

MARTIN NOWAK removes his shoes, props his white-socked feet on a chair, and explains why he is right and everyone else is wrong. He's in the corner

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office of the program he directs, which occupies the sixth floor of an office building near Harvard

University, where he holds a dual appointment in mathematics and biology. The 46-year-old has an enviable résumé, with tens of millions in grants and hundreds of publications.

But it's the paper that appeared in *Nature* last August that has attracted the most attention. In it, he and his co-authors attempt to dismantle a dearly held tenet of evolutionary biology called kin selection. The response from fellow scientists has been less than favorable: 137 of them signed a letter that, in so many words, calls the paper bunk. The letter argues that Mr. Nowak, Corina E. Tarnita, and E.O. Wilson, the esteemed biologist, are not only wrong but wrongheaded. They don't even, these critics contend, seem to understand what it is they're attacking.

The nearly universal opprobrium hasn't shaken Mr. Nowak's confidence or diminished his genial demeanor, though—even when that criticism has taken a more personal turn.

SURVIVAL OF THE FRIENDLIEST

Evolution is cutthroat. Winners take all, cruelty triumphs over compassion. Except, strangely, when it doesn't. There are numerous examples of self-sacrifice and cooperation among organisms, altruistic behavior that benefits the community but harms the individual. Worker ants lay down their lives for the queen. Human parents value the well-being of their children over their own (at least in general). Sometimes nature is nice.

The phenomenon is called eusociality, and it's long been explained by the kin-selection theory. The scientist who quantified that notion was W.D. Hamilton, who calculated that the cost of certain generous actions was offset by the degree to which the do-gooder was related to his beneficiaries. Hamilton's rule has been cited countless times, repeated in biology textbooks, memorized by undergraduates everywhere. Ironically, it was Mr. Wilson who helped popularize Hamilton's insights.

Now Mr. Wilson has joined with Mr. Nowak to announce that kin selection is not necessary, that it doesn't really apply to most cases of altruistic behavior, and that biologists have been more or less debating themselves for decades. This is not how you make friends at conferences.

No one is saying that organisms don't cooperate: They clearly do. What Mr. Nowak and his co-authors are asserting is that the dominant model for understanding this coop-

eration, by placing such a strong emphasis on genetic relatedness, is seriously flawed. Relatedness matters less than biologists have supposed, they argue. And rather than requiring a separate model, cooperation can be accounted for using good old natural selection.

Attempting to summarize the conflict is perilous because the two sides don't agree on the basics. Some biologists would argue that Hamilton's rule is properly understood as an integral part of natural selection, not as some special addendum. In the *Nature* paper, it seemed to many that Mr. Nowak and company were insisting that relatedness didn't matter at all; they've since clarified the point, though not to everyone's satisfaction.

Dicier still is the fact that the debate hinges on the intricate mathematics of altruism, which plenty of biologists—to say nothing of journalists—would confess that they don't comprehend.

The argument is, at one level, completely pure. Scientists are quarreling about how best to describe the world. But there's also the issue of tone. The *Nature* paper was seen in some quarters as dismissive, even arrogant. Likewise, Mr. Nowak's new book, *Supercooperators: Altruism, Evolution, and Why We Need Each Other to Succeed*, doesn't tread lightly on the feelings of fellow researchers. Biologists are mocked as holding tight to a bogus theory rather than letting "an ugly and inconvenient fact get in the way."

Mr. Nowak is more conciliatory in person. He says that while he'd rather science "move beyond" kin selection, like a kid who dispenses with training wheels on a bike, he can imagine situations when it

The nearly universal opprobrium hasn't shaken Martin Nowak's confidence.

might be useful in helping someone think through a problem. But those hypothetical researchers should be aware that the theory is severely limited, the numbers don't add up, and that it shouldn't be relied on exclusively. Other than that, go for it.

A CARICATURE OF THE SCIENCE?

In fairness, his critics haven't exactly held their tongues either. They allege that Mr. Nowak is pummeling a straw man, defacing a caricature. For instance, Richard Dawkins, whose classic *The Selfish Gene* owes much to Hamilton, wrote that the paper "nullifies the whole point of kin selection" and called the chapter in *Supercooperators* that addresses the topic "embarrassing."

Others have taken more direct aim at Mr. Nowak, specifically the sources of his grants. Mr. Nowak, who is a Catholic, has been closely allied with the John Templeton Foundation, which in 2009 gave him a \$10.5-million grant. He also served, until last year, on its board of advisers. The Templeton foundation is viewed with suspicion by many scientists for its religious overtones. When Martin Rees, a British astrophysicist, won the foundation's annual prize this year, some colleagues called on him to turn it down.

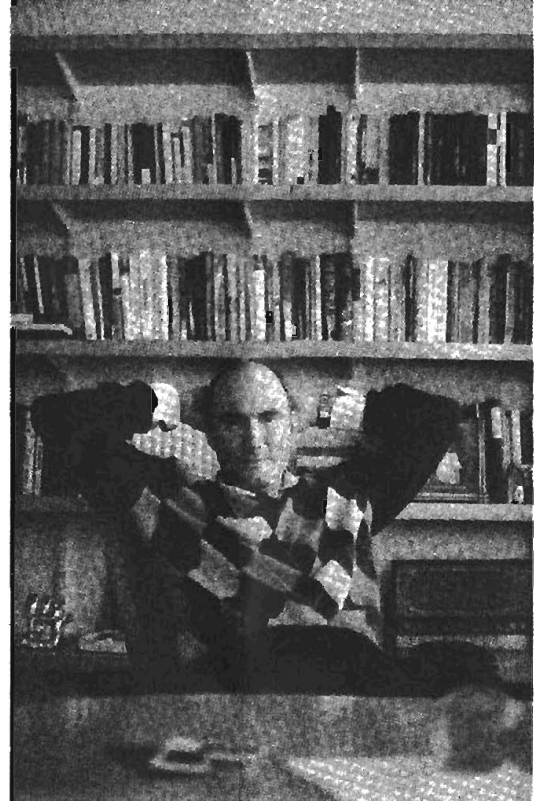
On his blog, *Why Evolution Is True*, Jerry A. Coyne, a professor of biology at the University of Chicago, devoted space to examining Mr. Nowak's connections to Templeton, an organization he chastises for its "insidious blending of science and woo." Mr. Coyne's discussion of *Supercooperators* was titled "New book shows that humans are genetically nice, ergo Jesus." And while that's an intentionally comic description of Mr. Nowak's premise, his book does posit that research on cooperation has resulted in the core creeds of world religions—mercy, charity, kindness—being "enshrined in science." It's a statement guaranteed to make the irreligious queasy.

Another target is Mr. Nowak's relationship with Jeffrey Epstein, the disgraced billionaire who was released from prison in 2009 after serving 13 months for soliciting a minor for prostitution. Mr. Epstein has been a generous supporter of science, doling out money to a host of thinkers who strike his fancy, but he's been especially kind to Mr. Nowak. He reportedly made a \$30-million pledge to Harvard to start Mr. Nowak's program in 2003, well before Mr. Epstein's legal troubles. (Harvard officials would not confirm the size of the gift or whether it had been paid in full.)

In his book, Mr. Nowak writes that Mr. Epstein "often challenged my perspective with new ideas" and has said previously that Mr. Epstein's financial support "changed my life." He also describes in the book visiting Mr. Epstein's private island and said in an interview that he and the hedge-fund mogul talked on the phone frequently.

Jon Wilkins wrote on his blog, *Lost in Transcription*, that accepting money from or even interacting with Mr. Epstein is morally suspect (though he softened this by allowing that "some people may feel differently without necessarily being bad people"). Mr. Wilkins, a professor of biology at the Santa Fe Institute who studies evolutionary theory, also noted that some in the field believe that Mr. Nowak "has not really earned his reputation."

Mr. Coyne would certainly be on that list. "I can't name one substantive thing he's achieved that has moved evolutionary biology for-



Martin Nowak, a professor of mathematics and biology at Harvard U., wrote a paper criticizing a longstanding tenet of evolutionary theory. The response has been harsh—and personal.

ward," he says. "I can only mumble something about game theory." Mr. Wilkins says that the remarkably prolific Mr. Nowak has probably written "more good and interesting papers than most people do in their careers" but that he has a "tendency not to give as much credit to other researchers as those researchers feel they deserve."

Both professors think his paper on kin selection is ridiculous. Mr. Wilkins made an online animated video featuring two characters discussing the paper. One character, answering why such a prestigious journal would publish such a misguided piece of research, says that it's "important Harvard scientists who do important Harvard science." The implication being that minus the reputations and affiliations of its authors, the paper never would have appeared in *Nature*.

Not all of Mr. Nowak's critics are quite so harsh. Iain D. Couzin, an assistant professor of biology at Princeton University, signed the letter in opposition to the paper and believes it misrepresented the field. That said, he also thinks it's "fantastic that they're challenging the status quo." As for the more pointed

jabs: "I see more jealousy and spite in that kind of response."

Mr. Nowak professes to be unperturbed. In fact, he seems almost congenitally pleasant, more likely to grin and shrug than trade verbal blows. He points out that the \$10.5-million grant from Templeton is being used to finance young researchers, some of whom are not members of his program. As for Mr. Epstein, he says all he knows about his legal troubles is what he's read in the news media. When the two men talk, they talk about science.

Right now Mr. Nowak is working to understand the mathematics of cancer; previously, he has outlined the mathematics of viruses. It falls within his career mission to "provide a mathematical description where there is none," he says, a goal at once modest and lofty. He would also like to write a book on the intersection of religion and science, a publication that would no doubt further endear him to atheists.

He knows that the debate on kin selection is far from over, though he sees the ad hominem attacks as a good sign. "If the argument is now on this level," he says, "I have won."