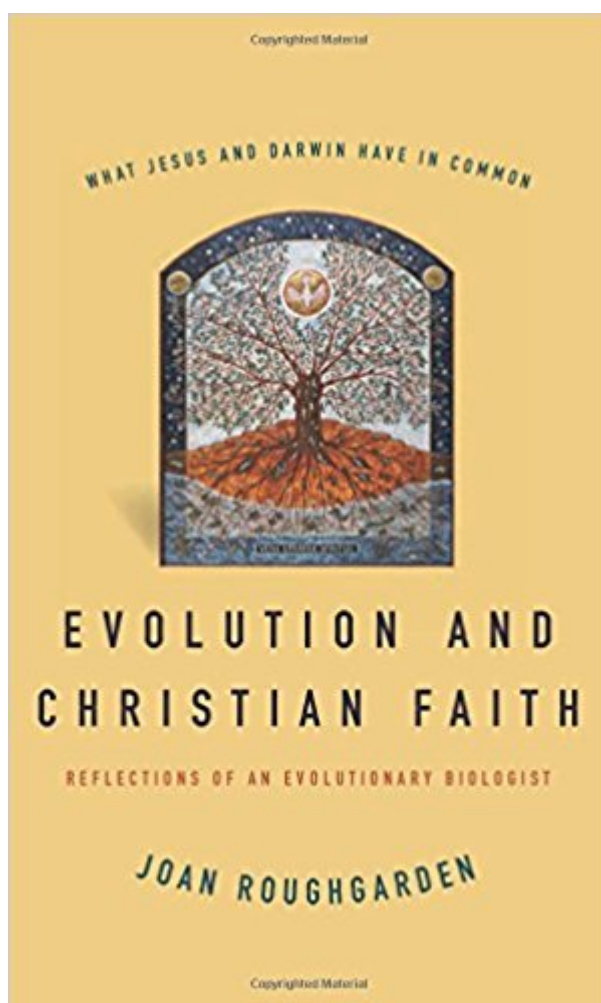


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Evolution And Christian Faith: Reflections Of An Evolutionary Biologist



Synopsis

Click here to visit evolutionandchristianfaith.org "I'm an evolutionary biologist and a Christian," states Stanford professor Joan Roughgarden at the outset of her groundbreaking new book, *Evolution and Christian Faith: Reflections of an Evolutionary Biologist*. From that perspective, she offers an elegant, deeply satisfying reconciliation of the theory of evolution and the wisdom of the Bible. Perhaps only someone with Roughgarden's unique academic standing could examine so well controversial issues such as the teaching of intelligent design in public schools, or the potential flaws in Darwin's theory of evolution. Certainly Roughgarden is uniquely suited to reference both the minutiae of scientific processes and the implication of Biblical verses. Whether the topic is mutation rates and lizards or the hidden meanings behind St. Paul's letters, *Evolution and Christian Faith* distills complex arguments into everyday understanding. Roughgarden has scoured the Bible and scanned the natural world, finding examples time and again, not of conflict, but of harmony. The result is an accessible and intelligent context for a Christian vision of the world that embraces science. In the ongoing debates over creationism and evolution, *Evolution and Christian Faith* will be seen as a work of major significance, written for contemporary readers who wonder how-or if-they can embrace scientific advances while maintaining their traditional values.

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Customer Reviews

Roughgarden, a Stanford biology professor and author of *Evolution's Rainbow*, is impatient with the current tone of creation/evolution debates, but takes them seriously as an expression of a "pent-up

urge for talking about God" in American public life. Attentive to "the spiritual yearning of people that compels them to overlook the evidence" if evolution is portrayed as an enemy of faith, Roughgarden urges science educators to show "more sympathy and willingness to accommodate people of faith, to offer space for seeing a Christian vision of the world within evolutionary biology." The book's main argument is that a suitably flexible reading of the Bible and Darwin bears out common, or at least compatible, themes, and that evolution can be read within a broader perspective of divine design. Roughgarden sees room in the biblical account for the common ancestry of all life on Earth, as well as the possibility that evolution is "guided by the hand of God, even if the mutation process is random" as described by Darwinian theory. While the book occasionally overreaches in attempts to have things both ways— or so it will seem to controversialists on either side— readers who see a role for both evolution and divine creation will appreciate Roughgarden's attempt to stake out a common ground that does not feel like a compromise. (Aug.) Copyright © Reed Business Information, a division of Reed Elsevier Inc. All rights reserved.

"Clear and brilliantly concise, Dr. Roughgarden's thoughtful analysis sheds much-needed light on the contemporary debate over the compatibility of Christian belief and evolutionary biology. Eschewing polarizing rhetoric and antithetical claims, she demonstrates that there is no contradiction between Christian faith and the facts of evolution and that it is false to suggest such dichotomous thinking is required by either faithfulness to the Bible or scientific evidence. Roughgarden's fresh approach suggests that much in the Bible invites Christians to recognize God's good creation precisely as a universe in evolution." (Patricia Beattie Jung Professor of theology, Loyola University Chicago)"Joan Roughgarden is more than an accomplished evolutionary biologist; she is also brave. Combining lucid evolutionary reasoning with personal Christian faith, she builds a remarkable bridge across the cultural chasm between science and faith in America today. Roughgarden rejects both junk science based on spurious metaphors and junk religion based on spurious theology. In their place, she offers an inspiring accommodation between thoughtful science and compassionate religion." (Michael Rose Professor of evolutionary biology, University of California, Irvine)

Joan Roughgarden, *Evolution and Christian Faith* (Island Press, 2006). Joan Roughgarden is an immensely talented and creative Stanford University evolutionary biologist who, like millions of other people, is a practicing Christian. Like many scientists of all faiths, Roughgarden finds God in nature, and rejoices in the diversity, beauty, and charm of the natural world. "We can rejoice as Christians in

the ethical meaning behind what evolutionary biologists are increasingly finding. I've been exhilarated by this personal realization, and I hope you will be, too." (p. 5) Roughgarden is most critical of the fundamentalist Christians who see evolution as the enemy of faith, and the "selfish-gene" biologists, who view evolutionary biology as proving the non-existence of God. "I believe scientists need more sympathy and willingness to accommodate people of faith," says Roughgarden, "to offer space for seeing a Christian vision of the world within evolutionary biology and not force people to accept a doctrine of universal selfishness as though established scientific fact." (p. 12) Roughgarden describes evolution as saying (a) all life belongs to one huge family tree; (b) species change over generations; and (c) animal behavior is more about cooperation helping than competition and conflict. She stresses the harmony of this view with the Christian Bible, noting St. Paul's stress on the sacred significance of the material unity of all life, the absence of anything in the scriptures that denies the mutability of species, and the Christian ethic of community. She closes the book with a passage from Matthew 22: "Thou shalt love the Lord thy God with all thy heart, and with all thy soul, and with all thy mind... That shalt love thy neighbour as thyself. On these two commandments hang all the law and the prophets." One of Roughgarden's aims in this short book is to develop evolutionary theory in a more detailed way than is usually done by those who address the science vs. faith issue. She identifies the central evolutionary dynamic in the phrase "natural breeding leads to an improvement of the stock" (p. 50) She uses the term "natural breeding" rather than Darwin's term "natural selection," because she wants to stress that the process of transmitting genes from one generation to the next is a product of the care of the parents as much as the competition among offspring. Roughgarden explains Fisher's Fundamental Theorem, which she interprets as expressing the basically progressive nature of evolution, as expressing a natural tendency for the improvement of populations over time. Roughgarden does mention the critiques of Fisher's theorem, which she attributes to "biologists skeptical of the idea that evolution has a direction." (p. 51) I find this attribution of philosophical "ulterior motive" to the critics to be an excess of proselytizing zeal that compromises her commitment to science. I do not know if Moran's classic 1964 paper criticizing Fisher was motivated by skepticism or not, but I am sure that Moran was correct and the subsequent efforts of brilliant population biologists in qualifying Fisher's Theorem and setting it right was not motivated by philosophical concerns surrounding the "progressive" nature of evolutionary dynamics. Roughgarden expresses the belief that the exceptions highlighted by the critics rarely occur in nature. I believe she is incorrect in this assessment because of the ubiquity of non-additive genetic interactions. Nevertheless, I would not deny that there is a progressive thrust to natural selection. Roughgarden is duly critical of the intelligent design

movement, on the grounds that intelligent design and evolution are compatible theories: both could be right, both could be wrong, or either one could be right and the other wrong. Because intelligent design does not present any evidence in favor of its theory, and because even if its critique of evolution were correct this would not increase the probability that intelligent design is correct, Roughgarden rejects intelligent design. I find this a very ingenious and attractive treatment of the intelligent design movement. Of course, Roughgarden does not believe there is any truth to the intelligent design movement's critique of evolution whatsoever, but she presents her own laundry list of critiques of contemporary evolutionary theory, all of which are interesting and possibly valid. Her general problem (see Chapter 9) is that Darwinian evolution overemphasizes the "individual" and "competition" and underemphasizes the "community" and "cooperation." This critique does not ring true to me. I learned evolutionary theory when I was already a seasoned social scientist, and saw immediately that it provided the tools for understanding both human cooperation and competition. I do not feel that I have ever been misled into a Social Darwinist direction by the careful study of evolutionary biology at all. Of course, my work has been bitterly criticized by the "selfish gene" and "anti-multilevel-selection" school that is the object Roughgarden most serious barbs, but I do not find that evolutionary theory lends any particular support to the position of these critics. I suspect that their criticisms of me, when untrue, are a desperate and almost comical attempt to defend an indefensible biological tradition in which altruism was a dirty word. Roughgarden also criticizes the standard depiction in evolutionary theory of females as "coy" and highly concerned with the quality of their sexual partners and males as "promiscuous" and concerned only with maximizing their total number of inseminations. Her argument is quite worth reading and she may be correct. But I think she has it mostly wrong. For most sexually reproducing species in which anisogamy holds (i.e., the female gamete--the egg---is many orders of magnitude larger than the male gamete---the sperm) the cost of gamete production is much lower for males than females, so it is likely that the former will value the number of copulations more than the quality of each mate's gamete contribution. Moreover, in mammals, the extent of female contribution to the offspring is generally much higher than that of the male, so this asymmetry is even more pronounced than in other sexually reproducing classes. Of course, there are several species where the males care for offspring rather than females, but these are almost exclusively in fish, and less often in birds. As a result of their greater investment in gamete production and offspring care, females look for males with high quality genes, and males attempt to pass themselves off as having high quality genes by hook or by crook. This is an inevitably competitive interaction among males for access to females, and involves a conflict of interest between males and females: the female wants the highest quality sperm, and

the male (rare cases excepted) is willing to impregnate females independent of the quality of their genes. Roughgarden stresses the cooperative nature of the breeding relationship between male and female once they have mated: they then have a common interest in having their offspring live to reproductive age. However, she undervalues the conflictual character of mate choice. In addition, except in certain species, after impregnation, males do better by abandoning their mates in favor of seeking new mating opportunities rather than participating in raising offspring. Roughgarden directs her criticism of mating behavior to what is known as "sexual selection" theory, which attempts to account for that fact that males of a species are often highly decorated (Darwin's peacock's tail) by a theory of "runaway selection" of the following form (elaborated upon analytically by Fisher): females come to prefer males with decoration for no fitness-relevant reason, but once this preference exists, it is better to mate with a colorful male because the male offspring will be more colorful and hence have enhanced mating chances, even if the cost of decoration to males is fitness reducing. I have done a fairly thorough study of this phenomenon and as far as I can tell, it does not exist, either in a plausible theory or in empirical observation. Moreover, most population biologists do not believe in runaway sexual selection at all, but rather believe that male decoration is a costly signal of possessing high quality genes. Thus, I do not think there is much to Roughgarden's critique of sexual selection that we do not already know. I should add that the general public finds runaway sexual selection extremely attractive, and there are numerous authors who have asserted that humans have this or that characteristic (e.g., musicality and intelligence for males, big breasts and wide hips for females) because of sexual selection. There is little support for such notions in the serious professional literature, and Roughgarden is rightly exasperated with such arguments. I should also add that the fact that in many species the "coy" female and the "promiscuous" male stereotype is fairly accurate does not mean that it holds for all species. It certainly does not. There has been some attempt to claim that it holds in humans, and to use this difference between human masculinity and femininity to account for the sex differences in human society (especially the fact that women prefer rich and powerful men and men prefer young and nubile women). I do not find this argument at all persuasive. The problem is that there is an equally plausible explanation in terms of patriarchal culture and the remnants thereof. There may of course be differential innate predisposition in men and women concerning nurturance, family values, and the like, but observed differences are most likely due to acculturation and male/female status differences rather than genes. I would not be surprised if it turns out that most male-female behavioral differences in human society are highly attenuated or eliminated in the context of a gender-neutral culture. However, if differences remain, I suspect they will be in conformance with the relative investment in gamete theory which,

although of doubtful relevance in today's world, was of prime importance in our evolutionary history. I think the most valuable aspect of this book is Roughgarden's demonstration, through a sort of low-tech biblical exegesis, that a belief in the teachings of Jesus, as laid out in the New Testament, is not in conflict with evolutionary theory. She throws in for good measure (though limited relevance) that homosexuality, bisexuality, trans/ambiguous gender, and other aspects of modern life that liberate us from gender stereotypes are neither modern, nor prohibited by the Bible, nor absent from the non-human animal world. All that for only \$15.00. Pretty hard to beat.

Roughgarden may be a maverick in the evolutionary pack, but she's articulate, measured, and an experienced university lecturer.. Her clear prose is a delight. She explains issues that the newspapers confuse, and takes sides fearlessly. Her treatment of varying religious groups is respectful and sticks with scientific issues.

I read this book with interest - I thought the author does a nice job of blending Christian/Biblical perspectives with evolutionary perspectives. A good read for those strongly committed to Christian values!

Wonderful book about the Christian faith and how it stands against Evolution and the whole theory. Very Eye opening book.

Informative

Good,

Like the author of this book, I am both a Christian and an evolutionary biologist. As such, I welcome any contribution to the too-few voices calling for an end to the creationism/evolution controversy. And Roughgarden's book makes a good many valid and important points that I wish more people would notice. However, the book is undermined by its flaws. Roughgarden's approach to the Bible seems to be "read it absolutely literally except the bits you find evidence against, and reject those bits completely." Such an inconsistent hermeneutic is hardly likely to impress many believers. It is possible to find, through sincere faith and careful scholarship, a consistent approach to Biblical interpretation that avoids both the narrow Bibliolatry of the literalists and the casual dismissal of theological liberals. Roughgarden's presentation of evolutionary theory is strangely flawed. She

does an excellent job of presenting the basic claims of evolutionary biology in her early chapters (her choice of "natural breeding" to replace the more familiar "natural selection" is a particularly excellent idea), and her critique of Intelligent Design is spot on (I only wish it were longer, there are even more problems with ID than she mentions-- but then, this is a short book so the brevity is appropriate). However she stumbles when she discusses the "problems" that social behavior creates for evolutionary biology, seeming to be entirely unaware of the substantial literature dealing with it and of principles such as inclusive fitness that address it. Roughgarden may disagree with inclusive fitness, but that's no reason to pretend that biologists are utterly at sea without even a suggestion to make. Following that, her chapter on sexual selection not merely stumbles but falls flat on its face. She presents a ridiculous straw man that has little to do with any actual sexual selection theory and concludes that evolutionary biology's approach to it is irredeemably flawed. Discussing the errors in this chapter would take a chapter in itself. In brief, she asserts that sexual selection theory requires mated pairs to be in competition while in truth their activity in producing offspring is cooperative. Indeed it is cooperative, but this has nothing to do with sexual selection-- which is over and done with by the time a mated pair exists. Sexual selection concerns the way in which organisms choose their mates: what selective forces influence how they will choose? What will be the effect of that choice on the evolution of the opposite sex? I doubt that Roughgarden actually believes that organisms exercise no choice in mating whatsoever, so her rejection of this area of theory is hard to understand. Perhaps her erroneous belief that sexual selection absolutely requires that females always be the choosy sex has something to do with it. She introduces this with a few examples of Victorian sexism from Darwin's writings, a source more than a century out of date, and then refutes them with counterexamples well known to, and well researched by, those who study sexual selection. In fact, Roughgarden's chapter on sexual selection is so ludicrous it casts a pall over the entire rest of the book. As an evolutionary biologist myself, I can see that her earlier chapters are accurate despite this strange failure, but biologists who are skeptical of Christianity will likely react with the assumption that Roughgarden is too ill-informed to be taken seriously, while Christians skeptical of evolution may be impressed, but are being set up for a fall if they learn more later. It is a pity that these flaws bring down what is an otherwise welcome voice crying "Peace!" We need more-- and need them to be more careful in both their theology and their science.

Couldn't even finish it, it was so wishy-washy. She's trying to ride the fence. Wish I hadn't spent the money.

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