

CELL BY CELL, GENE BY GENE, GALAXY BY GALAXY

A. S. Byatt's Scientific Imagination

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A. S. Byatt opens her preface to a book entitled *Strange and Charmed: Science and the Contemporary Visual Arts* (2000) with the assumption that most people (at least, people who read books and are curious about the world they live in) are nowadays more likely to read books of science than philosophy. In a way, A. S. Byatt is here voicing an idea that is subtly embedded in current discourses about the crisis in the humanities, that science is the prevalent mode of access to knowledge. Byatt says as much in the preface just referred to, in the following terms:

We read science out of concern for our own health and environment. But I think we also read scientific books because they are the best way we now have of answering the perennial human need for understanding, contemplation of our place in the order of things, a sense of complexity and mystery, an inkling perhaps of the order of those things which are not ourselves. (...) We need to feel that there is something real out there – of which we are a part and not the whole – and science reveals it to us in its beauty and its terror and its order and its chaos, bit by fascinating bit, cell by cell, gene by gene, galaxy by galaxy. Curiosity doesn't kill cats, it saves them. It is a fundamental human drive, and the opposite of solipsism.

(Byatt, 2000a: 7)

A. S. Byatt's interest in science can be traced back to the need she displays, be it in her fictional or in her non-fictional writings, of transcending what she views as the solipsism of poststructuralist and postmodernist understandings of reality, as she mentions in the preface referred to above, as well as in other writings on the issue. As I have already demonstrated elsewhere,^[1] Byatt finds it particularly difficult to cope with poststructuralist views of reality that take language as a self-referential system, namely, the derridean idea that our interpretation of the text/ of writing is always necessarily contained by the text/ writing itself.^[2] In an interview to Nicholas Tredell, for example, she states:

I get so distressed by literary theories which say language is a self-supporting system that bears no relation to things, because I don't experience it in that way. I don't have any naïve vision of words and things being one-to-one equivalents, but they're woven, like a sort of great net of flowers on the top of the surface of things.

(Tredell 1994: 65-6)

In this sense, Byatt's high regard for science parallels her high regard for Victorian times, before the emergence of a pervading sense of fragmented subjectivity, when the idea of a reality exterior to the self was felt as real. In *Possession: A Romance* (1991), a novel that depicts in a narrative parallel the present time of the end of the twentieth century and the past time of the second half of the nineteenth century, the two twentieth-century protagonists (Roland Michel and Maud Bailey) are aware of their own condition of contemporary subjects and of the impossibility of a unitary self, and long for this Victorian, pre-freudian, and even pre-darwinian time, when that was possible. They state precisely this in the following terms:

1 I have already focussed on the issue of Byatt's ambivalence toward Postmodernist and Poststructuralist theories elsewhere, namely, in the article "More than Words: the Elusive Language of A. S. Byatt's Visual Fiction" (Pereira, 2006) and in *Do Romance Vitoriano ao Romance Pós-moderno: Reescrita do Feminino em A. S. Byatt* (Pereira, 2007: 207-255).

2 What has been acknowledged as the derridean assertion that there is not a "hors texte", which he exposes in *Of Grammatology*: "Yet if reading must not be content with doubling the text, it cannot legitimately transgress the text toward something other than it, toward a referent (a reality that is metaphysical, historical, psychobiographical, etc.) or toward a signified outside the text whose content could take place, could have taken place outside of language, that is to say, in the sense that we give here to that word, outside of writing in general. (...) There is nothing outside of the text [there is no outside-text; il n'y a pas de hors-texte]." (Derrida, 1997: 158).

'(...) We are very knowing. We know all sorts of other things, too – about how there isn't a unitary ego – how we're made up of conflicting, interacting systems of things – and I suppose we believe that? We know we are driven by desire, but we can't see it as they did, can we? We never say the word Love, do we – we know it's a suspect ideological construct – especially Romantic Love – so we have to make a real effort of imagination to know what it felt to be like them, here, believing in these things – Love – themselves – that what they did mattered –'
(Byatt, 1991: 267).

We can say that the striving for objectivity of expression and its link to science has been present in Byatt's work from the very first novels. In her second novel, *The Game* (1967) – which, as the first one, was largely about the issue of artistic expression and, especially, of female artistic expression, and its relation to life – we find the character of Simon Moffitt, a zoologist (whose field of expertise is the study of snakes), as a scientific voice that acts as a counterpoint to the artistic/ literary vision of the other characters. In one of the episodes of the novel, where Simon is having a debate about his documentaries on snakes with a group of artists and writers, these opposing views come to the surface. Thus, where all the others are interpreting the snakes' existence *vis-à-vis* the several cultural referents underlying "snakes" (be they Christian or Freudian or others), Simon expresses his scientific point of view by protesting that you can look at the snakes as snakes and watch them eat out of curiosity to understand how they do it, and reacting to the suggestion that this watching "affects you", he states:

'It might not, Why should it [sic]? Why should it be anything to do with you? It's filling its own stomach. We don't know what it feels like. It's simply there. I – I wanted simply to – learn, to measure.'
(...)
'Scientific knowledge' – said Simon, 'the thing in itself –'
(Byatt, 1992a: 161)

As I have argued before (cf. Pereira, 2006), it is perhaps in the novels *Still Life* or *The Biographer's Tale* that we can better see at work this deep desire of transcending the ambivalent and self-referential condition of the postmodern subject of which Byatt talks in several interviews and essays. In both novels we find characters that try to bridge the gap between language and an external reality, that is, characters that strive to go beyond the self-referential paradigm

theorised by post-structuralism. We can find a recurring and permanent trace in Byatt's novels as regards this issue, once Simon Moffitt's remark about the materiality of snakes and our scientific curiosity to understand them in their biological aspects (devoid of culture, allegory or metaphor) will be replicated by the character of the playwright Alexander Wedderburn (in *Sill Life* [1995a]) or by that of Phineas Gilbert Nanson in *The Biographer's Tale* (2000), the literary theory Phd. student-turned-biographer, because he cannot stand the abstractions of his literary theory classes and "must have *things*" (Byatt, 2000: 2). What Simon Moffitt voices in a 1967 text is returned to us in this other novel published in the year 2000 in the following form:

I went on looking at the filthy window above his head, and I thought, I must have *things*. I know a dirty window is an ancient well-worn trope for intellectual dissatisfaction and scholarly blindness. The thing is, that the thing was also there. A real, very dirty window, shutting out the sun. A *thing*.

(Byatt, 2000b: 2)

It must be said, however that, in the end, both these characters, Alexander Wedderburn and Phineas Gilbert Nanson, will be confronted with the impossibility of their undertaking. In *The Biographer's Tale*, while Nanson embarks in the task of writing the biography of Scholes Destry-Scholes, the biographer of a Victorian polymath by the name of Elmer Bole, he will be diverted to fragment upon fragment of text, hiding away any possibility to a direct apprehending of the facts of the biographer's life. Confronted by both the fictionality and sheer absence of facts about Destry-Scholes's life, Nanson's task will, ultimately, lead him to himself, something that he acknowledges in the end, by stating "that because of Destry-Scholes's *absence* [his] narrative must become an account of [his] own presence, *id est*, an autobiography, that most evasive and self-indulgent of forms" (Byatt, 2000b: 214). As to Alexander Wedderburn in *Still Life* he too comes to the conclusion that eschewing figurative language is impossible, that language is embedded in culture and there is no direct reference to any reality outside it: "Language was against him, for a start. Metaphor lay coiled in the word sunflower, which not only turned towards but resembled the sun, the source of light" (Byatt, 1995a: 2). What happens to these characters is indicative of Byatt's ambivalence toward the issue of objective knowledge, of her understanding that, however hard we strive to attain total and unmistakable objectivity, language is always mediating our knowledge of the world.

Yet, underlying Byatt's interest in science is also the author's ever present curiosity about the world and the way we human beings perceive it and structure our knowledge of it, either through science, in its many guises, or through the arts (including literature), as is also patent in the already quoted preface to *Strange and Charmed: Science and the Contemporary Visual Arts* (2000). A. S. Byatt is perhaps best known for her work with history and with her present assessment of the past; she has been recurrently viewed as a 'postmodern Victorian' or 'Neo-Victorian', due to several narratives that are set at that time, such as *Possession: A Romance*, the two novellas of *Angels and Insects* (1995d [1992]) and the short story "Precipice-encurled" (1995c [1987]), but her novels are also set in other than Victorian historical settings, like the 1950s and 1960s in the Frederica Quartet or the post-Victorian/ Edwardian setting of *The Children's Book* (2009). However, in assessing her work, many critics have noticed (hardly could they not have) A. S. Byatt's "sheer range of knowledge – literary, literary-critical, scientific, psychological" (Kelly, 1996: vii)^[3], as Kathleen Coyne Kelly states in relation to the novel *Possession: A Romance*, but which we can extend to all her narrative fiction, adding to the range other branches, such as her knowledge in the arts and art criticism^[4], for example.

In view of this, Byatt's interest in science is displayed in her novels as part of a worldview that chooses not to exclude significant components of our lives. In an article titled "Fiction Informed by Science" (2005), which appeared in *Nature*,

3 To give other examples, of what critics have stated in this respect, Celia Wallhead mentions that "her curiosity about all aspects of life is boundless, and as she believes a novel is 'a large, loose baggy monster' (...), she makes them accommodate her interests" (Wallhead, 1999: xi); June Sturrock remarks; about the novel *A Whistling Woman*: "A Whistling Woman is brimming with information, material, and analogies from a variety of disciplines, among them mathematics, psychology, biochemistry, genetics, and art history. Its narrative valorizes the breaking down of disciplinary walls, the refusal to see things in compartments. Frederica, who began the tetralogy—in *The Virgin in the Garden* (1978) —comforted by the possibility of what she calls "laminations," of keeping experiences separate, ends it with a disquieting but invigorating sense that "the laminations were slipping. She was full of life, and afraid" (*Whistling Woman* 411)" (Sturrock, 2002/2003: 93).

4 Some of the studies that deal with the relation A. S. Byatt's fiction establishes with the arts include Michael Worton's article "Of Prisms and Prose: Reading Paintings in A. S. Byatt's Work" (2001); three essays published in Rui Carvalho Homem and Fátima Lambert's *Writing and Fiction: Essays on Word and Image* (2006), by Isabel Fernandes, Paola Spinnozi and myself (cf. Bibliography at the end); more recently the book by Elizabeth Hicks, *The Sill Life in the Fiction of A. S. Byatt* (2010) also deals with this relation, especially as regards the still life genre, and an article by Jack Stewart (2009), published in *Style*. Byatt herself has written plenty of critical work on the arts, of which we can mention her writings on the English painter Patrick Heron (1998; 2001) or the book on portraits with the title *Portraits in Fiction* (2002).

A. S. Byatt describes her own coming of age as a writer in 1950s Cambridge (where she studied) and how, although as a young student she had not had an education in science, she started noticing that the writers that she cared about the most were those that had this encompassing attitude towards the society of their time, namely, those that showed a deep interest “in the scientific work of their time” (Byatt, 2005: 294), such as George Eliot or Coleridge. When writing the first volume of the tetralogy which would later be known as the Frederica Quartet (comprising the novels, in order of publication, *The Virgin in the Garden* [1978], *Still Life* [1985], *Babel Tower* [1996] and *A Whistling Woman* [2002]), a novel “about the body–mind problems of a young woman interested in her own sex-versus-intellect conflict” (*Ibidem*) in the author’s own words, Byatt states that she “felt — and thought — that there should be people in the world of my novel who were interested neither in language nor in literature.” (*Ibidem*)

Therefore, in Byatt’s novels we can find a number of characters that are scientists, such as the herpetologist Simon Moffitt (from *The Game*), Gerard Wijn-nobel (from *Still Life*, later appearing also in *Babel Tower* and *A Whistling Woman*) – who combines two different scientific approaches, once he is both a mathematician and a linguist –, or, from partly the same novels, Jacqueline Winwar – a young scientist who first appears in *Still Life*, as a very young and very enthusiastic science student and develops in *Babel Tower* and *A Whistling Woman*, as a full-fledged scientist doing research on the DNA of snails – or the Victorian entomologist William Adamson (from the novella “Morpho Eugenia”), among many others. But not all scientific discourse in A. S. Byatt’s fiction is voiced through the many characters that are practicing scientists. Some of the discourse on science is voiced by characters that, although not scientists themselves, are interested in science, like the poet Randolph Henry Ash (who displays a clear interest in “natural history”) or Matty Crompton in “Morpho Eugenia”.

The many scientists and scientific themes that can be found in Byatt’s narratives are illustrative of the kind of encompassing worldview present in many of her novels. The range of the presence of science and scientific discourse in Byatt’s fiction (among so many other aspects of human knowledge) is perhaps best illustrated by the acknowledgements present at the end of her novels which refer us to the sources she has used (oral and written) in order to write them. This is a practice Byatt starts to use in her fictional work after *Possession: A Romance*. Thus, in all her subsequent fictional work, we have access to a long list of written sources used in the novels. Many of them are connected to science, providing a good overview of the general scientific themes that surface in her fiction.

We will, thus, try to provide an overview, however brief, of the characters and themes that present links to the sciences in some of A. S. Byatt’s fictional work, which I tried to summarize in the following table.

TITLE OF THE NOVEL/ SHORT STORY	SCIENTIST CHARACTERS	LINKS TO SCIENCE
<i>The Game</i> (1992a)	Simon Moffitt	Zoologist; expert herpetologist (study of snakes); presenter of TV documentaries on the subject
<i>The Virgin in the Garden</i> (1992b) – set in 1953	Marcus Potter	Frederica adolescent brother with a mathematical/ geometrical vision of reality
<i>Still Life</i> (1995a) – set in 1958	Prof. Gerard Wijn Nobel / Marcus Potter/ Jacqueline Winwar	Linguist and mathematician, Vice-chancellor of the new University of North Yorkshire/ Marcus Potter begins his research career in science, first under the influence of biologist Christopher Cobb, later on in mathematics/ Aspirant biologist.
<i>Possession: A Romance</i> (1991)	Randolph Henry Ash	The Victorian poet is interested in Natural history/ There are references to several natural historians or men of science
“Morpho Eugenia” (in <i>Angels and Insects</i> , 1995d)	William Adamson	Protagonist of the story, he is a Victorian entomologist; the story plays on the metaphor of the ant communities and the Victorian family.
<i>Babel Tower</i> (1997) – set in 1964	Gerard Wijn Nobel/ Jacqueline Winwar / Marcus Potter/ Luk Lysgaard-Peacock/ Abraham Calder-Fuss/ John Ottokar/ Hodder Pinsky	Jacqueline Winwar is conducting a study on the population genetics of snails, supervised by the geneticist Luk Lysgaard-Peacock/ Marcus Potter has done research on the mathematics of consciousness under the supervision of mathematician Jacob Scrope and is now on the neuroscience of the brain. Preoccupation with environmental destruction is also present in the novel, influenced by Rachel Carson’s <i>Silent Spring</i> (1962)

TITLE OF THE NOVEL/ SHORT STORY	SCIENTIST CHARACTERS	LINKS TO SCIENCE
<i>The Biographer's Tale</i> (2000)	Francis Galton/ Carl Lynnaeus	The biographer's tale contains fragments of biographies of three Historical figures, two of them being the eugenicist Francis Galton and the naturalist/ taxonomer Carl Lynnaeus
<i>A Whistling Woman</i> (2002) – set in 1968	Gerard Wijn Nobel/ Jacqueline Winwar/ Marcus Potter/ Luk Lysgaard-Peacock/ John Ottoekar/ Hodder Pinsky/ Eichenbaum	John Ottoekar is a computer expert/ works with computer languages/ Wijn Nobel organizes a conference about the Body and Mind issue and invites many scientists/ Jacqueline Winwar joins Lyon Bowman's laboratory for a post-doc about the physiology of memory
"Body Art" (in <i>The Little Black Book of Stories</i> , 2003)	Damian Becket	Doctor (gynaecologist) and interested in the arts; has a good collection of art Works both at home and in the hospital; he wants to arrange the collection of old scientific material deposited in the underground of the hospital

In *The Virgin in the Garden* the link to the world of science is made through the young Marcus Potter, Frederica's younger brother, who has a mathematical/ geometrical vision of reality. In the subsequent novels of the tetralogy the references to the world of science would only increase, as Byatt explains in the article "Fiction Informed by Science" already alluded to. Hence, in *Still Life*, we have the character of Gerard Wijn Nobel, "a grammarian and a mathematician" (Byatt, 1995a: 213), as he is described in the novel, who is "interested in some description of human cognition and notation that should combine the two" (*Ibidem*). He is also described "as possibly the last of the polymaths" (*Ibidem*), the type of Renaissance intellectual who can still retain a broad view of science, that is, one that does not exclude significant parts of access to knowledge. As the Vice-Chancellor of the new University of North Yorkshire, he endorses a vision of higher education, which was more common in the 1970s (indeed much more common than it is today), founded on the belief in a more comprehensive, non-specialized and interdisciplinary form of education:

He was against English early specialization, he said. Knowledge was not sealed in self-contained little boxes. His students would be required to have a foundation in science and mathematics, in more than one language. Also the university would teach techniques, skills – architecture, engineering but also painting, radio, film. There would be communication between disciplines at all levels.

(Byatt, 1995a: 214)

As is stated in the last novel of the quartet, “[h]e believed strongly that universities should be what their name implied, places for the study of everything” (Byatt, 2002: 26). Being both a mathematician and a grammarian, Wijnnobel is excited by the idea that science will be able to provide a clear understanding of the ordering principles underlying language. In *Babel Tower*, the third novel in the Quartet, Wijnnobel re-appears, now at the beginning of the 1960s (the novel is set in 1964), presenting his own version of the ordering principle underlying languages, in a novel that has as a strong *leitmotiv* the ability and the limits of languages to communicate and order thought. Taking into account the ideas coming from saussurean structuralism, chomskian generative grammar and the latest (in 1964) discoveries in genetics and neuroscience, he thinks that in the future people will find out an unchangeable deep structure in language and a clearer understanding of grammar. To quote from the novel:

Gerard Wijnnobel is convinced intellectually that Chomsky is right: that the human brain is born with a capacity to generate and transform language – that this is innate, not absorbed into some empty bucket or inscribed on some tabula rasa, but there in the folds of the cortex, the dendrites and synapses and axons of neurones in the brain. (...)

He believes too, that in some distant future the neuroscientists, the geneticists, the students of the matter of the mind, may find out the forms of language in the forest of the dendrites, in the links of the synapses.

(Byatt, 1997: 192-3)

The two last novels of the Quartet reproduce arguments and incorporate scientific knowledge derived from such distinct areas as computer science (through the character of John Ottockar), the genetics of snail populations (through the characters of Jacqueline Winwar and Luk Lysgaard-Peacock), the physiology of memory (again through Jacqueline Winwar), among so many other themes which were incorporated in the table.

The presence of science is not only perceived in the fictions that are set in more recent historical periods, but, as has already been studied^[5], in the fictional work set in the Victorian times. The novella “Morpho Eugenia” is, in this respect, quite exemplary, once it depicts the impact of Darwin’s *On the Origin of Species* (1859) on Victorian society with William Adamson (the Adam of a new world) presenting the view of the modern man of science – an entomologist who, in true Darwinian guise, having gone on exploratory trips to South America, comes back with a collection of new butterfly specimens. The evolutionary Darwinism of the novel is countered by the religious view of the reverend Harald Alabaster. On the other hand, Matty Crompton, who has drawn the illustrations for William’s book on ant colonies and writes children’s stories, provides the view from the arts.^[6]

If Byatt’s fiction is pervaded by so much scientific discourse should we then presume that they are in any way scientific novels? This is a presumption that does not occur to the author. The presence of so much scientific discourse in Byatt’s fiction must be taken both as a reminder of a curious attitude to the world that surrounds us and as a project to depict worlds that are as encompassing and as wide-angled as possible. In this sense they are clearly, as already mentioned, narratives where scientific discourse is used to convey both the themes and the historical flavour of the times.^[7] Thus Wijn Nobel’s thoughts about the nature of language in the Quartet reproduce arguments that are incorporated in the novels in ways that are not to be considered in any way definitive or aiming at imparting precise scientific knowledge about the

5 Cf., in this respect, Borman, Daniel Candel (2002), *The Articulation of Science in the Neo-Victorian Novel: A Poetics (and Two Case-Studies)*, which deals with the incorporation of Victorian scientific discourse in *Possession: A Romance*, as well as in Graham Swift’s novel *Waterland*.

6 Several essays have dealt with the evolutionary Darwinism present in Byatt’s *Angels and Insects*, namely, Sally Shuttleworth (2001), “Writing Natural History: ‘Morho Eugenia’”, Michael Levenson (2001), “Angels and Insects: Theory, Analogy, Metamorphosis”, June Sturrock (2002/2003), “Angels, Insects and Analogy: A. S. Byatt’s ‘Morpho Eugenia’”. Byatt (1995b) has herself written about what she saw as a Darwinian trend in British fiction, in which her own stories can be included in an essay with the title “A New Body of Writing: Darwin and Recent British Fiction”.

7 In “Fiction informed by science”, A. S. Byatt writes about this at length, stating, at a certain point in the article: “The quartet changed in the writing from a backward glance at the power of Shakespeare’s and Milton’s English and England, to a form excited by the mystery of scientific discovery. My world has been changed by all the scientific writers who have made their understanding approximately available to me, in plain English and working metaphors.” (Byatt, 2005: 297)

issues.^[8] The same holds true for the discussions about the genetics of snail populations in *Babel Tower* and *A Whistling Woman*, or the reference to the physiology of memory in *A Whistling Woman* or to the Darwinian discussions that we can read in the novella “Morpho Eugenia”.

For example, both in *Babel Tower* (1997) and in *A Whistling Woman* (2002), we meet several scientists who contribute for the wide-ranging portrayal of a society in a precise historical time (the English society of the 1960s) in an organic way, that is, intertwining different aspects of this time and this society, namely, the scientific aspects. In an interview to Boyd Tonkin, Byatt explains the process underlying the research of the scientific matters she introduces in her novels and the way she incorporates this research in the fiction:

Personally, I pick those areas which I find I have a deep desire to know about and then I just go on finding out and hope that the shape of my work of art will rise, as you say, organically. And it really does feel organic. (...) I read everything I can find on the biology of consciousness until (a) I know what recurs in all the books, and (b) I know the language in which people who are doing it try to describe it to me, and with any luck I see what it is that they do that I can never understand. All my scientist friends say to me: ‘You must remember that you don’t really have the slightest idea of what we’re doing’, and you don’t. But of course, it always leads you sideways. The reading grows like an organism.

(Tonkin, 1999: 21)

The intertwining of the language of science with other languages (legal, religious, literary, artistic, critical) and their assemblage in our current daily speech reminds us that the language we use comes from very different centres of knowledge. On the other hand, in A. S. Byatt’s fiction this intertwining is made to show connections and relations that would otherwise be irrelevant for the self-contained centres of knowledge within which these different languages circulate. And, as is well seen by Alexa Alfer and Amy J. Edwards de Campos in their assessment of *Babel Tower*, “Byatt manages to connect her

8 Even because much of that discussion is currently outdated, the same occurring in other scientific discussions that are raised in the novels. According to Alfer and Campos: “Some concepts (e.g. Chomsky’s generative grammar and McConnel’s theories of memory transfer) are eagerly discussed even though the reader will be aware that these have been discredited since the 1960s – an aspect of *Babel Tower* which led an exasperated J. M. Coetzee (...), in his not wholly favourable review of the novel, to question why Byatt should devote so many pages to discussions of ‘outdated’ science” (2010: 82).

subjects – language, society, literature and science – with a series of elegant and coherent metaphors.” (Alfer and Campos, 2010: 78) In all her novels a lot of the scientific discourse is indeed appropriated by the author in order to fit her own related arguments, thus acting as apt metaphors within the narratives. In *Babel Tower*, for example, the discussion about DNA is posited as yet another example of a linguistic metaphor, for the DNA is referred to as a sort of alphabet that allows infinite possibilities of association (cf. Byatt, 1996: 357-8). Also the whole idea of the study of snails was induced (as A. S. Byatt herself mentions)^[9] by her relating an ancient scientific name for snail (as *helix*) to the spiral form of the snail, the spiral of the DNA and other spiral coincidences (she mentions, also, the Fibonacci spiral which she has Marcus Potter work on at the end of *Babel Tower*).

In “Morpho Eugenia”, the study of the communities of ants, with the Queen as the progenitor of the whole community, is metaphorically associated to the Victorian family in the story, the Alabasters, and is made to signal the highly organized structure of the household. The Alabaster family is seen through the eyes of William as echoing the organisation of the ant community he set and is observing with the help of Matty Crompton. As in an ant society, so here there is a Queen, Lady Alabaster, who is served by all her workers.^[10] When the Queen is old, her function is handed on to Eugenia, William’s wife, and his own function seems to be that of the males in ant communities, that is, mating with the Queen and die.

Byatt’s claim of her ignorance of the scientific aspects which she explores in her novels is to be understood as an assertion of the limits of our understanding of knowledge in which we have not been trained, but it is at the same time a reminder that this should not be an impediment to at least making an effort to recognize that there are different forms of reaching out to the world, of trying to perceive, understand and explain it and that we should be open to them; and this works both for people who have been trained in different disci-

9 In “Fiction Informed by Science” A. S. Byatt states: “I discovered a solid metaphor which I embodied in the language and the narrative of my novel. I realized, one idle morning, that a snail in Latin is *helix*. And a snail’s shell is in the form of a spiral.” (Byatt, 2005: 295).

10 In the narrative, William Adamson observes the way the family functions in as much as he observes the operations of the society of ants. In relation to Mrs. Alabaster, he notes: “William felt that this immobile, vacantly amiable presence was a source of power in the household. The housekeeper came and went for her instructions, Miss Mead brought the little girls to recite their poems and tables, the butler carried in documents, Cook came and went, the gardener, wiping his boots, brought in pots of bulbs, little posies, designs for new plantings.” (Byatt, 1995d: 27)

plines of the humanities, as well as for the ones that have been trained in the sciences. In this she is close to the idea expressed by Frederica in the last novel of the quartet, when, at the end of Hodder Pinsky's conference on "Metaphors for the Matter of the Mind", she realizes that "though she had *understood what he had said*, which was lucid, and interesting, she was profoundly ignorant, blackly, thickly ignorant of *what he was talking about*." (Byatt, 2002b: 355) and adds:

She knew the words, neurone, synapse, dendrite, and she liked them because she could do their etymology. But the human world – including maybe some of her own forebears – had invented microscopes, and telescopes, and dissected tissues and identified cells, and if it all vanished tomorrow she would not know where to start, though she might be able to write down quite a lot of *Paradise Lost* by heart (whatever her heart was, and however it worked). (Byatt, 2002: 355)

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