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Science and Literature: Reflections on Interdisciplinarity and Modes of Knowledge

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The joint field of 'science and literature' has been gaining increasing prominence in the last two decades, charting new grounds beyond the divided landscape of the 'two cultures'. Of our increasingly border-crossing research culture, no field provides a better example than cognitive literary criticism. Though still relatively young, this area has already produced a body of work that is extremely wide-ranging in both scale and explanatory scope, illustrating through its very organization the possibilities of multidisciplinary enquiry. This paper will examine interdisciplinarity with reference to evolutionary literary criticism, a sub-field within cognitive literary criticism; a scrutiny of the political and ideological implications that follow from basing an account of literature on adaptive value will be given followed by a discussion of the historical lineaments of the science/literature debate.

Keywords: science / culture / literature / cognitive literary criticism / evolutionary criticism / interdisciplinarity

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I

The joint field of 'science and literature' has been gaining increasing prominence in the last two decades or so, charting new ground beyond the divided landscape of the 'two cultures'. The *MLN* signaled this spirit of constructive interdisciplinary exchange in their special issue entitled *Literature and the History of the Sciences* (2003), which announced that there were now 'complementary tendencies in literary studies and the history of sciences, tendencies that seemed to eventually converge or even to coincide methodologically' (Campe 515). The hopeful note of methodological reconceptualisation inherent in the 'complementary tendencies' pronouncement would have seemed improbable fifty years ago, at least in

the Anglo-Saxon academic world; that such optimistic foregrounding of convergences, of both methods and concepts across the divide, is common today makes plain the very many advances the 'two cultures' debate has taken.

Of our increasingly border-crossing research culture, no field provides a better example than cognitive literary criticism. Still relatively young, cognitive literary criticism has already produced a body of work that is extremely wide-ranging, illustrating through its very organization the possibilities of multidisciplinary enquiry. Though cognitive approaches range widely in both scale and explanatory scope – cognitive poetics, cognitive stylistics, cognitive aesthetics, cognitive narratology, 'evo' (evolutionary) literary studies, 'neuro' (neuroscientific) literary studies and other interdisciplinary studies yet to be given a formal title – they have in common a focus on the cognitive nature of literature and a belief in using the methods of science to illuminate it. The study that opened up this field was *The Literary Mind* (1996) by Mark Turner: in it, Turner used the methods and concepts of cognitive linguistics and neuroscience to illuminate the cognitive and psychological processes at work in the act of reading. It has not only recalibrated the relations between previously discrete modes of knowledge but has demonstrated through its example that interdisciplinarity is inherent, setting new standards for bringing the concepts and methods of one discipline into a working relation with the concepts and methods of another. Turner sums up his approach:

In combining the old and the new, the humanities and the sciences, poetics and cognitive neurobiology is not to create an academic hybrid but instead to invent a practical, sustainable, intelligible, intellectually coherent paradigm for answering basic and recurring questions about the cognitive instruments of art, language, and literature. (Turner, 'The Cognitive Study' 9)

Not all attempts in this field have been quite so judicious. Even at this inchoate stage, there are epistemic issues that trouble the notion of convergence, none more so than in the field of evolutionary literary criticism. To discuss the problems, I will examine *The Literary Animal: Evolution and the Nature of Narrative* (2005) edited by Jonathan Gottschall and David Sloan Wilson. Though there have been many evolutionary literary studies, this book illustrates the defining features of this school singularly well; and it is also clear in differentiating itself from long-established criticism informed by Darwinian ideas, in which critics like Gillian Beer, among others, have written powerfully and illuminatingly (see Beer). I will investigate the forms and methods that underpin this kind of application of evolutionary knowledge to literature, consider the political and ideological implications that

follow from basing an account of literature on adaptive value, and trace the lineaments of the debate historically. For perhaps the most striking feature of evo criticism is its striking similarity with arguments of the past.

II

Evolutionary literary critics begin from the premise that language is a distinct and defining feature of humans which holds profound truths about human nature. Looking at the sheer ubiquity of narratives in human societies, they attempt to understand the adaptive value of literature by using literature as an object of scientific scrutiny. ‘First, what is literature about?’; ‘Second, what is literature for?’; ‘Third, what does it mean for a seemingly nonscientific subject such as literature to be approached from the perspective of a scientific discipline such as evolution?’ – these are three questions that underpin *The Literary Animal* (Gottschall and Wilson [eds.] xxv). In regarding literature as an object of serious and sustained scientific enquiry, *The Literary Animal* appears to take a big step forward towards interdisciplinarity, unlike the majority of scientific writing which excludes what it regards as non-scientific modes of knowledge from its field of investigation. The introduction announces that it seeks to ‘provide a single conceptual framework for unifying disparate bodies of knowledge [...] and reverse the trend of extreme specialization of knowledge that has taken place in the absence of a unifying conceptual framework’ (xvii). In the same vein, E. O. Wilson writes about the possibility of evolutionary literary criticism to bridge the divide between the two cultures. If naturalistic theories are proved to be right, he writes, ‘not only human nature but its outermost literary productions can be solidly connected to biological roots, it will be one of the great events of intellectual history. *Science and the humanities united!*’ (Gottschall and Wilson [eds.] vii)

But if by proposing the inherent literariness of the human mind as one of the most fundamental parts of our cognitive capacity, ‘evo’ criticism appears to recalibrate the dynamics of the relationship between literature and the sciences and put them on a more equal footing, one is very soon confronted by assertions, such as E. O. Wilson’s, which prompt the question of whether the single conceptual framework is based on a common ground of knowledge or a ground of scientific knowledge only. He writes:

Confusion is what we have now in the realm of literary criticism. The naturalistic (Darwinian) literary critics have an unbeatable strategy to replace it. They do not see the divisions between the great branches of learning – the natural sciences on one side and humanities and humanistic social sciences on the other – as a fault

line between two kinds of truth. They do not consider it a line at all but rather a broad expanse of mostly uncovered phenomena awaiting cooperative exploration by scholars from each side. This conception has the enormous advantage that it can be empirically proved to be either right or wrong or at worst, unsolvable. (vii)

The idea that literary knowledge can be established through empirical verifiability would not be worth serious consideration except that this is a typical, indeed declared, method of evolutionary literary criticism. And despite E. O. Wilson's veneer of impartiality, established through his breezy dismissal of the incommensurability of various paradigms of knowledge, it still remains a matter of dispute whether the commensurability of literary and evolutionary enquiry has been satisfactorily or even adequately addressed. Before the discussion on the epistemological status of artistic communication can be had, and challenges to the epistemologies of scientific rationality be made, it is worth pointing out that this kind of collapsing of the two cultures is a common feature in the present interdisciplinary culture which should be distinguished from genuine attempts at consilience. It is now commonplace to hear of post-'two cultures' or anti-'two cultures' proclamations and how one should embrace a less divisive approach to acquiring knowledge. In these announcements, it would seem that the two cultures idea was an arbitrary doctrine or a territorial prescription for separatist modes of enquiry. But when C. P. Snow (1905–1980) articulated this idea in his 1959 Cambridge Rede lecture, 'The Two Cultures and the Scientific Revolution' (see Snow, *Two Cultures*), he was merely reflecting the institutional and conceptual divide prevalent in the Western world in the mid-twentieth century. A simple rejection of Snow's summary without institutional and conceptual changes and without a fundamental reconceptualisation of both fields, one that goes beyond superficial term-borrowing, amount to little more than rhetoric, or even worse, a mystification that masks difference and institutional inequality.

It is true that in the heated and ferocious debate following on from Snow's thesis and F. R. Leavis's subsequent rebuttal, there was little room to examine whether the differences between the two cultures were quite so absolute. Two years ago, Onora O'Neill pointed out in her Cambridge Rede lecture, entitled 'Two Cultures Fifty Years On', that the assumptions and methods by which both cultures proceed are not quite so divided, giving as her examples the common methods of interpretation and inference aiming at empirical truths and relying on normative assumptions. O'Neill's observations are timely in that they express something of the current climate of convergence. But one should not lose sight of the fact that the two culture debate, as Patricia Waugh (33) has argued, can be dated back as far as classical antiquity, revolving as it does around two

modes of enquiry leading to two kinds of knowledge: scientific, quantifiable knowledge and the aesthetic, non-quantifiable knowledge. Plato's idea of intellect, which famously relegated aesthetics to subjective emotionalism, found its twentieth-century equivalent in Snow's attack on literary intellectuals (or more specifically, modernist writers) and is undergoing a resurgence again in current polemics produced by evolutionary literary critics.

But to return to the issue of the presumed superiority of the scientific method: just as C. P. Snow did fifty-odd years earlier, but with an even more confident and blinkered positivism, evolutionary critics, with evangelical zeal, champion their mode of enquiry. 'There is no work of literature written anywhere in the world, at any time, by any author, that is outside the scope of a Darwinian analysis', claims Joseph Carroll in *The Literary Animal* (79). He continues:

Darwinian psychology provides a scientifically grounded and systematic account of human nature. This is the first time in our intellectual history that we have had such a theory, but the subject of this theory – human nature itself – is the very same nature that has always animated writers and readers. Most writers historically have not had access to the evolutionary explanation for how human nature came to be what it is, but they have nonetheless had a deep intuitive understanding of human motives and human feelings. What a Darwinian social science can now do for literary criticism is to give us conscious theoretical access to the elemental forces that have impelled all human beings throughout time and that have fundamentally informed the observations and reflections of all writers and all readers. Darwinian criticism can lift us above the superficial paraphrases of traditional criticism without forcing us into the often false reductions in the postmodern conceptions of human nature. (Carroll 103)

But biology-led ideas of what literary enquiry is, when they do not address the epistemological status of aesthetic knowledge, have little to say about literature, especially that with no discernable adaptive value.

A general confusion about what literary knowledge is has much to do with the assumptions about literature with which evolutionists begin their investigation. They are, like all scientists, concerned with the highest levels of generality. Literature is of course concerned with human universals but formulated in a uniquely specific way. The specificity is what constitutes the literariness. This is not an argument against reduction. If the process of reduction is a move in the direction of greater objectivity in the sciences, it is also a move towards a more accurate view of the real nature of things in the humanities. But some processes of reduction lead us straight up a dead end. And some lead to direct attacks on non-scientific modes of knowledge.

Evoking Snow's attack on non-verifiable modes of knowledge and modernism, the intellectual frame of which was logical positivist orthodoxy, evolutionary critics, in this volume and elsewhere, condemn non-verifiable ideas of social constructivism and postmodernism. Joseph Carroll argues:

The turn to theory-driven criticism answered a manifest need, but the theoretical models that have been used, up to now, have been painfully inadequate. Deconstruction, Marxism, Freudianism, and Foucauldian political criticism have all presupposed ideas about human nature that conflict sharply with the Darwinian conception. The other main school, feminism, is a less single, coherent theory than a preoccupation about a specific subject matter – the condition of women – but the notions that cluster around this preoccupation often entail false ideas about human nature, and most feminist critics over the past thirty years have affiliated themselves with one or other of the dominant theoretical schools. All of the schools, as subsidiaries of postmodern theory, have fundamentally repudiated the idea of an innate, biologically constrained structure in the human motivational and cognitive system [...] offer[ing] distorted, skewed and strained accounts of the elemental motives and governing principles in literary texts. (Carroll 102)

That poststructuralist and postmodernist accounts have at times failed to adequately address the category of the natural is a valid point. Certain strands of postmodern epistemological relativism have treated the concepts and methods of science with extreme scepticism and consequently have produced decades of disputes over epistemology and methodology which reached a peak in the 'science wars' of the 1990s (for a delineation of which, see Norris). However, refuting a position by discrediting several flawed arguments in its favour does not encourage epistemic compatibility of the quantifiable, positivist and measurable and the non-quantifiable, immeasurable, aesthetic mode of knowledge.

The combative tone may have something to do with the process of breaking down barriers between disciplines and constructing new paradigms. But the polemics does not seem unrelated to the fact that cognitive science was borne out of the biological revolution of the 1950s and that within its current manifestation, biology has now superseded classical physics as the 'exemplary' discipline which sets the standard of all inquiry. Redolent of what F. R. Leavis called the 'technologico-Benthamite' reduction of the human in Snow's overextension of scientific epistemology (see Leavis), evolutionary critics' polemical rhetoric can seem like gung-ho assertions of scientific supremacy. The hierarchisation of knowledge presumed by evo criticism is, again, reminiscent of Snow's scheme of the two cultures which equated the scientific mode of investigation with political progressivism, and the literary culture with the degenerate. 'A certain type

of art has been intimately linked with a certain type of inhumanity' averred Snow (Snow, *Recent* 6). That a set of regressive and self-indulgent attitudes is associated with literary intellectuals, and a set of progressive ones with natural sciences, is the foundation of evolutionary criticism in which there is no place for 'non-entertaining' modernist and postmodernist literature. The most extended condemnation of modernism and postmodernism is Steven Pinker's *The Blank Slate*, which mounts a systematic attack on forms of literature from which he can find no adaptive value. Regretfully, this is a logic that informs *The Literary Animal*.

So what is literature about according to evolutionary logic? What is it for? Looking at literature, the evolutionary critic finds that various hypotheses could be made about its adaptive value, producing as evidence entertainment, circulation of information, simulations that prepare humans for actual decision-making, vicarious wish-fulfilment and counter-factual fantasy. These values may or may not illuminate literary texts but the quality of these interpretations is not a point I would like to pursue here. What I would like to discuss are the political and ideological implications of positing a direct link between literature and use value while passing over in silence the formal characteristics that constitute literature. For what is literature if not form? Literature has crucial relevance precisely because it is not paraphrasable into more basic speech and because it only exists as an indivisible whole whose meaning is always symbolic. Of course a large number of activities go on under the heading of reading and writing, activities which are connected in various ways and which all add up to the experience of literature, and among which entertainment and information gathering could play a part. However, the idea that entertainment in itself elucidates literature is not only incomplete but misconceived. There is certainly enough non-entertaining literature to constitute a formidable challenge to the idea of human nature upon which these scientific hypotheses are based. And even the most hard-boiled empiricists would regard entertainment an inadequate criterion for evaluating and comprehending literature, especially when the concept of entertainment revolves around passive reception of information. Another problem of equating literature with entertainment is that it ignores the relationship between art and ideology. Do some forms of literature, especially repetitive genre fiction on which 'evo' critics are so keen, reinforce certain ways of seeing? Are certain literary forms symbolic representations of social relations? If literature reflects society, is the reflection partial and does the partiality mask fundamental contradictions of that society? In short, what is the epistemological status of the great tradition of negative dialectics in literature? Literature does not merely reflect; it also refuses, rejects and negates. Literature is

often a great refusal of what is, a negation of the present. It is also often a proposal of what we can hope to become.

The misappropriations and parody of literature have potential consequences reaching far beyond pseudo-literary claims about the adaptive value of narratives. Some evolutionary critics, like Snow before them, have been widely accepted as a powerful and authoritative voice of science on a global scale, and their neo-Darwinian neuromythologies have a bearing not only on the future direction of cognitive science but on the public intellectuals whose opinions are informed by and produced within scientific discourses. If one looks closely, at the heart of this debate on literature is nothing less than humanity's model of itself, closely associated with society's structure of values, and this debate has been on-going for at least two hundred years.

A less well-known but pertinent antecedent of the Snow-Leavis controversy can be found in the nineteenth century, in the Huxley-Arnold version, which provided the point of reference for both Snow and Leavis. Matthew Arnold's (1822–1888) own Rede lecture of 1882, entitled 'Literature and Science', rebutted, albeit in a more gentlemanly and respectful manner, the claims made by T. H. Huxley (1825–1895), whose 'Science and Culture' promoted science over the traditional classical education. In his refutation of Huxley, Arnold argued:

If then there is to be a separation and option between humane letters on the one hand, and the natural sciences on the other, the great majority of mankind, all who have not exceptional and overpowering aptitudes for the study of nature, would do well, I cannot but think, to choose to be educated in humane letters rather than in the natural sciences. Letters will call out their being at more points, will make them live more. (Arnold 70)

As this example demonstrates, Arnold's idea that literature is closely and exclusively involved with the giving of life is the premise on which both he and Leavis based their refutation of scientific supremacy. That 'humane letters' is separate from the natural sciences of which Arnold speaks is broadly a continuation of the fissure that opened up between types of knowledge in the seventeenth and eighteenth centuries with the advent of European enlightenment. But the clear and mutually exclusive categories of knowledge, as delineated by Snow and Leavis, are a distinctly nineteenth-century phenomenon. Scientists, called 'natural philosophers' prior to the nineteenth century, were understood to include in their study the culture of humans as well as the natural world. Indeed, the category of science, in English, in the narrow restricted meaning of the word as pertaining to the physical or the natural sciences to the exclusion of theo-

logical and metaphysical science, dates back no further than the 1830s according to the *OED*.¹

Of the extremely wide range of implications arising out of this genealogy, the most pertinent to the present argument is the hierarchy of knowledge produced by such categorization. From the romantic period onwards, one can readily find the category of science assuming a special claim to reliable, objective knowledge and from then on the two cultures debate could not but proceed with the humanities continually defending the value of an aesthetic form of knowledge (see Collini). As a consequence, there has been a huge imbalance in their degree of legitimization which has pushed the humanities to a perennial self-justification. There have been two main approaches to this justification. One approach has been for the humanities to aspire to the condition of science, scrupulously avoiding non-verifiable questions such as meaning, value and intention; the New critics have been the most notable though by no means the sole practitioners of this method. The other approach has been to defend the existence and value of a specifically aesthetic, non-scientific kind of knowledge; in other words, the methods of modern aesthetics. As Terry Eagleton (16) has stated, 'aesthetics is born of the recognition that the world of perception and experience cannot simply be derived from abstract universal laws, but demands its own appropriate discourse and displays its own inner, if inferior, logic.' Thus any interdisciplinary research would need to address the question of whether the intellectual methods and standards adopted from the natural sciences are appropriate for a discourse founded on precisely that which cannot be derived from scientific modes of knowledge. A convergence of transdisciplinary proportions would require profound transformations of the inherited categories as described above, for it is unlikely that any attempt that does not achieve this will be able to resolve the issue of epistemological compatibility. Erasing the two categories in favour of a mythical third is no less a dubious gesture than relegating the categories to the waste heap of history, for there are more profound issues at stake in such apparently narrow disputes.

The scientific ascendancy may provide the foundation for consilience, but to reach that level of advanced understanding the significance of aesthetic knowledge will need to be continually reasserted in the face of scientific reduction of the literary. Certain truths about the human experience can only be communicated in aesthetic form which is one strong argument for preserving the divided landscape of the two cultures even as we try to resist the circumstances which produced it.

NOTE

¹ In the German tradition, the distinction between *Geisteswissenschaften* (or *Literaturwissenschaften*) and *Naturwissenschaften* does not affect the category of *Literatur*, which is outside of *Wissenschaften* all together.

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