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# A Sputnik Moment? The Natural Sciences and Humanities

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## A sputnik moment? The Natural Sciences and Humanities. An interview with Edward L. Ayers

Fifty years ago, the Natural Sciences and the Humanities were described (by C.P. Snow) as 'Two Cultures'. Are they still so? This interview conducted by Peter Vale suggests that they are complementary and are likely to be increasingly so. Edward Ayers is the President of the University of Richmond. Previously dean of arts and sciences at the University of Virginia, where he began teaching in 1980, Ayers was named the National Professor of the Year from the Carnegie Foundation for the Advancement of Teaching in 2003. A historian of the American South, Ayers has written and edited ten books. *The Promise of the New South: Life After Reconstruction* was a finalist for both the National Book Award and the Pulitzer Prize in 1992. *In the Presence of Mine Enemies, War in the Heart of America 1859–1863* won the 2003 Bancroft Prize for distinguished writing in American history and the Beveridge Prize for the best book in English on the history of the Americas since 1492. Ayers is a former president of the US National Council on the Humanities, and has been elected to the American Academy of Arts and Sciences.



reflects a society's deepest structures of thought and practice. After Kuhn, scholars of all fields are much less likely to take any form of knowledge representation as natural or even as progress than they did before. As we see in the answer to the next question, moreover, other shared discoveries unite the disciplines.

**PV:** *Given emerging global problems—say, climate change and even the financial crisis—are we likely to see a greater convergence of the humanities and the natural sciences? If so, what form do you think this will take; if not, why can academic work not escape from the old trap that societies have problems while universities have departments?*

**ELA:** As we have seen, the humanities and the natural sciences have woven together for the last century, continually converging and diverging, continually reinforcing each other and critiquing each other. This marriage means that similarities between the two have grown even when people have not noticed it. In one field of human understanding after another, cultural historian Stephen Kern has recently pointed out, causality has come to be understood in terms of 'increasing specificity, multiplicity, complexity, probability, and uncertainty.' Satisfying explanations of social phenomena increasingly emphasise the intricate interplay of the structural and the ephemeral, the enduring and the emergent. This is true for history and sociology as it is for physics and biology.

As a result of this tendency, which may have something to do with interdisciplinary borrowing but which also has something to do with the recognition that the world simply works in complicated and unpredictable way, the humanities and the natural sciences are indeed converging and seem likely to continue to do so.

**PV:** *In an age of immense technological change, why should society attach importance to the humanities?*

**ELA:** The humanities and modern technological society have always been co-dependent. The disciplines we associate with the study of human behavior are actually quite new. Most of them, even history in its current academic form, developed in the late 19th and early 20th centuries as part of a larger effort to comprehend and even control social life. As a result, there have always been two currents running through those disciplines. One celebrates the humanities' and social sciences' reflective, disinterested, and even radical disconnection from dominant forms of industrial life. Another current is charged by a determination to be engaged and useful. Sociology, anthropology, political science, and economics were designed to be accompaniments to a technological society, to provide a set of tools to channel change. Even the study of literature and art was intended to make sense of potentially disruptive forms of human expression, to comprehend, categorise, and foster them.

Thus, the humanities are not leftovers from some earlier stage of social life, some vestigial appendage that will atrophy in a more thoroughly technological and modern age. There is every reason to expect that the humanities and social sciences will grow ever more sophisticated and specialised as they fulfil the purposes they were designed to fulfil. That purpose is disguised by the language that both

their defenders and their detractors employ, dwelling on the humanities' non-utilitarian nature. Those who celebrate the humanities for their own sake and those who criticise them as a useless adornment both ignore the larger and intrinsic social role of the humanities. Those disciplines will be with us in one form or another as long as we have a modern society.

**PV:** *Do you think that the self-reflexiveness of the humanities could assist the natural sciences in being more concerned with the social dimensions of their work?*

**ELA:** The sciences can indeed learn from the humanities; just as important, the humanities can learn from the sciences—albeit not what scientists may think humanists can learn. For the humanities and social sciences, reflexiveness is a major part of their social work. They demonstrate the ways that everything is social, including themselves. One of the most important developments in making the pursuit of knowledge more self aware came from an exchange between the humanities and the natural sciences.

When Thomas Kuhn devised the term 'paradigm shift' he was writing the history of science. By showing us that even science is deeply related to the structures of its production, Kuhn made all disciplines reflexive in a way they had not been before. It is in the nature of the Natural Sciences to ignore, even to deny, this fact about themselves. But after Kuhn, scientists better understand that science is not merely a neutral search for truth but

**PV:** *Should we view the global fall off in interest in the humanities a 'crisis'?*

**ELA:** I am not sure there is a global fall off of interest. Surely, we have never had more students studying the humanities, never more scholars producing more scholarship. It feels like a crisis, though, because of new competition. We have seen what we might think of the 'academisation' of things that were not taught in the academy before. The clearest example of this trend is business, where people now hold 'seminars' on managerial techniques, where all facets of business behavior are turned into subdisciplines.

The academy is full of other examples, from hotel management to recreation science to dental hygiene to disaster response, that simply were not taught in institutions of higher education a few generations ago. The proliferation of these subjects means that a growing proportion of students are not in the humanities—or in the natural sciences, for that matter.

The humanities do exactly what they say they do: prepare people to live lives with breadth of vision, suppleness of understanding, and the capacity to deal with change. These are the attributes and habits of mind needed by the leaders of complex, technological, and highly stressed modern societies. The crisis of the humanities comes in the self-perpetuating patterns of social inequality that dominates study of these fields. It is not apparent to many young people who are the first in their families to go to post-secondary school that the skills of the humanities are the skills they need to guarantee themselves a job, security, and a chance to advance. Those students flock to a more certain return in business or in more technical fields. They do so for perfectly logical reasons. But the result is that they limit themselves to relatively confined roles in later life, serving specific positions very well but not having the opportunity to lead enjoyed by those who have a broad humanities education, often topped off with a professional degree.

Those who study the humanities tend to be from families who are already comfortable and who go to schools that value and encourage the humanities. They are confident they will find no shortage of opportunities. They expect to get an MBA, a legal degree, a medical degree, or a Ph.D.; they understand that

undergraduate humanities work is intended to be broadening and deepening, not vocational. And that expectation, that confidence, becomes self-fulfilling. They learn to write and speak well, to know something about the world.

Young people from poorer backgrounds would also benefit from the studying the humanities, but they do not feel they can take the chance. They may be right, but they will find their success delimited as a result.

**PV:** *In your recent writing, you suggest that disciplines in the humanities are in the midst of a 'Sputnik' moment. Could you explain what you mean by this, and tell us what disciplines are involved and and suggest other areas that could possibly take off.*

**ELA:** In the United States, the education system in the late 1950s was shocked into a recognition that it had neglected mathematics and science while the Soviets had not. With encouragement and investment from the highest levels, American schools and universities poured enormous energies into scientific teaching and research.

The most recent Sputnik moment came to the United States and other Western societies in the wake of the terrorist attacks of 2001. Suddenly, government officials and opinion makers realised that we had neglected the teaching of foreign languages, religions, cultures, and histories, that our declared enemies knew a lot more about us than we knew about them. As a result, everything associated with international study boomed. Students flock into courses not only in Arabic but also in Mandarin, Hindi, and Farsi. Religious studies grew increasingly popular. The federal government in the United States, neglectful of the world after the Cold War, now pours money into foreign language teaching. Whether the effect will be as powerful in the short-run, and as apparently evanescent in the long run, as Sputnik remains to be seen.

**PV:** *If, as you have argued, the humanities are 'intrinsically inefficient' how might universities, research councils—and indeed, governments—better fund them?*

**ELA:** One of the most interesting and heartening developments of recent years is undergraduate research: original research, funded by small grants, overseen by faculty, performed by undergraduates themselves. Such research is a

natural outgrowth in the sciences, where it is an extension of well established practices of collaboration and on-site learning. Undergraduate study in the humanities, by contrast, has too often taken the form of the empty exercise, of reflection that is never tested by audiences of peers, of isolated work that never connects with, builds upon, or contributes to the work of others. Relatively small investments in real undergraduate research in the Humanities, funding professors as well as students, could play a major role in broadening our conception of what the humanities are and can do.

**PV:** *You have suggested that the new digital media are transforming the humanities. How is this happening, and will it alter both their form and content over the longer term?*

**ELA:** A revolution has taken place that people have barely noticed. Over the last twenty years, much of the human record has been digitised. Though much more awaits that conversion, vast amounts of information that was once rare and isolated is now commonly shared. Documents, art, and data that were once sealed away in inaccessible archives are now available largely for free. Scholarly books that were, only five years ago, largely unknown and unavailable except to a tiny audience are now obtainable to anyone with access to a computer.

This revolution has been so quiet because we are not quite sure what to do with this sudden abundance. We have not developed the tools to deal with having far more information than we know how to process. Billions of words from newspapers from around the world for the last two centuries are now before us. Those billions of words are not unlike the immense amounts of data that pour into computers every day from telescopes, particle colliders, remote sensing devices, and magnetic resonance imaging machines. The challenge for all of us—a thrilling challenge—is to find patterns and meaning in those words and numbers that explain things more fully than we have been able to explain them before. And what task of explanation is more exciting, and challenging, than explaining humans to ourselves? The digital revolution in the humanities has barely begun.

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