

Citizenship and the Sciences

A Roundtable Discussion featuring

**Daniel Goleman, Ian Ayers, David Sloan Wilson,
and David P. Barash**

We recently asked four leading authors—who are also educators—to answer some tough and timely questions on the relationship between citizenship and the sciences. Some of the questions and answers were quite provocative—such as those involving evolutionary theory, politics and the classroom—and others were quite illuminating and instructive—such as what kind of advice these authors would offer new teachers to help them better teach and connect with their students.

We also invite you, the teacher, to share your thoughts on these topics as well as general feedback to the authors' remarks, by writing to highschool@randomhouse.com with the subject line "RHI Roundtable Reaction."

Why is an understanding of the sciences integral to citizenship?

◇ **Dan Goleman** (*author of Emotional Intelligence and Social Intelligence*): The scientific method offers students a rigorous model for how to think about problems in life—not just logical, but systematic in asking questions, gathering information, and finding ways to evaluate answers. Sound decision-making lies at the heart of good citizenship.

◇ **Ian Ayres** (*author of Super Crunchers: Why Thinking-by-Numbers Is the New Way to Be Smart*): In today's world citizens need to at least be knowledgeable consumers of statistics in order to be able to evaluate critically what politicians and pundits are claiming. If it's all fuzzy math to you, you'll never be able to know whether letting teachers carry guns is likely to increase or

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decrease the chance of a Virginia Tech massacre or the extent to which carbon emissions contribute to global warming. There's an important difference between truth and what Stephen Colbert calls "truthiness."

◇**David P. Barash** (*author of *Madame Bovary's Ovaries: A Darwinian Look at Literature**): Science has come so far that it is difficult to find areas in which it is NOT integral to public policy and decision-making. Just consider global warming, environmental and resource matters of all sorts, debates over cloning and abortion and, of course, issues of weapons of mass destruction. Evolution—my special concern and interest—has not only been actively debated in the public sphere when it comes to matters of educational policy (for example, controversies over "intelligent design"), but it also has direct implications for questions of animal rights, human rights, racism and other misuses of evolutionary biology, including even questions of consciousness and implications of recent advances in genomics. Don't misunderstand: it isn't necessary for everyone to become a scientist in order to be a responsible citizen, but it is highly desirable—more so than ever before—for people to nurture a reasonable familiarity with basic principles and ways of scientific thought. The good news is that achieving basic scientific literacy needn't be a chore; in fact, it's great fun!

What are ways in which teachers can help to make cross-disciplinary links between science and fields important to building citizenship, such as the Language Arts and Social Studies?

◇**Ian Ayres**: Teachers should get students involved in collecting data about the world. A couple of years ago, two economists responded to want ads in the Boston Globe and Chicago Tribune by sending back résumés that were identical except for the name of the applicant. At random, some employers received résumés with African American-sounding names and others received résumés with Caucasian-sounding names. The simple test was just to look at the response rate (applicants with African American-sounding names had a lot fewer responses). The point about this study is that any high school or college student

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could have done it—with just a little help from a teacher. There’s all kinds of questions about how people behave and how they feel that are critically important for policy making. The best way to help students see the links between social science and the real world is to have students go out and do some real-world testing.

◇**David Sloan Wilson** (*author of Evolution for Everyone*): Before Darwin, the biological sciences consisted of many isolated disciplines that were difficult to cross. After Darwin, these disciplines became easy to cross because all of them could be understood in terms of a common set of ideas. That is why he referred to his theory as “one long argument.” Only recently has evolutionary theory expanded beyond the biological sciences to include human-related disciplines such as psychology, anthropology, economics, political science, social studies, and even art and literature. Scientists who approach these subjects from an evolutionary perspective find it easy to cross disciplinary boundaries. The whole point of my book is to accomplish the same transformation for the general public.

◇**David P. Barash**: In the case of our book, *Madame Bovary’s Ovaries: A Darwinian Look at Literature*, Nellie Barash and I took some of the most beloved works of literature and showed how they can be appreciated afresh by seeing them through an evolutionary lens. It turns out that literature and evolution, which may seem to be far removed from each other, are actually closely connected in that even a superficial familiarity with the latter can open up new realms of appreciation when it comes to the former. Evolution is too important, and too much fun, to be left to the evolutionists! It applies with great force to pretty much anything people do or have done, definitely including their imaginative storytelling.

◇**Dan Goleman**: The fundamental building blocks of good citizenship are personal skills like self-awareness and self-discipline, empathy and cooperation. These human abilities allow an individual to act as a good citizen. At the neural level, these emotional and social intelligence skills become ingrained in the brain

circuitry of students: the circuits for self-reflection and managing emotions well, for understanding others and getting along, are all taking shape into a person's early twenties. The school years are a major window on this development, and every sustained encounter adds to the neural development, for better or worse. Any time a teacher interacts with a student, all the other students in the room take away a model, for better or worse.

In addition, the content of a course like Language Arts or Social Studies can itself aid in healthy maturation for good citizenship by embodying lessons—stories of exemplary people, for example—that reinforce these human skills by offering a positive model for behavior. There are off-the-shelf lesson plans in Language Arts and Social Studies (and even math, for that matter) that are designed precisely to have this impact on students' citizenship abilities. They are part of the movement in “social/emotional learning.”

What does the debate over evolution and intelligent design say to you about the current state of affairs in education? Please weigh in on these debates.

◇**David Sloan Wilson:** There is very little scientific substance to the intelligent design debate, as the trial in Dover, Pennsylvania made clear. The key to increasing acceptance of evolution is to focus on implications in addition to facts. A threatening idea is like any other kind of threat: the first impulse is to run away or stamp it out. Make the same idea alluring and the first impulse is to embrace it. In the college courses that I teach, I show how evolutionary theory provides a powerful tool for understanding and improving the world without threatening basic values. Students respond by becoming enthusiastic about evolutionary theory and losing interest in nonexplanatory theories such as creationism and intelligent design. I am confident that evolutionary theory can become rapidly accepted by the general public, once we focus on implications in addition to facts.

◇**David P. Barash:** Sadly, it says that we—evolutionists in particular and educators in general—have our work cut out for us! The good news, however, is that

(although it may sound like a cliché) we have logic and truth on our side. Not only that, but the realities of evolution are great fun to explore, and, moreover, they don't require deep mathematical or technical sophistication. Plain old-fashioned intellectual honesty and curiosity are more than enough. Edmund Burke once noted that the only thing needed for the triumph of evil is for good people to do nothing. Whereas the promoters of intelligent design aren't necessarily evil, they are certainly naïve, ignorant and often intellectually dishonest, and whereas evolutionists aren't necessarily paragons of goodness and decency, there can be no doubt that they have wisdom and scientific validity on their side. I suspect that—at last—there is a new wind blowing in America, not only when it comes to the periodic swinging of the political pendulum, but also regarding respect for intellectual and scientific integrity. Our job as educators is to make science not only palatable but to share its thrills and delights.

What does science offer us in terms of under-standing human relations and even politics?

◇ **Ian Ayres:** Justice Oliver Wendell Holmes, Jr., said the life of the law has been experience. He meant that if you want to know what the law really is you need to know how judges are going to decide real cases. The empirical approach is uncovering the hidden levers of human behavior—in politics and society more generally. Want to know whether prison hardens or rehabilitates prisoners? For centuries, politicians have argued back and forth on this one. But theory can't tell you the answer. Instead a quasi-randomized experiment of real prisoners shows that both sides in the debate are wrong. Prison doesn't really increase or decrease the chance that released inmates will go out and commit another crime. Prisoners who at random were assigned to "hanging" judges had the same recidivism rate as those assigned to bleeding-heart judges. Want to know the impact of term limits or campaign contribution limits on how legislators vote? You better run a statistical test. Want to know whether Justice Alito is more likely to drift to the right or to the left in his future Supreme Court decisions? Statistically studying what causes ideological drift in the past is a good place to start. Justice Holmes

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was dead-on when he said “the man of the future is the man of statistics.” I would simply extend this to include women.

◇**David Sloan Wilson:** It is interesting that theories in the human-related sciences, such as rational choice theory or general learning theory, were never envisioned as alternatives to evolutionary theory. Few rational choice theorists are young earth creationists. When pressed to explain why people are designed to maximize their own utilities, most would probably cheerfully speculate that the ability evolved by genetic evolution. In this fashion, they rely upon evolution to explain their own assumptions, but then proceed without much knowledge about evolution. In retrospect, it is obvious that a sophisticated knowledge of genetic and cultural evolutionary processes is required to understand human relations and, yes—even politics.

Considering your research, speaking engagements, and your own reading, if you could offer one piece of advice or information to today’s teachers, what would that be?

◇**David Sloan Wilson:** Here is a passage from the end of *Evolution for Everyone*: “I sometimes wonder what it must have been like to be present during the early days of Darwin’s theory, when the idea was so new and so much remained to be discovered. Then I realize that I am present during the early days of Darwin’s theory. The intellectual events taking place right now are as foundational as 100 and 150 years ago. How amazing that virtually anyone can partake in the excitement, as an observer or participant, as I hope you have seen on the basis of this book.” My advice for today’s teachers to learn about these developments, not only from my book but from many other wonderful and accessible books on evolution as a theory that can explain the human condition in addition to the rest of the natural world.

◇**Dan Goleman:** Tune in to your students’ world—their feelings, their way of understanding, their concerns. This will let you teach and interact with them in a

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way that will resonate and engage—a direct antidote to the pulls in their lives to disengage from learning. Remember the distinction between an “I-You” communication and an “I-It”: in the “You,” the speaker attunes to how the listener reacts, and adjusts what she says and does accordingly; this establishes an emotional link between teacher and student. In the “It,” the speaker treats the listener as an object, communicating in a bullet-like, automatic way that leaves students cold. Creating a relaxed, connected warmth in the classroom sets the neural stage for students to learn at their best.

Books by Roundtable Authors

Social Intelligence *The New Science of Human Relationships*
by Daniel Goleman
Bantam, TR, 978-0-553-38449-9, 416 pp., \$14.00

Madame Bovary's Ovaries *A Darwinian Look at Literature*
by David P. Barash
Delta, TR, 978-0-385-33802-8, 272 pp., \$14.00

Evolution for Everyone *How Darwin's Theory Can Change the Way We Think About Our Lives*
by David Sloan Wilson
Delacorte Press, HC, 978-0-385-34021-2, 400 pp., \$24.00;
Paperback forthcoming 12/26/2007: Delta, TR, 978-0-385-34092-2, \$15.00

Super Crunchers *Why Thinking-by-Numbers Is the New Way to Be Smart*
by Ian Ayers
Bantam, HC, 978-0-553-80540-6, 272 pp., \$25.00
