

# Science, Love, Literature: John Donne and Constance Naden

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## Abstract

*This paper attempts to understand how science is blended with literature in John Donne and Constance Naden, how the blending is a patterned one, and how a new poetics is developed out of this. Along with this is analyzed how literature can become a valuable document for science, especially for recording its reception. Consequently, both the socio-cultural emergence and development of science and literature are considered.*

[**Keywords:** Renaissance, Victorian, Love, Science, Poetry]

“My suit, with Optics well begun,  
By Magnetism shall be won,  
And closed at last in Chemic union!”  
Constance Naden, ‘Scientific Wooing’

In two English poets- John Donne and Constance Naden- one finds a unique way of expressing love as they use scientific ideas in their poetry. Given the fact that science and literature are two apparently distinct disciplines with different aims and methodology, when scientific facts and truths are used to grasp the so-called unscientific faculties of human mind nothing can be more interesting than that. In what follows we will attempt to illustrate this interesting and unique idea.

## ***I. Science: Renaissance and Victorian***

John Donne, as we all know, was an early seventeenth century poet famous for his “metaphysical poems”. Constance Naden, less-known, was a woman poet of the late nineteenth century. But before going to the discussion of how blending of science and literature occurs in Donne and Naden and also why we select these two poets in particular, let us briefly recall the well-known trends of scientific thought in the Renaissance and Victorian period, their evolution and their influence on literatures of the respective periods.

During the Renaissance, Italy, the centre of rebirth of classical learning produced a host of revolutionary thinkers in the field of science. Three among them- Copernicus, Paracelsus, and Galileo Galilee- heavily influenced the existing trends of astronomy, chemistry and physics respectively. Copernicus who came from Poland to Italy to study science radically rejected the Ptolemaic concept of heliocentric universe and proved that the earth moved round the sun and not vice versa. Paracelsus who practiced both medicine and alchemy rejected traditional Galenist medicine and preferred medicine

based on violent drugs. Paracelsus was, however, famous for his application of chemical knowledge to medical chemistry, which application triggered great advances in chemistry as a whole, besides producing successful innovation in medical treatment. Galileo with his “radical spirit of free inquiry” initiated the discourse of modern physics as he theorized the swinging of pendulum and discovered telescope<sup>i</sup>.

During the nineteenth century scientific trend in England drew the attention of the whole world as Darwin burst forth with *The Origin of Species*. The story in fact begins early in the day when Bacon wrote *New Atlantis* and Newton burst forth with *Principia Mathematica Philosophiae Naturalis*. This, in fact, proved that science after Galileo was largely the contribution of Newton in seventeenth and eighteenth century and of Darwin in the nineteenth century. However the greatest discovery of nineteenth century could at all be possible because the trends of voyaging were initiated by the Italian Columbus. Darwin established his theory of evolution through natural selection only after voyaging to South America in a Columbian manner.

These scientific discoveries, although different in character, show a similarity insofar as their reception was concerned. The radical thoughts- be it of a Copernicus or of a Darwin- heavily influenced the intellectual and the masses. When Copernicus installed the new astronomical ideas, Luther famously said: “This fool”, meaning, Copernicus “wants to turn the whole astronomy upside down”<sup>ii</sup>. Again when Ben Jonson was writing his comedy of humors he was in fact giving vent to the physiological ideas in which Paracelsus was entangled and in spite of which entanglement Paracelsus was gradually moving towards the modern ideas of chemistry. As far as Galileo is concerned, his infamous punishment itself sufficed to capture the popular reaction to new philosophy which according to Donne called everything into doubt.

Response to Darwin and his follower and sociologist Herbert Spencer were also remarkable. The masses and specially the religious authorities severely attacked Darwin. The tension between the belief that God created the world and the knowledge that earth and its species evolved in their own way was voiced, as is well-known, by Tennyson in *In Memoriam*.

Both the scientific trends under consideration triggered skepticism and even a kind of tension on the psychological realm which led even to violent reactions.

## **II. Donne and Naden**

We select two poets- John Donne and Constance Naden- amidst a host of many others with an aim to illustrate the blending in question. There are many reasons of bringing two of them together.

First, both of them were unusually influenced by the scientific discoveries of their period and used the scientific ideas to express their love in poetry. This is not to suggest that none other than them was influenced by science. As has already been suggested, perhaps Ben Jonson in the Renaissance period and Tennyson in the Victorian England are the most popular authors who were heavily influenced by the ideas of science or particular problems of science in their writings. However, Donne and Naden show a similar manner of adapting scientific ideas (as we will see in the next section) and both of them are mostly engaged in writing love poetry.

Second, given the thrust of the paper upon science-literature interface we select one writer who is essentially a literary writer and another writer who is more a scientist than a poet. It will be interesting to see how a philosopher blends science and poetry, as is done by Naden. It will also be interesting to demonstrate how a philosopher's take on science and literature maybe compared to that of a poet. With Naden, moreover there is further problem of reception as far as gender problems are there.

Third, unlike the other writers who voiced the problems raised by new scientific ideas in the popular mind as in Tennyson or those who in a satirical manner used these ideas as in Jonson, both Donne and Naden almost in a similar manner plays with the emerging ideas. It is this playfulness which groups Donne and Naden together and marks them as distinct from others.

### **III. Science and Love: Chemic Union**

Although Donne and Naden belonged to two different periods and experienced different scientific discoveries as far as the use of scientific ideas is concerned they reveal a similar pattern.

First, scientific ideas are used figuratively to capture the idea of love. Ideas from some or all branches of science like Alchemy, Anatomical Science, Astronomy, and Geography Optics, Magnetism, Syllogism, and Mathematics are used in both Donne and Naden.

*Astronomy:* In at least three poems of Donne new astronomical and geographical ideas are directly used: 'A valediction: Forbidding Mourning', 'The Sun Rising', and the Holy Sonnet beginning with "At the round earth's imagined corners"<sup>iii</sup>. While the lovers' souls are compared to the stiff twin compasses, in the second poem there is an insistence to stick to the heliocentric conception of universe as the "busy, old sun" is considered as moving round the earth. Donne's well-known manipulation of microcosm-macrocosm relation is also pertinent here.

Naden too spoke about astronomy in conjunction with love. In the poem 'The Astronomer' loving is compared to stars loving the earth:

And I will love thee as the stars do love  
Even the distant earth.<sup>iv</sup>

Most importantly we find the muse of Astronomy Urania is invoked in this poem. But Urania, mythologically, is the goddess of universal love. Urania moreover represents astronomy, love and beloved:

Her atmosphere of white unswerving rays  
Athwart the fading moonlight swims;  
Rare vapour, like a comet's luminous haze,  
Floats round her argent limbs<sup>v</sup>.

We also find the astronomer looking at the world from heavenly dome where he wishes himself be after all astronomical exploration. Astronomer is torn between the earthly beloved and the heavenly one and this torn-between state generates poetry. In connection with astronomy one can also think of Naden's poem called 'The Nebular Theory' where Naden shows her awareness of Swedenborg's solar theory.<sup>vi</sup>

Naden's astronomer is more pragmatic and aware of his limitations and of recent evolutions in astronomy than Donne's astronomer for obvious historical reasons. Naden's astronomer is assured of the fact that the universe is not heliocentric and describes his astronomical exploration accordingly:

Beyond the sun I pass; around me rolls  
Infinite-circled Life.<sup>vii</sup>

*Alchemy and Chemistry*: In Donne love's alchemy is compared to chemist's alchemy and is said to be eternally distant from eternal delight: which is as follows:

And as no chemic yet th' elixir got  
But glorifies his pregnant pot  
If by the way to him befall  
Some odoriferous thing, or medicine  
So, lovers dream a rich and long delight  
But get a winter-seeming summer's night<sup>viii</sup>

Almost three hundred years after Donne, Naden in her poem 'The Alchemist' reveals the struggle of an alchemist to discover the elixir of life. Thus speaks Naden's alchemist:

I still will hope, and struggle for the crown;  
Night shall not come, before I grasp the truth;  
For I will yet behold my just renown,  
And feel at last the fresh delight of youth<sup>ix</sup>.

What is of importance for us is that even so many years after the dominance of alchemical practices in Renaissance, and even after significant evolutions in Chemistry, belief in Alchemy still persisted for a long time.

Naden however is aware of the modern developments in chemistry and in "chemical" terms talks about love. In the poem 'Scientific Wooing' love's trajectory is completed in the following manner:

My suit, with Optics well begun,  
By Magnetism shall be won,  
And closed at last in Chemic union!<sup>x</sup>

*Anatomy*: Ideas of anatomical science pervaded the Renaissance and its metaphorical exploration is found in a work like Robert Burton's *Anatomy of Melancholy* or John Lyly's *Anatomy of Wit*. Donne's 'The First Anniversarie. Or the *Anatomy of the World*' can be regarded as belonging to the same trend (italics added). When Donne compares the microcosm of the lovers with the macrocosm, or when he thinks of human body as a little world cunningly made of angelic sprite - the obsession with anatomical ideas of his time is given vent to<sup>xi</sup>. In Naden, although reference to microcosm does not directly appear, one can find multiple references to the anatomy of different species and the evolution of one body of species into another in a Darwinian fashion. This is particularly the case with two poems: 'Natural Selection' and 'Solomon Redivivus' in which Darwin's theory of evolution is treated comically.

*Botany* Naden in the poem 'Poet and Botanist' compares and contrasts a poet with a botanist and also a good poet with a bad poet:

..the Poet lets them [*flowers*] ope  
 And bloom, and wither, leaving fruit and seed  
 To ripen; but the Botanist will speed  
 To win the secret of the blossom's hope,  
 And with his cruel knife and microscope  
 Reveal the embryo life, too early freed.  
 Yet the mild Poet can be ruthless too,  
 Crushing the tender leaves to work a spell  
 Of love or fame; the record of the bud  
 He will not seek, but only bids it tell  
*His* thoughts, and render up its deepest hue  
 To tinge his verse as with his own heart's blood<sup>xii</sup>.

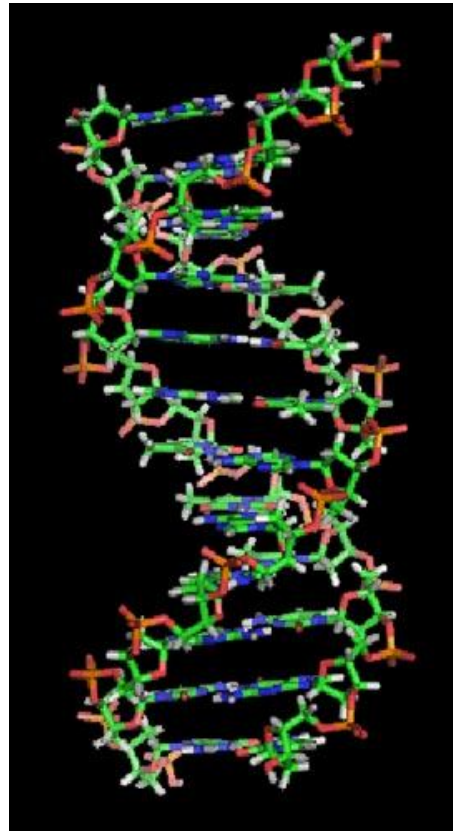
In the poem 'Love's Growth', Donne too compares the growth of love with the growth of vegetables and flowers thus in one sense uses ideas from Botany:

Gentle love deeds, as blossoms on a bough,  
 From love's awakened root do bud out now.<sup>xiii</sup>

*Optics, Genetics, Magnetism, and Chemistry.* These branches of science get mixed up in Donne and Naden. As Jonah Lehrer has observed the expression "the double string" in Donne's 'Ecstasy' foreshadows the idea of "double helix" in Genetics. In molecular biology, the term "double helix" refers to the structure formed by double-stranded molecules of nucleic acids such as DNA and RNA.<sup>xiv</sup> The double helical structure of a nucleic acid complex arises as a consequence of its secondary structure and is a fundamental component in determining its tertiary structure. When the expression "one double string" in the following stanza from 'Ecstasy' is compared with the above structure of "double helix" the similarity of conception becomes striking:

Our hands were firmly cemented  
 By a fast balm which thence did spring  
 Our eye-beams twisted, and did thread  
 Our eyes upon **one double string**;  
 So to intergraft our hands, as yet  
 Was all the means to make us one,  
 And pictures in our eyes to get  
 Was all our propagation.<sup>xv</sup>

In Naden ideas from Faraday's *understanding* of electromagnetism is directly imported as in the already quoted lines from 'Scientific Wooing'. In one sense Naden reminds us of the



The structure of a double helix

evolution from the laws of mechanics as in Newton to electromagnetism as in Michael Faraday.

*Syllogism*: Naden suggests that proposal of love should be made in such a manner that, logically, the beloved cannot but say “yes”. The response of the would-be beloved would be controlled by logical reasoning:

With rigorous Logic will I woo,  
And not a word I'll say at random;  
Till urged by Syllogistic stress,  
She falter forth a tearful “Yes,”  
A sweet “*Quod erat demonstrandum!*”<sup>xvi</sup>

Donne’s well-known wits are mainly a logical way of proving a certain point. Through poetry Donne makes points clear, which we would otherwise discard as absurd. In this sense Donne too uses Logic in his poetry.

Second, both the poets while figuratively using the scientific ideas maintain both a serious and a comic tone. Donne is serious insofar as he seriously contemplates the problem of the new philosophy calling everything in doubt. The division between the believers affects the metaphysical question of death and afterlife (as in ‘Anniversarie’). In Naden, there is a slightly different kind of seriousness. For her, study of new science is not well looked upon by the conservatives, more so when a woman studies science. Thus in the poem “The New Orthodoxy” the lover is unwelcoming towards his advanced and studious beloved. The new scientific ideas in one sense separate the two lovers from one another.

Both the poets reveal a comic tone underlying their blending of science and literature. Comic spirit in Donne derives from his witty use of scientific ideas, as is well-known. In the poem “The Sun Rising”, the poet-speaker sticks to the belief that the sun moves round the earth and comically attempts to control the sun’s movement. When stiff twin compasses are compared to the lovers’ souls or when Donne wittily remarks “*I am a little world made cunningly/ Of elements, and an angelic sprite*”, the reader is highly amused to discover the intellectual complexity.

In Naden the comic is more intense than in Donne. The desire to look at the lovers’ eyes through spectroscope and thus make love or to set the river Thames on fire with plenty of Potassium or when King Solomon narrates his queen’s evolution from Amoeba and finally when H<sub>2</sub>SO<sub>4</sub> rhymes with “task was o’er”, the reader is highly amused by the manner in which ideas from science are blended with love poetry. Hilarious too are the following lines:

At this I'll aim, for this I'll toil,  
And this I'll reach—I will, by Boyle,  
By Avogadro, and by Davy!  
When every science lends a trope  
To feed my love, to fire my hope,  
Her maiden pride must cry is “*Peccavi*”<sup>xvii</sup>

Given the mixture of serious and comic tone as explained above, one may extend Eliot’s well-known idea that Donne unified reason and emotion in his poetry by

saying that Naden goes one step further and comically manipulates the unification in question.

#### **IV. Usefulness of Blending Science and Literature**

Both Donne's and Naden's poetry becomes indispensable in the sense that they capture the impact respectively of Copernicus and his contemporaries on the one hand and Darwin and his contemporaries on the other on the Renaissance and the Victorian mindset. They record popular skepticism towards the new scientific discoveries thus helps us understand the popular skepticism towards such discoveries at a given period and place. For Donne, for example, new science calls everything in doubt therefore many people doubt this science. For Naden, both Darwin and Spencer were doubted by many the moment they burst forth with their ideas.

Levi-Strauss in his famous interpretation of Oedipus myth came to the conclusion that Oedipus myth captures the tension between the belief that human beings are born from one (the Earth) and the knowledge that human beings are born from two (union of man and woman).<sup>xviii</sup> Myth actually captures the psychological milieu in which rational discourse emerged. Myth therefore is the best record (better than any other) which captures the historical moment of the emergence of science. Poetry, the product of human imagination and emotion, too may reveal the emergence of scientific discourses. In this sense the poetry of Donne and Naden becomes a document of utmost importance recording the emergence and reception of certain kind of scientific discourses as discussed above. While their writings are important document recording the historical state of science they also interestingly reveal the historical development of both literature and science.

#### **V. Towards a New Poetics: Singing a Darwinian Lay**

But the use of scientific ideas not only involves a recording of such ideas existing at a particular time but also points towards new kinds of poetics. Both Donne and Naden considered it novel to construct poetry based on science. Naden with high ambition declares "*I'll sing a deep Darwinian lay*"<sup>xix</sup>. Donne too could not think of his "witty" poetry without following the unique character of science. Therefore he says: "*A mathematical (therefore, scientific) point is the most indivisible and unique thing which art can present*".<sup>xx</sup> In Donne science is a significant lens through which the writer looks at life. Naden's perspective is similar and to borrow one of her own favorite tropes, she wanted to view love or the beloved through the lens of a spectroscope. Science is thus used as a means to perform the greater and general act of viewing of life on the poet's part and therefore for artistic creation.

Again, at times scientists take recourse to literature in order to express their findings. Erasmus Darwin, Charles Darwin's grandfather, wrote two long scientific poems: *The Botanical Garden*, and *The Temple of Nature* which become illustrative of this. Again Galileo who discovered the principles of size and swinging of pendulum discussed place and size of Dante's *Inferno* which discussion became his first public lecture. When we fondly recall Rabindranath–Einstein interviews we are also struck by the fact how science and literature can become so close to each other. This fact is also proved when we find Naden's astronomer becoming poetic inspired by the muse Urania, or when Donne's poetic mind repeatedly takes recourse to scientific ideas.

When thought in this manner one has a feeling that the age-old dichotomy between science and literature breaks down as Donne and Naden blend science and literature in their love poetry.

## Notes

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<sup>i</sup> For the scientific facts I have consulted G. Crowther, *A History of Science* (London, Methuen, 1969).

<sup>ii</sup> *ibid*

<sup>iii</sup> John Donne, *John Donne's Poetry*, ed. Donald R. Dickson (London and New York: W.W. Norton and Company, 2007), 71, 74, 137.

<sup>iv</sup> Naden, 'The Astronomer', *The Complete Poetical Works of Constance Naden* (London: Vickers, 1894).<http://purl.dlib.indiana.edu/iudl/vwwp/VAB7115>.

<sup>v</sup> *ibid*

<sup>vi</sup> Naden, 'The Nebular Theory', p.327.

<sup>vii</sup> Naden, 'The Astronomer', p.3.

<sup>viii</sup> Donne, 'Love's Alchemy'

<sup>ix</sup> Naden, 'The Alchemist', p.22

<sup>x</sup> Naden, 'Scientific Wooing', p.307

<sup>xi</sup> Holy Sonnet: "I am a little world made cunningly", p.142.

<sup>xii</sup> Naden, 'Poet and Botanist', p.331.

<sup>xiii</sup> Donne, 'Love's Growth'

<sup>xiv</sup> "John Donne and Genetics". Posted on Internet on July 24, 2008 10:13AM, by Jonah Lehrer. [http://scienceblogs.com/cortex/2008/07/john\\_donne\\_and\\_genetics.php](http://scienceblogs.com/cortex/2008/07/john_donne_and_genetics.php). For the definition of double helix and the diagrammatic representation of its structure, see [http://en.wikipedia.org/wiki/File:DNA\\_orbit\\_animated\\_static\\_thumb.png](http://en.wikipedia.org/wiki/File:DNA_orbit_animated_static_thumb.png).

<sup>xv</sup> Donne, 'Ecstasy'

<sup>xvi</sup> Naden, 'Scientific Wooing', p. 307.

<sup>xvii</sup> *ibid*

<sup>xviii</sup> Levi-Strauss, "Structural Analysis of Oedipus Myth" in *Structural Anthropology* Volume 1.

<sup>xix</sup> Naden, 'Scientific Wooing', p.307.

<sup>xx</sup> Science quotes by John Donne [http://www.todayinsci.com/D/Donne\\_John/DonneJohn-Quotations.htm](http://www.todayinsci.com/D/Donne_John/DonneJohn-Quotations.htm).

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