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## Afterword

*Creating Consilience: Toward a Second Wave*  
Edward Slingerland, Mark Collard, eds.  
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### Two Points about Two Cultures

When C. P. Snow gave the Rede Lecture in 1959, the gap between the “two cultures” seemed unbridgeable. The division involved not merely subject matter and methodology, but temperament, social attitudes, and politics. Much has changed in the last half century, and it is no longer the case that scientists and humanists regard each other with the disdain and indifference Snow describes. Indeed, very little of Snow’s account remains true today. For one thing, few people today recognize what Snow called the “moral component right in the grain of science itself,” or claim that scientists as a whole have “the future in their bones.” The scientific establishment, which Snow characterized as “expansive . . . confident at the roots . . . certain that history is on its side, impatient, intolerant, creative rather than critical, good-natured and brash,” is now largely dependent on (diminishing) government funding and can hardly afford the kind of pride in the manifest uselessness of its work that Snow noted among the scientists of his day. So difficult is it for a university researcher to obtain funding from sources other than the government or corporations that “blue skies” research of the kind on which Snow and his fellow scientists prided themselves does not get done at all.<sup>1</sup> And so

difficult is it to sustain a research project on the resources the government does provide that few scientists permit themselves to dream that their work may one day contribute to solving huge and intractable (and potentially politically controversial) problems such as the elimination of poverty. It is hard, in fact, to recognize in today's scientific community any of the characteristics Snow attributes to scientific culture, other than a general rationality.

On the other side, the socially and intellectually complacent culture of "literary intellectuals" that Snow derides has simply vanished, and has been replaced by professors of the humanities disciplines, primarily literature. These professors do not labor, as Snow's literary intellectuals did, under the burden of the extreme-right politics of Yeats, Pound, Lawrence, Eliot, and Wyndham Lewis; and they do not, as a rule, stand up for "traditional culture." In fact, for the last thirty years or more, humanists have been enthusiastically rubbishing the political right, and traditional culture has no harsher critics than professors of English. It is true that many humanists resist the notion that the final solution to such humanistic enigmas as language, aesthetics, and ethics is to be discovered in labs run by cognitive neuroscientists, evolutionary biologists, or primatologists. But as a group, humanists are not socially complacent, ignorant of science, or politically conservative. Rather, they are, like their scientific counterparts, anxious, demoralized, conscious of losing ground, and detached from mainstream culture.

And yet, despite these massive transformations in the cultures he describes—changes that ought, it seems, to have rendered his analysis irrelevant—Snow remains somehow pertinent. The division between science and the humanities (which predates Snow, of course: the Huxley-Arnold debate was a 19<sup>th</sup>-century version of the war

between Snow and his literary antagonist F. R. Leavis) remains a stubborn and even embarrassing fact about academic culture that many people believe engenders confusion and inhibits the advance of knowledge. Why is this? Have we been so convinced by Hume's fact-value distinction that we blindly reinstitute it wherever we can? Why can't we think our way out of this paper bag? Why has E. O. Wilson's consilience not become the watchword of the academy? If the division is sustained by no good reason, as Wilson, along with many of the contributors to this volume confidently believe, if there are no divisions in nature corresponding to the current categories of knowledge, and if consilience would deliver all the goods its advocates promise, then why are we still awaiting the new dawn of "vertical integration"? If this baneful division serves us, and reflects on us, so poorly, why can't we just do away with it? Why is a volume such as this still necessary?

I have two responses to these questions, each offered in a spirit of friendly nonpartisan provocation. First, I would like to suggest that the division between science and the humanities is not as deep or radical as many believe; and second, that the consilience advocated by some represented in this volume would, if achieved, destroy both science and the humanities.

The first argument can only be sketched, but it is, I think, indisputable. My own field of literary study, for example, is regarded by many as the most humanistic of the humanities, the field that represents the clearest opposition to the methodology of the sciences. But in the beginning, this was not the case. The hoary ancestor of today's blogging, Blackberrying, black-clad English professor is the Reverend Mr. Casaubon of George Eliot's *Middlemarch*, a black-clad antiquarian pedant convinced, absurdly, that

his tedious labors had placed him in possession of “the key to all mythologies.”

Casaubon is a philologist. Invented at the end of the eighteenth century as a way of ascertaining the historical truth about Homer’s text, philology rapidly developed methods of textual scholarship that remain impressive as feats of intellectual method and rigor. The primary object was to understand in a formal and historical sense the language of the text; but beyond this, philologists sought to recreate, from linguistic evidence, an account of the total culture from which the text had emerged. Nor did they stop there. By developing methods for comparing languages, for grouping languages into “families” with genealogies, and for inferring long-lost “mother” languages from the known languages that descended from them, philology sought to recreate the aboriginal forms of human consciousness, which would provide the key to human nature, as well as to all mythologies. As early as the 1860s, one of the greatest or at least most renowned philologists, Max Müller, was able to pronounce philology the “Queen of the Sciences,” a claim that was not immediately challenged. Indeed, scholars in other fields that aspired to be sciences studied the methods of philology in order to learn what a science was. Darwin, for example, knew the work of Müller and other linguistic scholars, and found their linguistic genealogies so impressive that he included, as the sole illustration in *The Origin of Species*, a “Tree of Life” that was plainly modeled on linguistic tree-diagrams. Darwin’s most prominent German advocate, the polymath Ernest Haeckel, was persuaded that the key to understanding the evolution of the species was the study of language, and urged biologists to create taxonomies as rigorous as those of philology. There was, in short, a time when the scholarly study of language, literature, and culture was pursued as a science, and regarded by other scientists as a model for scientific method and rigor.

This situation, of course, did not last. As Gerald Graff showed in *Professing English: An Institutional History* (1987), modern literary studies was born of the struggle on the part of “generalists” to break away from the philological “scholars” who, by the beginning of the twentieth century, had degenerated into a disorderly combination of myopic pedantry on the one hand and unembarrassed race-theory on the other. This struggle continued throughout the twentieth century, with a series of new theoretical approaches—New Criticism, psychoanalytic theory, Marxist theory, structuralism and poststructuralism, and deconstruction, all of which promoted themselves as methodologies more consistent with the research ethos characteristic of science—promising to redeem the study of literature from its regressive belle-lettristic amateurism. In some ways, this internal struggle remains with English today in the form of an ambivalent relationship to the concept of disciplinarity, with some among the professoriate insisting on scholarship, professionalism, and certitude within a limited field and others making a vitalist argument that the essence of literary study is interpretive judgment, the articulation of values, and charismatic teaching that awakens young minds and hearts. In “The Decline of the English Department,”<sup>2</sup> William M. Chace, past president of Wesleyan and Emory, and an English teacher of forty years’ standing, takes the latter position, citing and endorsing recurrent doubts about the viability of English as a scholarly pursuit. Chace offers, as a way out of what he sees as an “academic dead end,” a return to “the aesthetic wellsprings of literature, the rock-solid fact . . . that it can indeed amuse, delight, and educate.” In practice, Chace says, this means that English departments should surrender their claim to contributing to the research function of the university and prioritize courses in composition, the “sturdy

lifeline” to university resources. For Chace and others of his persuasion, the study of literature is and ought to be no science.

If the formidably productive Joseph Carroll has his way, however, Chace will not prevail. A consilient literary study with evolutionary science at its core will become the site of a general reconfiguration of knowledge. The essay which Carroll, along with Jonathan Gottschall, Daniel Kruger, and John Johnson have contributed to this volume gives something of the flavor of the Darwinian literary project, but not necessarily of its scope. Evolutionary literary studies now constitutes a vanguard movement, with books, articles, conferences, special issues of journals, blogs, and every other accoutrement of a dynamic scientific undertaking. In a few years’ time, the same might be said of a more recently hatched movement to integrate cognitive science and literary study. Driven by younger scholars, this movement focuses on those aspects of the literary experience that can be illuminated by the theory of mind developed by cognitive psychology.<sup>3</sup> Other science-based approaches to narrative, metaphor, literary imagery, literary responsiveness, and to “bioculture” more generally, are also making strong claims to the future, with the result that literary study, which was for Snow the site of anti-scientific regression is today the most promising scene within the humanities of consilient rapprochement.

The larger point I want to make is that this approach to science on the part of literary scholars is not an astonishing new development in the field, for literary study began as a science and only detached itself from science with immense difficulty and ambivalent results. Something similar could be said of the field of philosophy in light of the recent interest in “experimental philosophy,” in which philosophical concepts of, for

example, normative ethics, are subjected to experimental testing of a kind more readily associated with social science. In a book that both announces and surveys this approach, Kwame Anthony Appiah argues that this approach should be taken very seriously. He points out that attempts on the part of philosophers to distinguish moral from psychological components in a given ethical decision fail the common sense test, and that some kinds of problems are better served by an approach that does not make the attempt at all.<sup>4</sup> To reassure philosophers who might be dismayed by the subjection of philosophy to social science, Appiah also contends that experimental philosophy, or “X-phi,” merely continues philosophy’s ancient preoccupation with empirical questions. This preoccupation has taken various forms, including the “linguistic turn” that dominated much of twentieth-century philosophy. This turn actually included within itself a science-humanities split: one of its branches—the branch on which Wittgenstein, Carnap, Frege, and Quine were perched—was manifestly empirical and logic-based, focusing on the presumably hard and knowable facts of language; and the other, whose most prominent advocate was Richard Rorty, was militantly humanistic, dedicated to narrative and rhetoric.

As the example of philology has already suggested, language is the subject that most tantalizingly raises the prospect of vertical integration. At various times the object of theology (In the beginning was the Word), philosophy, history, literary studies, primatology, cognitive science, anthropology, and evolutionary psychology, language has seemed to be equally available to the scientific and humanistic perspectives. This is particularly evident in the work of Noam Chomsky. Even as he situates his linguistics in the general field of cognitive psychology, Chomsky has drawn attention to an altogether

different disciplinary tree-diagram that extends from Descartes, Herder, and von Humboldt down to himself. The most appealing and indeed compelling feature of this humanistic tradition, from Chomsky's perspective, is that it treats language as a human endowment, a fact of human nature. The feature of language that most clearly reveals its "natural" rather than "cultural" status is, Chomsky says, the fact it is not learned laboriously, one component at a time, but emerges with incredible rapidity and assurance, regardless of the linguistic environment the child is in. So far, we are firmly in the domain of cognitive science, but Chomsky does not stop there. Our capacity to produce and understand sentences we have never before encountered suggests to him that our linguistic nature—our human nature—is fundamentally "creative." From there it is but a short step to the commonsense proposal that our political systems should allow for the flourishing of human nature: hence "anarcho-syndicalism," Chomsky's own term for his political stance. So from the abrupt character of the emergence of language in childhood, Chomsky has extracted not only a program for a career's worth of research in general linguistics, but also a philosophy and a politics. Although he has often protested, disingenuously, that his linguistics and politics are entirely separate undertakings—that, in other words, his is not a consilient undertaking—they are plainly connected by strong and easily traced linkages.

In many scientific fields, researchers are undertaking their own versions of Chomsky's quest for the secret of the human essence. The surge in evolutionary theory has been immensely influential and productive in this respect, as has the development of imaging technologies capable of registering brain activity, including cognitive events once thought to be accessible only to humanistic reflection such as ethical judgments,

linguistic understanding, and aesthetic responsiveness. For many years, the humanities have “owned” the task of understanding fundamental human capabilities, but no longer.

The integration of science and the humanities is an ongoing project that has been with us as long as the categories of science and humanities. Integration is the original condition of inquiry, before the emergence of professional, sectoral, departmental knowledge in a university setting. Each modern field contains within itself a dialectic between what are now considered practices of science, with their emphasis on testable evidence, their interest in pattern and regularity and method, their cognitive optimism (where ignorance was, there shall knowledge be), and their orientation toward prediction on the one hand, and, on the other hand, practices associated with the humanities, with their emphasis on reflection, their interest in local or particular instances, their cognitive pessimism (where certainty was, there doubt shall be), their tendency to plow the same row over and over, their indifference to utility, and their orientation toward the past. The consilience project is driven not only by the desire to advance knowledge by achieving a new synthesis, but also, at a deeper level, by the throbbing presence within the fields of both humanistic and scientific forces. This double determination itself reflects a science-humanities convergence, for the one factor looks forward to a new dawn of clarity and the other looks backward to a prior complicating tension that had been eclipsed by the drive to knowledge.

If my first argument is that vertical integration is the original condition of knowledge, my second is that if the project of vertical integration were to be completed, the consequence would be the destruction of both science and the humanities. I am fortified in this paradoxical pair of convictions by the fact that they are both endorsed, in

a sense, by Steven Pinker in this very volume. At the beginning of his essay on “The Humanities and Human Nature,” Pinker states bluntly that the kind of knowledge represented by the humanities is essential to society and to human self-understanding; and at the end, he concedes that scientific approaches “are bound to consider only a fraction of the richness in a work of art or scholarship.” The task of understanding a work of art requires, he says, with an admirable modesty, “expertise in the particulars of the work and the idiom, and not just generalities of psychology and biology.” And throughout, Pinker demonstrates a sympathetic understanding both of works of art and of humanistic scholarship, an understanding not always in evidence in the discourse of consilience. In his essay in this volume on “Mind-Body Dualism and the Two Cultures,” Edward Slingerland, for example, seems to disqualify the knowledge claims of that portion of humanities scholarship based on *Verstehen* or interpretive understanding because they are, in his view, based on a false and mystified way of knowing ultimately grounded in a mind-body distinction that few would defend on its own terms. Fact-based methods will, Slingerland says, invariably drive out interpretive non-methods because they are more persuasive and contribute to the accumulation of knowledge. Pinker makes no such case, and even suggests that evolutionary biologists could well have learned about “theory of mind” from fiction, which was engaging the subject in a sophisticated way *avant la lettre*.

Slingerland refers to the “special mode of understanding” claimed by the humanities, the “sympathetic understanding” of cultural products that can, according to humanists, only be grasped by mind to mind in an act Slingerland compares to “Vulcan mind-meld.” I appreciate the pop-culture reference, which is virtually obligatory in

humanistic scholarship, but the tone seems unnecessarily dismissive. Perhaps a more positive approach would be more productive. To meet Slingerland's challenge, let's take the most precious, impressionistic, and enchanted form of humanistic knowledge, literary knowledge. In a recent essay, the distinguished literary scholar Michael Wood notes that, within the field of knowledge, literary studies is distinctive.

Literature . . . does not deal in information or announcement. Literature is embodiment, a mode of action; it works over time on the hearts and minds of its readers or hearers. Its result in us, when we are receptive or lucky, is the activation of personal knowledge: knowledge of others and ourselves; knowledge of stubborn, slippery, or forgotten facts; knowledge of old and new possibilities—a knowledge that is often so intimate and so immediate that it scarcely feels like knowledge at all because it feels like something we have always known.<sup>5</sup>

I can only imagine the sneering response of some on the scientific side of the line to a passage such as this. But the knowledge Wood describes is not only valuable but essential. To imagine life without it—and Wood's essay is called "A World Without Literature?"—is, from my perspective, to imagine a profoundly impoverished, gray, savorless, and also terrifying and pathetic existence in which we are constantly in search of knowledge we do not have, knowledge that will overturn what we (think we) already know. A world without literature and the kind of knowledge literature provides, or "activates," would be a world without value, a world without a home. Of course, personal knowledge is slippery, inconstant, error-prone, and suspect in many ways; this is why scholarship and criticism are needed, to guide, stimulate, model, and inform this knowledge. But nobody, not even scientists, can do without personal knowledge: the

history of science affords countless instances where a discovery is not simply mandated by the evidence, but comes at the end of a gradual process of realization undergone by a “receptive or lucky” scientist who eventually realizes something that he had “always known.”

And so, the primary reason to resist the final or total integration of science and the humanities is not that it would finally put the serious scientific people in charge and force humanists to confess their crimes and ineptitudes, but that it would destroy both the humanities and the sciences. The real value of non-consilience is that it preserves the possibility within each mode of knowledge of another way of knowing altogether, a way that might not just differ but disconfirm the entire enterprise on which one has embarked. Robert Oppenheimer once wrote that both scientists and artists live “at the edge of mystery.” He clearly meant this as a compliment to both groups, I think because he felt it was a good thing that the future should remain open and beckoning, beyond our grasp. A single way of understanding the world would represent not the edge but the end of mystery. If knowledge were perfectly integrated, we would, in effect, be living not in a universe of expanding possibilities, but on a dying cinder, with a finite future. The difference between science and the humanities does not stymie knowledge, but stimulates it, and stimulates it infinitely.

This statement calls out for an example, so I would like to close by referring to a set of experiments recently performed under the supervision of a British literary scholar, Philip Davis, that sought to explore with EEG and fMRI technology the possibility that “the shapes of mentality formed by literary language, in particular syntax, lock into, shift and modify established pathways of the brain.”<sup>6</sup> Davis had subjects wired up, and then

had them read passages from Shakespeare in which language is used in particularly creative ways, as when a word normally used as one part of speech is converted into another: the noun “spaniel” is transformed into the verb “spanielled,” as when people follow a leader, like a dog; the adjective “mad” becomes “madded,” as in “driven mad.” Noting that many believe that the nouns and verbs are processed in different sectors of the brain, Davis posits that such “functional shifts” force the brain out of its customary routines, forcing it to negotiate new pathways, “stretching the human mind towards new connections, making the language itself more alive to us, at a level of neural excitement never fully exercised by subsequent conceptualization” (269). This excitement, a form of brain self-awareness, is measurable, Davis discovered, as a powerful surge on the EEG graph. “Consciousness,” he concludes, “is called into being when simple automaticity is balked.” Davis concludes the essay on an exultant note. It has often been said that literature makes us more self-aware, stretches our horizons, and takes us out of our conventional ways of thinking, but he has discovered good empirical verification for these clichés.

Davis has also discovered a new way of thinking about literary language, as the purest form of consciousness itself, “the best model brain science has to work from, if it is to capture the spontaneous living complexity of the human brain, and not merely limit itself to subjects spotting the color red” (272). The last clause is a swipe at those scientific experiments in which super-sophisticated technology is deployed in the service of pointless or trivial questions that do not connect to any real human interest, the kind of research in which Snow’s scientists took particular delight, regarding it as particularly pure. Davis’s implication seems to be that scientific knowledge and technology are as

dependent upon imaginative and meaningful—humanistic—hypotheses and interpretations as humanists are on method, empiricism, and evidence. One can quarrel with Davis’s experiments (which seem to me preliminary) and with the conclusions he draws from them (which seem to me adventuresome), but it is clear that he has been stimulated into productive humanistic thought by the possibility of empirical verification, even as he has maintained as a disciplinary prerogative the right to formulate the questions and interpret the data. I hope that neuroscientists read him and others and find themselves stimulated to develop even further the capacity to study the human mind in a way that will give us new ways of looking at the mystery of the human. The future lies not with the success of consilience alone, but also with its failure.

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<sup>1</sup> See for example: <http://arstechnica.com/science/news/2007/04/how-doubling-the-nih-budget-created-a-funding-crisis.ars>; and <http://www.phds.org/the-big-picture/nih-funding-crisis/>. In England, the situation is the same: see <http://www.telegraph.co.uk/science/science-news/3325553/Pessimism-and-anger-over-science-funding-crisis.html>.

<sup>2</sup> William M. Chace, “The Decline of the English Department,” *The American Scholar*, Autumn, 2009; online at: <http://www.theamericanscholar.org/the-decline-of-the-english-department/>.

<sup>3</sup> For an indication of the interests and methods of one of the leaders of this movement, see Lisa Zunshine, *Why We Read Fiction: Theory of Mind and the Novel* (Columbus: Ohio State University Press, 2006), and *Strange Concepts and the Stories They Make*

*Possible: Cognition, Culture, Narrative* (Baltimore: The Johns Hopkins University Press, 2008).

<sup>4</sup> See Kwame Anthony Appiah, *Experiments in Ethics* (Cambridge: Harvard University Press, 2008). Also pertinent, with a claim to priority, are Joshua Knobe, *Experimental Philosophy* (New York: Oxford University Press, 2008), and Jesse Prinz, *The Emotional Construction of Morals* (New York: Oxford University Press, 2007).

<sup>5</sup> Michael Wood, "A World Without Literature?" *Daedalus* (Winter 2009), 58-67, 62.

<sup>6</sup> Philip Davis, "Syntax and Pathways," *Interdisciplinary Science Reviews* 2008 (33.4): 265-77, 265.