

## Where are the Scientists in Literature and Science?

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At the recent Society for Literature, Science and the Arts (SLSA) meeting in Atlanta, I was disappointed—but not surprised—to encounter hardly any scientists. I have attended the majority of SLSA meetings since I first learned about and joined the society (then just SLS) in the early 1990s, and I believe the maximum number of practicing scientists present at any meeting was maybe half a dozen—three or four is more typical—out of a total attendance of several hundred.

A survey of the SLSA journal *Configurations* tells a similar story: the 72 issues to date contain a total of 370 articles (not counting editors' prefaces or book reviews). Some of these have two or more authors, while a number of scholars have published two or more articles; all in all there have been 356 individual contributors, of whom *just six* identify themselves with a scientific discipline in the biographical sketches at the end of each issue: two in neuroscience, one each in molecular and evolutionary biology, one in physics, and one in chemistry (that last would be me). (I do not include contributors who report having taken an undergraduate or even advanced degree in science, but affiliate with a different field professionally.) Likewise, among the 106 book reviewers (some of them overlap with the list of article authors) only two scientists are to be found: a zoologist and an MD. *JLS* is no different: the 12 issues to date feature 60 contributors of articles and nearly the same number of reviews, of whom only one was an active scientist.

It was not supposed to be like this. The founders of SLS envisioned "a pan-disciplinary environment where scholars from a broad range of fields, particularly the sciences, would feel welcome; where the multiplicity of interaction between sciences and literary studies might be investigated in a discursive arena that belonged to no single discipline or group of disciplines" (Weininger n.p.). The "pan-disciplinary" part has been for the most part successful—disciplines represented in the above survey include art and art history, communications, cultural studies, history, literature, media studies, philosophy, sociology, women's studies, and just about any sub-field associated with any of these—but not sufficiently "pan" to include more than a handful of scientists. Why has it turned out that way? Assuming that scholars in the field agree (as most of those I've talked to do) that increased participation by active scientists would be desirable, how might that be achieved?

I do believe that there is considerable potential interest among scientists in the relations between science and the humanities/social sciences. As just one example, I gave a version of the talk I presented at the latest SLSA meeting—it was on connections between molecular structural representation and literary translation—at a recent American Chemical Society meeting. To be sure, the details of each talk were tuned somewhat to the respective audiences, but the core content was basically the same, and the chemists were very receptive. The problem, of course, is that practising scientists, particularly those at major research institutions, find scientific work (including the less-pleasant but essential aspects, particularly that of securing funding) extremely time-consuming, while those who might be attracted to interdisciplinary activities outside their field generally perceive that little or no professional benefit is to be expected therefrom.

Furthermore, it must be acknowledged that some of those scientists who *have* paid attention to science-humanities relationships have taken a very negative stance, which came to the fore during the so-called Science Wars of the 1990s. That was perhaps best typified in the United States by biologist Paul Gross and mathematician Norman Levitt, who characterize a broad cross-section of those who presume to speak about science from outside positions as aiming to undermine scientific authority. Gross and Levitt are clearly uncomfortable with the possibility of productive intercourse between what they perceive as hard, fact-based science and fuzzy humanities, two domains that in their portrayal seem to be completely intellectually and epistemologically incommensurate:

The humanities, as traditionally understood, are indispensable to our civilization and to the prospects of living a fulfilling life within it. The indispensability of professional academic humanists, on the other hand, is a less certain proposition. . . . The notion that scientists and engineers will always accept as axiomatic the competence and indispensability for higher education of humanists and social scientists is altogether too smug. (242-43)

By contrast, the biologist E. O. Wilson appeared to offer a pro-interaction position:

There is only one way to unite the great branches of learning and end the culture wars. 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. (137)

Yet this revealed, on closer examination, much more of a call for colonization than alliance:

In the last several decades the natural sciences have expanded to reach the borders of the social sciences and humanities. There the principle of consilient explanation guiding the advance must undergo its severest test. The physical sciences have been relatively easy; the social sciences and humanities will be the ultimate challenge. (72)

The only way either to establish or to refute consilience is by methods developed in the natural sciences. . . . Its surest test will be its effectiveness in the social sciences and humanities. (9)

But many scientists *do* appreciate the need for truly "cooperative entry from both sides;" a nice example is provided in zoologist Richard Lewontin's essay review of *Higher Superstition for Configurations*, in which he discusses how metaphor shapes investigation in developmental biology (Gross's own field). Indeed, I suggest that a good measure of scientists' attitude towards literature and science is their understanding of how intimately scientific thought is bound up with metaphor. Compare these two statements from physicists Alan Sokal (of the (in)famous Sokal affair) and Jean Bricmont and then from chemist Ted Brown:

Some people will no doubt think that we are interpreting these authors too literally and that the passages we quote should be read as metaphors rather than as precise logical arguments. Indeed, in certain cases the "science" is undoubtedly intended metaphorically, but what is the purpose of these metaphors? After all, a metaphor is usually employed to clarify an unfamiliar concept by relating it to a more familiar one, not the reverse. (Sokal 10)

[A]ny model we might use to characterize the atom is metaphorical, whether it be that of a billiard ball . . . or a densely mathematical description based on quantum theory. . . . We don't ever "see" atoms. . . . What we see are constructs that at their best represent reliable models of reality, with sufficient verisimilitude to serve as productive metaphors. They facilitate correlations, predictions, and interpretations of other data and stimulate the creative design of new experiments. That is all we can hope for. (Brown 99)

The first comment projects a highly restricted, almost algorithmic understanding of metaphor—merely a tool for explanatory purposes—whereas the second reflects the ubiquitous, central role of metaphor in *all* realms of human activity, including science. Chemist (and Nobel laureate) Roald Hoffmann, an occasional SLSA meeting participant, has spoken similarly on how paying attention to considerations of language and literature can have a positive effect on scientific practice:

[T]here is no single correct analysis of the complex entities of chemistry expressed in a single adequate language, as various reductionist scripts require; and yet the multiplicity and multivocality of the sciences . . . do not preclude but in many ways enhance their reasonableness and success. . . . We understand the reality whose independence we honor as requiring scientific methods which are not univocal and reductionist precisely because reality is multifarious, surprising, and infinitely rich. (Grosholz and Hoffmann 223)

Sentiments along these lines, especially if supported with illustrations, could form an excellent basis for attracting scientists to literature and science.

What specific actions might increase participation by scientists in literature and science activities? An obvious first step is simply to try to interest scientists in what we do. I must confess my own attempts have not been hugely successful, but a large part of the reason for that is the factor I mentioned above: my colleagues at Caltech will express polite interest (sometimes!) but are not willing or able to go any further. I continue to try; but I expect outreach efforts at liberal arts colleges and other less high-powered research-oriented institutions might be more promising. In any case, humanists will have to do the lion's share of this work: there are just not enough of us scientists in literature and science to have much of an impact.

Having (hopefully) attracted sympathetic scientists on an informal basis, then, we could move towards more active involvement. Organizers of panels at an SLSA (or other) meeting could try to line up a scientist as a respondent, or even one of the speakers. Editors and authors contemplating a special issue, or a cluster of papers, for journals such as *Configurations* or *JLS* could recruit a scientist as one of the

contributors, or a co-author on one of the papers, or as a commentator on the theme and collection of articles. In fact, I see signs that such efforts may be underway already: the scholars who took over the editorship of *Configurations* in 2012 promised "agendas that bring scientists, humanists, social scientists, and artists together," (Littlefield and Sudan 211) and indeed, two subsequent themed issues on "Time" (Holland and Kittler) and "Emotions" (Frazzetto) include articles by a physicist (Schollwöck) and two neuroscientists (Frazzetto; Wilkes and Scott) respectively. If this is the beginning of a new trend, it is *most* encouraging.

Literature and science programmes or interest groups at colleges and universities would constitute another valuable mechanism *if* they include substantial active participation by scientists. I know some such exist—for example, there is a Center for Literature and Natural Sciences at the Friedrich-Alexander-Universität in Erlangen, Germany (ELINAS), cofounded and jointly led by members of literature and physics departments (see [elinas.fau.de/](http://elinas.fau.de/))—and I seem to recall a couple of presentations about smaller groups at previous SLSA meetings. We should try to increase their visibility, perhaps by arranging for such a presentation as a *plenary* talk at a future meeting, followed by a roundtable discussion on how to encourage similar activities elsewhere.

I hope none of this will be taken as any sort of negative commentary on SLSA, or on literature and science more generally. It is not that I feel isolated as one of the few scientists; on the contrary, I have always felt entirely welcome within the organization, and have tremendously enjoyed and profited from my interactions with all members. Nonetheless, I do strongly feel that increasing scientists' participation will be beneficial on many fronts: the literature and science endeavour to be sure, but perhaps on a much larger scale as well, such as potentially reducing interdisciplinary/interdepartmental barriers and tensions in academia in general, as I have suggested in a previous article. Let us see what we can do. Maybe taking a scientist to lunch would be a good start!

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