

SCIENCE AND THE ARTS

Another Approach to Consilience

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When we have unified enough certain knowledge, we will understand who we are and why we are here.

—E. O. Wilson, *Consilience*

When we have found all the mysteries and lost all the meaning, we will be alone, on an empty shore.

—Tom Stoppard, *Arcadia*

In *Consilience* (1), Wilson called for the unification of the scientific and humanistic spheres of learning—C. P. Snow's famous "two cultures." He proposed that the way to achieve it is "to view the boundary between the scientific and literary cultures not as a territorial line but as a broad and mostly unexplored terrain awaiting cooperative entry from both sides." It would be hard to disagree with that sentiment, but Wilson's claim that "the only way either to establish or to refute consilience is by methods developed in the natural sciences" seems to have much more to do with colonization than alliance. Indeed, the substantial amount of work toward consilience consists primarily of examining some aspect of the humanities from a scientific perspective. Some notable recent book-length examples include an anthology of Darwinian literary criticism (2) as well as explorations of the implications of neuroscience for the creation of, and response to, the visual arts (3) and music (4).

In contrast, Jonah Lehrer's *Proust Was a Neuroscientist* and David Edwards's *Artscience: Creativity in the Post-Google Generation* come from a different direction. Although they do not approach the issue in quite the same way, both can be taken as arguing that scientific knowledge may equally well be informed by humanistic study. And both authors offer a good deal of eloquent, if not always completely satisfying, support for their stance.

Lehrer (who writes the blog Frontal Cortex: <http://scienceblogs.com/cortex>) examines five authors plus one representative each

from the visual, musical, and culinary arts. He contends that their work reveals important information about how the brain functions: not mere analogy or metaphoric description, but real truths that are no less valid in their realm than those obtained from more reductionist scientific methods. These include purported demonstrations that Walt Whitman's poetry evokes the intimate interconnections between mind and body, refuting "Descartes' error" more than a century ahead of Antonio Damasio (5); that Marcel Proust, in his massive, introspective *A la Recherche du Temps Perdu*, constructed a model of the workings of memory that seems in many ways fully consistent with the findings of recent study, nearly down to the molecular level; and that Auguste Escoffier's methods of cookery presciently anticipated the subsequent discovery of umami, the fifth taste.

I found a number of his arguments rather compelling. On the other hand, a few cases are less convincing, especially when Lehrer allows an apparent predilection for hyperbole and overblown rhetoric to trump clear and reasoned explanation. More seriously, his presentation of the scientific content is too frequ-

A madeleine: "the trigger for Proust's epiphany."

ently imprecise. For example, the discussion of the chemistry of glutamate is quite confused. There are even some outright elementary blunders, as when thymidine and the other components of DNA are misidentified as amino acids. These defects diminish the overall impact of the book. Worse, they furnish ammunition to those critics (whom Lehrer explicitly takes on, in his "Coda") who dismiss Lehrer's knowledge claims as nonrigorous and hence irrelevant.

Edwards's book has more of the character of a practical "how-to" manual. His credo—one that will probably strike most readers as much less contentious than Lehrer's—is that people

who can transcend the cultural and intellectual boundaries between science and the arts thereby become more creative and productive. Edwards (a professor of bioengineering at Harvard) calls this pathway "artscience"

(Lehrer uses "fourth culture" for much the same thing), and a large part of the book consists of introducing individuals who follow it. Several of these stories do inspire, including the musician who re-educates herself as an engineer and invents a new method of composition; the chemical engineer whose artistic background inspires a theory of fluid mixing; and Edwards's own experience in establishing a center, Le Laboratoire (6), to promote "idea translation." As in Lehrer's book, not all the examples are equally persuasive. (Also, at the risk of sounding too cynical, I can't help wondering about the counterstories one might tell of those who spread themselves too

thinly and accomplish little or nothing.) Furthermore, when Edwards leaves the life stories for more general discussion, he occasionally descends into somewhat platitudinous exhortations for collaborating and thinking outside the box.

Despite these reservations, I found both books entertaining and generally worthwhile. At a minimum, they provide useful support for the point that (I believe) Stoppard was trying to make in the quote above: trying to get to Wilson's promised land by means of only the navigational tools provided by science is likely to lead us astray. True consilience will require the ability of science to solve mysteries and the ability of the arts and humanities to produce meaning, with equal respect from and for both sides.

References and Notes

1. E. O. Wilson, *Consilience: The Unity of Knowledge* (Knopf, New York, 1998); reviewed by J. Dupré, *Science* **280**, 1395 (1998).
2. J. Gottschall and D. S. Wilson, Eds., *The Literary Animal: Evolution and the Nature of Narrative* (Northwestern Univ. Press, Evanston, IL, 2005); reviewed by H. Fromm, *Science* **311**, 612 (2006).
3. B. M. Stafford, *Echo Objects: The Cognitive Work of Images* (Univ. of Chicago Press, Chicago, 2007); reviewed by C. A. Jones, *Science* **319**, 35 (2008).
4. D. J. Levitin, *This Is Your Brain on Music: The Science of a Human Obsession* (Dutton, New York, 2006).
5. A. Damasio, *Descartes' Error: Emotion, Reason, and the Human Brain* (Dutton, New York, 1994).
6. www.lelaboratoire.org; see review by L. Whiteley, *Science* **318**, 1871 (2007).

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