutest components? Is there a boundary separating one world from another, across which the transformation occurs?

Yes and no. Or, fittingly, no and yes. Lindley insists on only as much certainty as the topic will bear. Quantum mechanics provides mathematical explanations for how the subatomic world works. But despite their validity, these mathematically unambiguous explanations leave us some distance short of understanding. Why? Because they cannot be made to assume shapes that we recognize from our experience of the workaday world. The reality they describe seems so ghostly and elusive that we wonder finally whether it has any claims on our attention. Lindley's accomplishment is to persuade us that it does—while at the same time reassuring us that nature as we know it is not thereby undermined.

—James Morris

Arts & Letters

LIFE OF A POET:

Rainer Maria Rilke.

By Ralph Freedman. Farrar, Straus & Giroux. 640 pp. \$35

Rainer Maria Rilke (1875–1926) is that rare oxymoron, a popular poet. Not in the academy, where young Germanists stake their careers in trendier soil, but among the ragged ranks of the reading public, Rilke is one of the most beloved poets of the 20th century. Born in Prague of a German-speaking family, he rejected the military and busi-

ness career that was expected of him and, after a brief marriage to the sculptor Clara Westhoff, became a wandering artist, cultivating friends and admirers all over Europe. In the modernist age he began as a romantic, evolving over time into a visionary poet who revolutionized the German language.

One might quibble with the emphasis, or lack thereof, given certain minor works and figures in this biography. But Freedman, emeritus professor of comparative literature at Princeton University, manages to distill