



'Chordaria flagelliformis' from Anna Atkins: *Photographs of British Algae. Cyanotype Impressions Vol. 2* [British Library, item 80:11 (80)]

## ***BIOLOGICAL DISCOURSES***

### ***THE LANGUAGE OF SCIENCE AND LITERATURE AROUND 1900***

**A student-led conference organised by Robert Craig, Ina Linge and Annja Neumann  
ST. JOHN'S COLLEGE, CAMBRIDGE, APRIL 2015**

## **CONFERENCE COMMENTARY**

**ANGUS NICHOLLS, QUEEN MARY, LONDON**

---

This postgraduate-led conference opened with **Ina Linge** and **Robert Craig**, both PhD students in German at Cambridge, reflecting on the relations between the natural sciences and the realms of art and culture. Ina Linge explained the organisers' chosen image for the conference, a photograph by Anna Atkins (1799-1871) – who is reckoned to be the first published female photographer in Britain – of the 'chordaria flagelliformis,' a species of algae that is widely distributed in the cold-water areas of the Northern Hemisphere. In being a scientific photograph of great aesthetic beauty, and presumably an inspiration to those working not only in the natural sciences but also in the visual arts, Atkins' image represents the potential for the communication between, and the crossing of, disciplinary boundaries. This theme was then deepened by Robert Craig's discussion of C.P. Snow's Rede Lecture on

‘The Two Cultures’ held at Cambridge in 1959. In that lecture, Snow had bemoaned the fact that ‘literary intellectuals,’ as he called them, were in the main ignorant about contemporary science. The British education system, he alleged, had traditionally favoured the classical humanities at the expense of the pure and applied sciences, and this despite the fact that the sciences were the engine of economic growth in twentieth-century Britain. This had led British intellectual life to be divided into ‘two cultures’ that apparently confronted one another with mutual incomprehension, not to mention with animosity, as was evidenced by F. R. Leavis’s fiercely polemical 1962 response to Snow’s argument.<sup>1</sup> As a quick Internet search demonstrates, these debates are still very much alive today: see [Melvyn Bragg, ‘The Voice of Culture’ \(BBC Radio 4, 2 January 2013\)](#) and [Stefan Collini, ‘Leavis v Snow: the Two-Cultures Bust Up 50 Years On’ \(\*The Guardian\*, 16 August 2013\)](#). But as Stefan Collini has pointed out in a recent edition of Snow’s lecture,<sup>2</sup> such arguments were scarcely new even in 1959, since Matthew Arnold and Thomas Henry Huxley had engaged in a similar debate in the late nineteenth century. While Arnold had famously argued in his *Culture and Anarchy* (1867-9), that culture is the ‘pursuit of perfection’ based primarily upon aesthetic examples taken from classical literature,<sup>3</sup> Huxley countered him in a public lecture of 1880 (‘Science and Culture’), by proposing that in the burgeoning industrial Victorian culture of his day, ‘for the purpose of attaining real culture, an exclusively scientific education is at least as effectual as an exclusively literary education.’<sup>4</sup> This in turn led to a renewed defence of the literary humanities offered by Arnold in his Rede Lecture of 1882, ‘Literature and Science.’<sup>5</sup> As a recent study by Guy Ortolano has shown, already in their nineteenth- and especially in their twentieth-century manifestations, these debates had more to do with modern university curricula and with a broader clash between technocratic and humanistic versions of liberalism than with actual literary production,<sup>6</sup> and in our own age, they continue in REF2014, which has been seen by some as crudely applying a natural sciences model of social and economic

---

<sup>1</sup> F.R. Leavis, *Two Cultures? The Significance of C. P. Snow*, ed. Stefan Collini (Cambridge: Cambridge University Press, 2013).

<sup>2</sup> C.P. Snow, *The Two Cultures*, ed. Stefan Collini (Cambridge: Cambridge University Press, 2012), xiv.

<sup>3</sup> Matthew Arnold, *Culture and Anarchy*, in *Culture and Anarchy and Other Writings*, ed. Stefan Collini (Cambridge: Cambridge University Press, 1993), 60-61.

<sup>4</sup> Thomas Henry Huxley, ‘Science and Culture’ (1880), in *Science and Education: Essays* (London: Macmillan, 1893), 134-59; here: 141.

<sup>5</sup> Matthew Arnold, ‘Literature and Science’, in *The Portable Matthew Arnold*, ed. Lionel Trilling (Harmondsworth: Penguin, 1980), 405-29.

<sup>6</sup> Guy Ortolano, *The Two Cultures Controversy: Science, Literature and Cultural Politics in Postwar Britain* (Cambridge: Cambridge University Press, 2009).

impact to all academic disciplines, including the humanities. For this reason, it has come as no surprise in some quarters that the medical and life sciences (Panel A) received the highest impact GPA scores across all university subject areas in REF2014, while the arts and humanities appeared at the bottom of the impact table (even if the actual numerical differences are in themselves relatively marginal).<sup>7</sup>

The contemporary significance of inquiring into biological discourses in literature around 1900 therefore lies in the fact that the public discourse during that period bears some structural similarities to that of our own historical moment. In both ages, the natural sciences have arguably served as the perceived acme of human achievement, an acme that the humanities and the arts might at best imitate or appropriate. If anything, the prestige of the natural sciences has increased to such an extent that the pro-science and pro-technology arguments of Snow – made in the context of a Cambridge University then still dominated by the humanities – might seem almost superfluous today. Importantly for the context of this conference, the roots of these developments appeared already in the middle of the nineteenth century. Most crucially, after 1859 the Darwinian revolution had led to a redefinition of, and an increasingly sharp division between, the human and natural sciences. Darwinian natural selection had shown that it was possible to theorise biological development without recourse to the teleological models found in religious discourses or in the speculative systems of German idealism. As a consequence, mechanism, experimental method, and the testability of hypotheses increasingly defined what came to be known in Britain as ‘physical science’ and in Germany as *Naturwissenschaft*. It was precisely this developing prestige, exactitude and productivity of the natural sciences – along with their ability to capture the public imagination – that heightened the meaning which science came to have for literary authors around 1900. Perhaps our own early twenty-first century analogue of this development – albeit perhaps more instrumental and academic than strictly literary – is the contemporary vogue for cognitive and evolutionary approaches to the humanities evidenced by a number of recent authors.<sup>8</sup> While sometimes useful and insightful, the risk run by such approaches to the

---

<sup>7</sup> See Paul Jump, ‘The Impact of Impact,’ *Times Higher Education*, 19 February 2015. [www.timeshighereducation.co.uk/features/the-impact-of-impact/2018540.fullarticle](http://www.timeshighereducation.co.uk/features/the-impact-of-impact/2018540.fullarticle) [accessed 24 April 2015].

<sup>8</sup> To name just two recent examples, see: Winfried Menninghaus, *Wozu Kunst? Ästhetik nach Darwin* (Berlin: Suhrkamp, 2011); Joseph Carroll, *Reading Human Nature: Literary Darwinism in Theory and Practice* (Albany, NY: SUNY Press, 2011).

humanities lies in reducing complex historical artefacts to a substrate of allegedly ahistorical and empirically testable biological interests.<sup>9</sup>

The organisers of this conference are, however, decidedly not part of this vogue. Rather than conceiving of literary studies along natural scientific lines in the manner of the current ‘cognitive revolution,’ their purpose was much more to investigate the crosscurrents between literature and the biological sciences during this period. If these cross-currents did amount to something resembling a ‘third culture’ between literature and the natural sciences around 1900, then this ‘third culture’ was not so much a homogeneous space in which the two disciplines met;<sup>10</sup> rather it was a border region upon which confrontations and appropriations took place. In some cases it was the literary authors and cultural critics who entered this border region in order to lend scientific significance to their works; while in other contexts, natural and social scientists drew upon narrative methods in order to communicate their ideas to the public.

In her opening keynote lecture, **Heike Bauer** (Birkbeck, London) demonstrated the extent to which the ground-breaking sexologist Magnus Hirschfeld (1868-1935) used the narrative mode of the case study in order to describe ‘sexual inversion’ – ‘non-normative’ modes of sexual behaviour that could not be aligned with the dominant norms pertaining to reproductive sexuality during Hirschfeld’s age. Bauer showed that even the ‘inversion’ model – according to which, for example, male homosexuals were seen to have a ‘female soul’ within a male body – could not account for the variety of sexual phenomena encountered by Hirschfeld in his research, a situation that forced him to supplement a biological approach with the more differentiated narrative mode of biography. Continuing in this vein, **Linda Leskau** (Bochum) and **Cyd Sturgess** (Sheffield), examined the ways in which ‘non-normative’ and ‘non-hegemonic’ sexual modes were depicted in literary texts from the period. While Leskau illustrated how Alfred Döblin uses botanical metaphors in ‘Der schwarze Vorhang’ and ‘Die Ermordung einer Butterblume’ in order to depict sadism and masochism, Sturgess demonstrated that literary discourses enabled Dutch women writers such as Eva Raedt-de Canter and Josine Reuling to explore non-normative female desires and to go beyond the inversion model posited by Hirschfeld.

It is well known that during the second half of the nineteenth century, German philosophy came to experience what Hans Vaihinger called the ‘great crash’ (*großer Krach*)

---

<sup>9</sup> For a broader historical critique, see Angus Nicholls, ‘Scientific Literary Criticism in the Work of Matthew Arnold and Wilhelm Dilthey,’ *Comparative Critical Studies* 8, no. 1 (2011), 7-31.

<sup>10</sup> See Elinor S. Shaffer, ed., *The Third Culture: Literature and Science* (Berlin: De Gruyter, 1998).

of German idealism.<sup>11</sup> Hegel's philosophy, which had helped to provide a sense of teleological progress conveniently aligned with the triumph of the Prussian state, was displaced by Darwinian explanations of biological change that did not require recourse to metaphysical speculation. The paper delivered by **David Midgley** (Cambridge) discussed the dominant representative of Darwinism in Germany during this period: Ernst Haeckel (1834-1919). Midgley's paper focused on two controversies surrounding Haeckel: the first his theory that ontogeny recapitulates phylogeny; the second the allegation that Haeckel's theories concerning race fed into the discourses of National Socialism. While questioning the teleological narrative which posits a continuity between Haeckel and National Socialism, Midgley also showed the extent to which progressive German authors of the early twentieth century such as Alfred Döblin and Arnold Zweig spurned Haeckel's version of Darwinian mechanism in favour of the vitalism propagated by one of Haeckel's students: Hans Driesch (1867-1941). A similar historical picture emerged from the paper delivered by **Charlotte Woodford** (Cambridge). Woodford offered an examination of Wilhelm Bölsche's popular celebration of Darwinism, *Das Liebesleben in der Natur* (1898), demonstrating how Bölsche's normative and deeply poetic vision of cellular life as infused by erotic forces informed the writings of Lou Andreas-Salomé, in particular her essays 'Gedanken über das Liebesproblem' and 'Die Erotik.' Both papers showed the extent to which the Darwinian worldview needed to be supplemented by a post-Darwinian 'metaphysics of life' in order to meet the human need for meaning and orientation in the early twentieth century.

The fate of Darwin in the early twentieth century was the focus of papers delivered by **Elena Borelli** (New York), **Anahita Rouyan** (Bologna) and **William Dodd** (Birmingham). All three speakers revealed how a broadly conceived 'Darwinism' became a field of biological discourse onto which all manner of ideological preoccupations could be projected. Such literary appropriations of Darwin generally had little to do with accurately communicating a scientific theory; rather, authors took on the language and concepts of Darwinism in order to invest their works with power and significance within their own historical contexts. Thus Borelli showed the extent to which a vaguely Darwinian notion of animalistic primitivism informed works of *fin de siècle* Italian literature, while Rouyan examined how H.G. Wells's *Time Machine* was invested with the anti-Darwinian notion of biological degeneration, depicted in the Eloi civilization featured in that novel. Dolf Sternberger's *Panorama oder Ansichten vom 19. Jahrhundert* (1938), offers, according to William Dodd, a dystopian vision of Darwinism that was a reaction to the National Socialist

---

<sup>11</sup> Hans Vaihinger, *Hartmann, Dühring und Lange. Zur Geschichte der deutschen Philosophie im XIX. Jahrhundert. Ein kritischer Essay.* (Iserlohn: Baedeker, 1876), 1.

culture that surrounded an author who was retreating into inner immigration. Sternberg's image of Darwinism – or better of *social* Darwinism – is one that can scarcely be found in Darwin's actual writings, even if Darwin was given to making statements about race that could easily be co-opted by the discourses of Victorian colonialism and later by National Socialism.<sup>12</sup>

The appropriation of scientific discourses for non-scientific purposes was the focus of papers by **Aisha Nazeer** (St. Andrews), **Michael Wainwright** (Royal Holloway, London) and **Marie Kolkenbrock** (Cambridge). While Nazeer argued that Rider Haggard's novel *She* (1887) incorporated pseudo-scientific discourses about race in the manner of Arthur Gobineau in order to construct an orientalist vision of the Other, Wainwright explored the adoption of parasitology by social and literary discourses through the examples of John Ruskin and Bram Stoker. Kolkenbrock's paper revealed how discourses of bacteriology came to coincide with occultist preoccupations concerning the 'invisible enemy,' the 'haunted' and the 'infected' in selected works by Arthur Schnitzler (*Thameyers letzter Brief*, 1902) and Karl Hans Strobl (*Gespenster im Sumpf*, 1920). Understanding the human by way of analogy with the non-human – in this case the botanical – was also the subject of a masterful paper by **Michael Eggers** (Cologne). Eggers offered a reading of Adalbert Stifter's 'Der Kuss von Sentze' (1866), showing how the author derived the novella's central plot construction concerning kinship relations within a noble family from Wilhelm Hofmeister's (1824-1877) theories concerning the reproduction of mosses. The tendency to see human relations as being akin to natural laws was part of Stifter's pantheistic and politically anaemic view of human nature, according to Eggers. All of these papers implicitly demonstrated that the barrier between science and non-science (or ideology) was highly porous during the second half of the nineteenth century and into the twentieth century.

The human sciences of anthropology and psychology have often hovered around the border between a strictly testable and empirical scientific method on the one hand and more speculative modes of understanding on the other. The problem that they confront – as Michel Foucault has demonstrated in *The Order of Things* (1966) – is that the human being is an historical being that cannot be defined in reductive biological terms and so always eludes fixed scientific descriptions. In other words: any attempt to answer Kant's key question – *Was ist der Mensch?* – will necessarily be infiltrated by the historical and cultural contexts of the

---

<sup>12</sup> See for example, the comparison that Darwin makes between the mental faculties of 'an old dog with an excellent memory' and a female Australian Aborigine in *The Descent of Man and Selection in Relation to Sex*, 2 vols., London: John Murray, 1871), 1: 62.

person who is posing the question. The question of how to understand the human being and human experience in both scientific and literary terms was the subject of papers by **Tracey Loughran** (Cardiff), **Sarah Cain** (Cambridge) and **Rey Lawson-Conquer** (Oxford). Both Loughran and Cain focused on psychological discourses: for Loughran the epidemic of ‘shell-shock’ during the First World War was often understood in speculative psychoanalytic terms as revealing a hitherto overlooked ‘primitive core’ of the human being; while for Cain the psychological theories of Hugo Münsterberg, who taught both Gertrude Stein and T. S. Eliot at Harvard, are seen to have influenced the image of worn-out industrialised man depicted in Eliot’s *The Waste Land* (1922). Lawson-Conquer examined the subject of synaesthesia in the works of Wassily Kandinsky, showing how this painter-poet’s ideas drew upon the scientific discourses of his time. The human being as an object of scientific analysis was also the focus of papers by **Robert Craig** (Cambridge) and **Annja Neumann** (Cambridge). Craig suggested that Alfred Döblin’s vision of man in *Berlin Alexanderplatz* was informed by philosophical anthropology as adapted from the *Umwelt*-theorist Jakob von Uexküll, while Neumann examined the extent to which the doctor-writer Arthur Schnitzler developed a poetics of dissection in which the literary text literally comes to be seen as a corpus or body.

In his concluding keynote lecture **Staffan Müller-Wille** (Exeter) showed how the concept of heredity – which was an established legal term before it was adopted by the medical profession and by evolutionary theorists – was developed from observations concerning heritable variation, and particularly by fixating on deviations identified in the breeding of livestock and the cultivation of plant species. In this way he demonstrated that the scientific view of nature is never purely objective or divorced from normative and instrumental values; rather, the concept of heredity was conceived within industrial and agricultural contexts, in which the breeding of the ‘best’ and most stable species was the uppermost concern.

In his important lecture of 1917, ‘Wissenschaft als Beruf,’ Max Weber defines the scientific method as one in which the normative ‘values’ of the researcher should be surmounted by the controlling method of the experiment. Yet as a sociologist, Weber also knew that this level of objectivity would be – at least in human sciences such as sociology – almost impossible to achieve. The value of a conference on biological discourses in literature around 1900 is that it helps us to see just how historically determined and ideologically laden conceptions such as ‘science,’ ‘pseudo-science,’ and ‘non-science’ may in fact be, while also revealing how the prestige of the natural sciences has often captivated literary minds. An understanding of the relations between the humanities and the natural sciences today – and

especially of the extent to which the natural sciences may have come to occupy the default definition of what ‘science’ is in our society – can only be achieved by gaining this kind of differentiated historical perspective.

**Angus Nicholls**

**June 2015**

**Angus Nicholls** is Senior Lecturer in German and Comparative Literature, and Chair of the Department of Comparative Literature, at Queen Mary University of London. His most recent book is *Myth and the Human Sciences: Hans Blumenberg’s Theory of Myth* (Routledge, 2015) and he is currently working on a book project entitled *Literature and the Boundaries of Science in Nineteenth-Century Britain and Germany*. He co-edits the journal *History of the Human Sciences*.