The Biosemiotic Imagination in the Victorian frames of Mind: Newman, Eliot and Welby

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A Thesis submitted in partial fulfilment of requirements of

London Metropolitan University

For the Degree of

Doctor of Philosophy

June 2016

ABSTRACT

This thesis traces the development of thought in the philosophical and other writings of three nineteenth-century thinkers, whose work exemplifies that century's attempts to think beyond the divisions of culture from nature and to reconcile empirical science with metaphysical truth. Drawing on nineteenth-century debates on the origin of language and evolutionary theory, the thesis argues that the ideas of John Henry Newman, George Eliot and Lady Victoria Welby were cultural precursors to the biosemiotic thought of the second half of the twentieth century and beyond, specifically in the way in which these three thinkers sought to find a 'common grammar' between natural and human practices.

While only Lady Welby communicated with the scientist, logician and father of modern semiotics, Charles S. Peirce (1839-1914), all three contributed to the cultural sensibility that informed subsequent work in biology/ethology (Jakob von Uexküll (1864-1944), zoosemiotics (Thomas A. Sebeok (1920-2001), and the development of biosemiotics (Thomas A. Sebeok and Jesper Hoffmeyer (1943-present), Kalevi Kull (1952-present) among others. Each of these nineteenth-century writer's intellectual development show strong parallels with the interdisciplinary endeavour of biosemiotics. The latter's observation that biology is semiotics, its postulation of the continuity between the natural and cultural world through semiosis and evolutionary semiotic scaffolding its emphasis on the coordination of organic life processes on all levels, from simple cells to human beings, via semiotic interactions that depend on interpretation, communication and learning, and its consequent refusal of Cartesian divide, all find distinct resonances with these earlier thinkers.

The thesis thus argues that Newman, Eliot and Welby all gave articulation to what the thesis identifies as the growth of a 'biosemiotic imagination.' It argues that Newman, Eliot and Lady Welby envisaged a unity, or a holistic understanding, of life based on a European developmental tradition of biology, philosophy and language which was familiar to Charles Darwin himself. This evolutionary ontology called forth a new epistemology grounded in a mode of unconscious creative inference (biosemiotic imagination) akin to Charles S. Peirce's concept of abduction. Abduction is the logical operation which introduces a new idea and, as such, is the only source of adaptive and creative growth. For Peirce, it is closely tied to the growth of knowledge via the evolutionary action of sign relations. The thesis shows how these thinkers conceptualised their own version of what I suggest can be understood as this biosemiotic imagination and the implications this has for understanding creativity in nature and culture. For John Henry Newman, it was a common source of inspiration in religion and science. For George Eliot, it lay at the basis of any creative process, natural and cultural, between which it forged a link. Similarly to Eliot, Lady Victoria Welby saw abduction as a signifying process that subtends creativity both in nature and culture.

ACKNOWLEDGEMENTS

I am above all grateful to my director of studies Emeritus Professor Wendy Wheeler for her generous attention, enthusiastic encouragement and wise supervision. Her trust in me and belief in this project enabled me to pursue and complete my studies.

I would also like to thank Professor Paul Cobley for his support during difficult times and for the countless conversations that, among other things, enabled me to view things from a different perspective.

My life during my studies has been variously enriched by the joy, support, humour and friendship provided by Dr Sara Cannizzaro, Dr Sarah Law, Trevor Norris, Dr Martin Murray, Dr Adam Beck and Dr Christopher Ryan.

For the help and support in administrative and research matters I would like to thank the staff in the department of Social Sciences and Humanities, specifically Cathy Larne, Hema Joshi, Dr Anna Gough-Yates and Megan Redmond.

The love and support of my dear friends Valentina Fachin, Penelope Jones, Vera Guštin, Helen McKenna, Catherine Mitsaki and Matt Potter have been indispensable in the achievement of this project.

A very special thank you goes to Matevž Peterlin and to my family. Without my mother Tanja, father Guido and sister Andra and their endless love, belief and support it would have been much harder to complete my project. This thesis is dedicated to them and to the memory of my dear uncle Marko.

CONTENTS

ABBREVIATIONS

This thesis follows the standard notation employed by Peirce's scholars to reference his work. All references will appear in the standard form in the text: the volume in Arabic numerals, a period, and the paragraph in the volume cited, using the form CP. and EP.

CP *Collected Papers of Charles Sanders Peirce*. 8 volumes; Vols.1-6 eds. Charles Hartshorne and Paul Weiss. Cambridge, MA: Harvard University Press, 1931- 1935; Vols. 7-8 ed. Arthur Burks. Cambridge, MA: Harvard University Press, 1958.

EP *The Essential Peirce: Selected Philosophical Writings*. 2 Vols. Eds. Nathan Houser, Christian Kloesel, and the Peirce Edition Project. Bloomington: Indiana University Press, 1992-99.

INTRODUCTION

The key question lying at the root of all this is: How could natural history become cultural history? (Jesper Hoffmeyer)[1]

The aim of this dissertation is to trace the development of thought in the philosophical and other writings of three nineteenth-century thinkers, namely John Henry Newman (1801-1890), George Eliot (1819-1880) and Lady Victoria Welby (1837-1912) whose work exemplifies that century's attempts to think beyond the divisions of culture from nature and to reconcile empirical science with metaphysical truth. This dissertation argues that these three thinkers sought to find a 'common grammar' between natural and human practices, in what this thesis identifies as the biosemiotic imagination. It argues that their ideas contributed to the cultural milieu that gave rise to the semiotic theoretical biology (which arose in the second half of the twentieth century) and its view of the continuity between the natural and cultural world through semiosis.

Newman, Eliot and Welby lived in an era, which in 1858 sir Henry Holland, Charles Darwin's cousin, defined as 'a period of great transition.'[2] Although each historical era is an age of transition, as Walter E. Houghton points out, many people seemed to be especially aware of the profound changes that were taking place on a social and intellectual level, where traditional political, social, moral and religious beliefs were challenged by a new, emerging worldview.[3] The latter was partly indebted

[1] J. Hoffmeyer. *Signs of Meaning in the Universe*. Bloomington: Indiana University Press, 1996, p. viii.
[2] H. Holland.Quoted in Walter E. Houghton. *The Victorian Frame of Mind 1830-1870*. New Haven and London: Yale University Press, 1957, p. 1.
[3] See for instance Walter E. Houghton. *The Victorian Frame of Mind 1830-1870*. New Haven and London: Yale University Press, 1957; T. W. Heyck. *The Transformation of Intellectual Life in Victorian England*. New York: St .Martin's Press, 1982; A. Briggs. *The Age of Improvement 1783-1867*. 2nd ed. London: Routledge, 1979; P. Davies. *The Victorians. Vol.8. 1830-1880*. Oxford: Oxford University Press, 2002; A. Cruttenden. *The Victorians: English Literature in Its Historical, Cultural and Social Contexts.* New York: Facts on File, 2003 and R. Gilmour. *The Victorian Period: The Intellectual and*

to rapid industrialization, the transition from a rural, agrarian society to an industrial and democratic one. With the development that came with the use of new machines and communication, a sense of faster living brought about a change in the very form of experience of life and fostered a sense of displacement and anxiety which took firm hold in the various frames through which the Victorians thought about their world.

Where industrialisation was at the heart of societal transformations, science, or rather, scientific assumptions and methods were at the core of the changing intellectual frameworks and the emerging understanding of culture in Victorian England.[4] As Suzy Anger points out, Victorian science transformed people's relation to almost everything, from travelling to communicating, and perhaps most importantly to the perception of self.[5] Indeed, concepts of human identity and agency – central to the idea of culture – were changing in the framework of nineteenth-century scientific naturalism. The idea of human culture as a natural, adaptive condition originating in a remote past drew on this naturalist tradition which developed over centuries of observations of organisms, including human beings. The nineteenth century contributed to this framework with the geological idea of a deep time and an increasing understanding of instinct as a source of human behaviour.[6] As a consequence, culture was increasingly understood as an expression of the natural order, and it was believed, that its purposes and qualities, could be understood through the study of developmental

Cultural Context of English Literature, 1830-1890, London; New York: Longman, 1993.

[4] Raymond Williams observes that the term culture was only starting to be seen as a 'thing in itself' in the nineteenth century. This was because, according to Williams, the term had a very different meaning in its early use where it referred to the 'tending of natural growth' and by analogy to a process of human training. See R. Williams. *Keywords: A Vocabulary of Culture and Society*. London: Fontana, 1987, pp.87-89.

[5] S. Anger, J. Paradis. Ed. *Victorian Science and Literature*. vol. 2. London: Pickering and Chatto, 2011, p. xiv.

[6] *Ibid*., pp. xiv-xvi.

processes and natural sciences. These, by the 1840s, 'were beginning to fall under the spell of materialism and positivism.'[7]

The extension of scientific assumptions and methods from the physical and biological world to the whole life of men were at the basis of the fundamental shift in the Victorian ways of thinking about their society. This brought a feeling of anxiety since they challenged, on the one hand, the established moral and religious beliefs. On the other hand, they posited, mostly as a result of Charles Darwin's evolutionary theory, the even more intricate question of the relation between natural and cultural evolution and the 'natural history' of cultural life. After the publication of Darwin's *Origins of Species* (1859), as Houghton observes, the idea that the historical process was an organic process and that the possible discovery of its dynamic laws could be applied to the study of history and human nature, became an important assumption of the time and offered new possibilities in understanding culture.[8] As the literature of the time amply indicates, the expansion of the physical science and natural science had a strong impact on the emerging and complex idea of culture. Some of this emerging thinking, for instance, can be seen in Thomas Henry Huxley's essay 'Science and Culture' (1880) where he emphasises science as an essential element of modern culture and claims that a scientific education is as effective as the more traditional literary studies, or in Samuel Butler's novel *Erehwon* (1872) where he draws on theories of life and self-evolving matter in order to blur distinctions between man and machine. Another example is John Stuart Mill's essay 'Nature' (1872) where he ponders on the meaning of the term 'nature' and discusses the issue of agency in both nature and man. What Huxley's and other writings of the time reveal is the importance of the Victorian

[7] A. Bowie. *Schelling and Modern European Philosophy. An Introduction*. London: Routledge, 1993, p. 4.
[8] W. E. Houghton, *op.cit*., 1957, p. 33.

naturalistic thinking about culture and the extensive interrelation between scientific and cultural practices.

In fact, a common assumption in nineteenth-century writings was that 'the inter-weaving of scientific and cultural practices would create an organic wholeness.'[9] John Addington Symonds' essay 'Culture: Its Meaning and Uses' (1893) is a good example. In his essay he discusses how both poetry and metaphysics had contributed to the formation of evolutionary theory and how evolutionary sciences such as philology have contributed to understanding culture.[10] The confrontation between philology and science also found an earlier distinctive voice in S. T. Coleridge's *Aids to Reflection* (1825) and *Constitution of the Church and State* (1829) where he elaborated a concept of culture which would draw on discourses of organic evolution as opposed to the mechanistic sensationalist science.

With evolutionary theory, ideas of organic wholeness, of relatedness and connectedness, became a growing concern and a distinguishing feature of the second half of the Victorian period. Drawing on each other's metaphors, the intellectuals of the time incessantly tried to create a model of synthesis that would encompass rather than separate all aspects of life. In this respect Trevor H. Levere observes that German *Naturphilosophie* offered an important model of thought since, in contrast to the increasingly mechanistic worldview in the nineteenth century, it did not endorse the traditional distinction between disciplines, but instead proposed a unified view.[11] *Naturphilosophie*, stemming from the work of Immanuel Kant (1724-1804), Johan Wolfgang von Goethe (1749-1832) and Friedrich Wilhelm Joseph Schelling (1775-1854) focused on the organic core of nature and emphasised its living, creative and

[9] D. Amigoni. *Colonies, Cult and Evolution: Literature, Science and Culture in the Nineteenth Century Writing.* Cambridge: Cambridge University Press, 2007, p. 17.
[10] J. A. Symonds. Quoted in D. Amigoni., *op.cit.*, 2007, p. 13.
[11] T. H. Levere. *Poetry Realized in Nature. Samuel Taylor Coleridge and the Early Nineteenth-Century Science*. Cambridge: Cambridge University Press, 1981, p. 2.

self-organising nature. This new type of epistemology had a direct impact on the understanding of nature and organisms which took firm hold of eighteenth and nineteenth-century thinkers. In particular, it influenced Darwin's conception of nature as self-organising as well as George H. Lewes's understanding of organisms as living, evolving wholes.[12] For both, empirical reductionism - the mode of analysis which presupposes the dissection of a biological entity or system into its constituent parts in order better to understand it[13]- seemed to miss the very nature of organisms.

This organic conception of nature, proposed by the *Naturphilosophen*, and endorsed by many Victorian intellectuals, such Charles Darwin, George H. Lewes (1817-1878), James Ward (1769-1855), George J. Romanes (1848-1894), George Eliot and Lady Welby, opposed the growing mechanistic interpretation of the living world in Victorian Britain which was endorsed by such tinkers as T. H. Huxley (1825-1895), Herbert Spencer (1820-1903), William Thompson (1775-1833) and James Clerk Maxwell (1831-1879). The basic postulate of mechanical philosophies was that nature operates according to mechanical principles, the regularity of which can be expressed in the form of natural laws, formulated in mathematical terms. Romantic biologists, in line with Kant's analysis of the similarity between teleological and aesthetic judgement and Schelling's postulation that nature and mind are one - mind being the product of nature - maintained that creative imagination was at the basis of understanding nature and its creative, self-organising processes. In other words, for

[12] Robert J. Richards points out that contrary to now-yielding beliefs that Darwin's concept of natural selection was conceived in a mechanistic way, Darwin never explicitly referred to natural selection as operating in a mechanical fashion. Instead, nature, to which selection gave rise, was perceived in its parts and whole, as a teleologically, self-organising structure. (See his argument in R. J. Richards. *The Romantic Conception of Life: Science and Philosophy at the Age of Goethe*. Chicago and London: The University of Chicago Press, 2002, pp. 533-545).

[13] C. R. Woese provides this definition in his article "A New Biology for a New Century." *Microbiology and Molecular Biology Reviews* Vol. 68 n. 2, June (2004): 173-186, p. 174.

Naturphilosophen it was through aesthetic imagination that we gain access to the otherwise intelligible world.

Schelling's account of imagination, nature and mind is echoed, albeit differently, in S. T. Coleridge's system of thought where he endeavoured, as other *Naturphilosophen*, to put all knowledge into harmony. The influence of German idealism, however, is clearly visible in Coleridge's insistence on the active role of mind in nature, which was itself organic, alive, developing and intelligible, and in his belief in the Absolute and corrective and unifying force of Ideas which, when apprehended in knowing minds, reveal essential relations in nature. Every perception, according to Coleridge, involved a creative act of mind, that in order to be incorporated in science it needed to be organised by ideas. This led him to distinguish between secondary and primary imagination. The latter he defined in a rather cryptic phrase as 'the repetition of the finite mind of the eternal act of creation in the infinite I AM.'[14] In this definition Coleridge relates creation, God, the self and nature in a unity that can be explored through the biblical account of creation.[15] Indeed, for Coleridge human reason and the world of nature are both created by God, by his will and reason and the role of ideas is to mediate between what is real in mind and what is real in nature. In this way, Coleridge is able to relate the imaginative life of men with life of God through experience in nature. Most importantly, for Coleridge imagination understood as a cognitive perception is not disjointed from reason, on the contrary, it is a pre-stage of reason from which faith stems. In this respect John Coulson notes that this view preserved Coleridge from believing that the existence of God, and faith in general,

[14] S. T. Coleridge. *Biographia Literaria*. Ed. by Nigel Leask. London: Everyman, 1997, Ch. xiii, p. 212.
[15] T. H. Levere, *op.cit.*, 1981, p. 7.

'could be demonstrated or empirically verified by evidence or other forms of "mechanical understanding."'[16]

Coleridge was particularly interested in defending theology from the consequences of mechanistic thought and in his prose writing on Christian Revelation, such as *Aids to Reflection* (1825), he ponders on both, the particular inflection of the philological science of language (underpinned by Horne Tooke's (1736-1812) etymology) which was exerting an ever larger impact on the understanding of religion; and the importance of imagination as an intuitive-inferential process as the origin of religious belief. Drawing on the organic conception of life, Coleridge insisted that words, as incarnate history, are 'living powers'[17] rather than mere counters of social intercourse. With this idea Coleridge countered the materialist constructions of philology which were largely based on the arbitrary and material nature of connections between word and idea.[18] As living powers, words should be understood in their primary meaning, that is, in the metaphorical meaning, since metaphor is the innovative and non-standard use of language on which the act of reflection – understood as a mental process – is based.

It is precisely the idea of imagination as an intuitive-inferential process, based on metaphor, as proposed by *Naturphilosophen* and further elaborated by Coleridge, that will become the defining force in both Newman's elaboration of the argument for the common grammar between faith and reason in *Grammar of Assent* (1870), and also in Eliot's argument for the common enterprise of the scientist, novelist and ethicist whose willingness to explore the significance of that which cannot be registered by

[16] J. Coulson. *Religion and Imagination: In Aid of a Grammar of Assent*. Clarendon Press: Oxford, 1981, p. 12.
[17] S.T. Coleridge. [1825] *Aids to Reflection* and the Confessions of an Inquiring Spirit. London: George Bell and Sons, 1884, p. LXVI.
[18] L. Dowling. *Language and Decadence in Victorian Fin de Siecle*. Princeton: Princeton University Press, 1986, p. 7.

instruments and unaided senses is based on the same process of imagination. It will also bear importance in Welby's conceptualisation of Mother-Sense as the underlying force subtending creativity in nature and culture.

Newman, Eliot and Welby all sought to find a common grammar between natural and human practices - between nature and culture - through their postulation of what, in the light of subsequent developments, I will argue we can now think of as proto-biosemiotic imagination. Although Newman's, Eliot's and Welby's works were in part the product of their time and environment, with its shifting notions in science, religion, interpretation and meaning, their works show important parallels with theories in biosemiotics specifically in the way in which they address the issue of continuity within a religious, literary and philosophical framework. All three authors tried to propose ways of thinking that would encompass, rather than separate various disciplines. Among these, the most important they drew from, were evolutionary theory and language theory. Newman, Eliot and Welby envisaged a unity of life, a unity of natural and cultural life, which was based on a new epistemology (arguably largely informed by Darwin's evolutionary theory and *Naturphilosophie*) grounded in a mode of non-conscious inference. They believed the sacred, aesthetic and scientific and practical aspects of life are deeply ingrained and intermixed in this non-conscious inference.

Newman identified this non-conscious inference as the illative sense which he believed was a common source of inspiration in science and religion. Differently from other theologians of his time, and where his originality lies, is in his objection to the assertion that a belief cannot be held before it is proved to be true or certain. Eliot, on the other hand, believed that this form of inference, which she identified as aesthetic imagination, both underpinned any creative process, natural or cultural, and also forged a link between these two types of processes. Lady Welby, echoing Peirce, saw

abduction as a signifying process that subtends creativity in both nature and culture. It is their elaboration of the non-conscious creative process, together with their distinctive ways of bridging the Cartesian divide, that constitute their most important contributions to the development of the biosemiotic insight that culture is evolutionarily emergent in nature through semiosis.

Biosemiotics and its key concepts

Biosemiotics ('bios'-life, 'semeion'-sign) is a non-reductionist, non-mechanistic inter-disciplinary field founded in the mid-1960s by the linguist Thomas A. Sebeok (1920-2001). It was developed in Europe by, among others, molecular biologist Jesper Hoffmeyer, (1943-present) theoretical biologist and philosopher Claus Emmeche (1956-present), and naturalist and Professor of Biosemiotics Kalevi Kull (1952-present). Biosemiotics as a field is based upon the recognition that 'life is fundamentally grounded in semiotic processes'[19] and that signs and meaning exist in all living systems. Biosemiotics holds that all living systems – cells, organisms and ecologies – are scaffolded by semiosis. The latter is the production, exchange and interpretation of signs. What this view implies is that semiotic interactions among individual organisms are part of the natural world and that purposeful behavioural patterns emerge because of a network of semiotic interactions, which Hoffmeyer terms 'semiotic scaffolding devices'.[20] These semiotic interactions, in other words, provide the necessary conditions for living systems to perform their tasks and are based on the capacity of living organisms to interpret and act upon their interpretation of signs.

[19] J. Hoffmeyer. *Biosemiotics: An Examinations into the Signs of Life and Life of Signs*. Scranton and London: University Scranton Press, 2008, p. 1.

[20] J. Hoffmeyer, *op. cit.*, 2008, p. 4. Biosemiotics doesn't deny that living systems originate from molecular processes; however, Hoffmeyer points out, that 'these cannot be exhaustively explained in chemical terms since such processes, by virtue of their very participation in the constitution of the fundamental processes of life, functionally become distinctive bearers of life's critical semiotic relationships.' J. Hoffmeyer. "Semiotic Scaffolding in Living Systems." Ed. M. Barbieri. *Introduction to Biosemiotics: The New Biological Synthesis.* Berlin: Springer, 2007, pp. 149-166, p. 154.

Importantly, this suggests that processes of sign and meanings cannot be assumed to be the fundamental criteria marking human communication alone, and thus cannot be assumed to distinguish the realms of nature and culture. Rather, as the molecular biologist and biosemiotician Jesper Hoffmeyer states, cultural processes can be viewed, as 'special instances of a more general and extensive biosemiosis that continually unfolds and acts in the biosphere.'[21] Nature and culture, thus stem from a continuous, unified and creative evolutionary process which is based on sign interpretation.

By placing greater emphasis on organisms' capacities for interpretation and meaning, biosemiotics opposes a more traditional mechanistic and reductionist view that has been endorsed in biology by the Neo-Darwinian Modern Synthesis. As Claus Emmeche has pointed out, 'by representing an organism merely as a composition of small non-living bodies that interact according to mechanical forces or quantum mechanical laws, we may never reach the description of life itself'[22] which is what biosemiotics is partly concerned with. Indeed, a central tenet of the biosemiotics view proposed by Thomas A. Sebeok is that 'life and semiosis are coextensive.'[23] This view was elaborated by Sebeok after his discovery of Jakob Von Uexküll's (1864-1944) concept of *Umwelt*. This concept refers to the species-specific ability to create a phenomenal world through what he termed *Funktionskreis*, or functional cycle whereby an organisms models its phenomenal world through recursive semiotic feedback loops. These involve an organism's ability to perceive signs, act upon them and then communicate something to others in the environment, who will in turn

[21] J. Hoffmeyer, *op.cit.*, 2008, p. 3.
[22] C. Emmeche. Quoted in Marcello Barbieri. *Introduction to Biosemiotics: The New Biological Synthesis.* Doordrecth: Springer, 2008, p. 213.
[23] K. Kull, C. Emmeche, D. Favareau. "Biosemiotic Questions." *Biosemiotics* Vol. 1. (2008): 41-55.

communicate something back to the organism. In so doing the organism adapts to the new information and therefore is able to change, evolve and therefore learn.

Biosemiotics bases its understanding of the sign on the semiotics of the nineteenth-century American scientist and semiotician Charles Sanders Peirce (1839-1914) who famously stated that 'the universe is perfused with signs, if it is not composed exclusively of signs' (EP 2:394). This implies that all living organisms - not only human beings and animals, but also plants and microorganisms - are able to engage creatively with their environment through the active interpretation of signs. Crucially, unlike the anthropocentric and dyadic Saussurean sign, the Peircean sign-relation is triadic, connecting the representamen, to its object through an interpretant. This relation, which Peirce called semiosis, is dynamic, and thus evolutionary, and includes both natural and cultural signs. The differences between Saussure and Peirce are fundamentally important in understanding biosemiotics and they will be discussed in Chapter One.

Peirce's semiotics provides a central underpinning for the biosemiotic insight that natural forms of semiosis are not separated from cultural forms, but rather, that they are antecedent to and a condition of the cultural ones. Moreover, Peirce's evolutionary thinking leads to his recognition that an important form of semiosis in culture and nature is related to a non-conscious creative process that Peirce called the 'logic of abduction'. The latter represents a substantial part of what, in this thesis, I term the biosemiotic imagination. Peirce's logic of abduction provides the theoretical underpinning with which to analyse what John H. Newman, George Eliot and Lady Victoria Welby identify as Illative Sense, Aesthetic Imagination and Mother Sense, respectively and which I discuss in chapters Three, Four and Five.

In order to investigate these three central authors' proto-biosemiotic thought, this thesis will embrace three necessarily interlinked fields of study. These are biosemiotics, philosophy and literature, where biosemiotics will provide the main theoretical framework structuring the thesis which reflects the inter-disciplinary nature of this research. Through applying a biosemiotic framework of interpretation to these different Victorian thinkers and their contributions I wish to highlight those aspects of their thought that, for a variety of reasons, have been left unconsidered or underdeveloped by engagements in literary criticism in the late twentieth and early twenty first centuries. For instance, George Eliot's novels and critical writings have received particular attention from a number of important critics such as Sally Shuttleworth (1984), Gillian Beer (2000), Rosemary Ashton (2007), George Levine (1981), David Carroll (2006), and Ken M. Newton (2011),[24] all of whom were interested in exploring and documenting in various ways the novelist as an extraordinary representative of Victorian intellectual life and a pioneer in integrating evolutionary theories with literary work. Shuttleworth and Beer in particular have explored Eliot's understanding of society as a living and evolving organism, whereas Levine has looked at patterns of science in Victorian fiction with specific attention to Eliot's hypothesis of reality. Ashton, Newton and Carroll, have highlighted Eliot's indebtedness to German philosophical thought, (specifically in relation to Romanticism and hermeneutics) for the development of her own philosophical thought. Although some very important research has been done to uncover the depth

[24] The available literary criticism on Eliot is so vast that it is impossible to include all in this introduction, therefore I have selected those authors that have contributed most significantly to the body of literature surrounding Eliot's work. See Gillian Beer. *Darwin's Plots*: *Evolutionary Narrative in Darwin, George Eliot and Nineteenth Century Fiction*. 3rd ed. Cambridge: Cambridge University Press, 2009; David Carroll. *George Eliot and the Conflict of Interpretations: A Reading of the Novels*. Cambridge: CUP, 2006; Sally Shuttleworth. *George Eliot and the Nineteenth Century Science*. Cambridge: Cambridge University Press, 1984; George Levine. *The Realistic Imagination: English Fiction from Frankenstein to Lady Chatterley*. Chicago: Chicago University Press, 1981; Ken M. Newton: *Modernizing George Eliot: The Writer as Artist, Intellectual, Proto-Modernist, Cultural Critic*. London: Bloomsbury 2011; Rosemary Ashton. *George Eliot*. Oxford: Oxford University Press, 2007.

and broadness of Eliot's views, there has been no further work researching and interpreting her ideas on the interconnectedness between society and environment. This may be due to a general avoidance of focusing on matters potentially associated with socio-biology, more recently known as evolutionary biology.[25] In the latter, the persistence of a reductive, mechanistic and gene-centred account (as well as potentially its eugenics implications) has meant it has been an uneasy fit with the humanities, whose preoccupations tend to concern the socially constructed nature of both nature and culture. A biosemiotic account potentially helps to resolve a traditional schism between nature and culture because biosemiotic theory advances a non-reductive, non-mechanistic, emergent systems view. Hence this thesis intends to offer a biosemiotic reading of Eliot's work which I hope will cast new light on the implications for the human-nature relationship in Eliot's work and her understanding of the interplay between language and environment.

There is also an extended body of literature on Cardinal John Henry Newman, one of the most significant theologians of the nineteenth century. This has seen the rediscovery of the Cardinal Newman not only as theologian, but also as a profound and under-explored philosophical thinker more broadly. His insights on conscience, on reasoning and faith and imagination have been documented in the works of Ian Kerr (1990; 2004; 2009), Terrence Merrigan (1990; 2009), Gilley Sheridan (2002) and J. Coulson (1981), to name only a few examples.[26] Notably, Newman's concept of Implicit Reason as an inferential process which underpins both faith and science has

[25] E. O. Wilson. *Sociobiology: The New Synthesis*. Harvard: Harvard University Press, 1976; E. O. Wilson. *On Human Nature*. Harvard: Harvard University Press, 1978.

[26] See for instance Terrence Merrigan. Ed. *Essays in Honor of the Centenary of John Henry Cardinal Newman 1801-1890*. Front Royal, VA: Christendom Press, 1990; Terence Merrigan. "The Imagination in the Life and Thought of John Henry Newman." *Cahiers Victoriens & Edouardien* Vol. 70 (2009): 187-217; Sheridan Gilley. *Newman and His Age*. 4th ed. London: Darton, Longman & Todd, 2002; Ian Kerr. Ed. *Newman the Theologian: a Reader*. Notre Dame Indiana: Univ. of Notre Dame Press, 1990; John Coulson. *Religion and Imagination.* Oxford: Clarendon Press, 1981.

usually been discussed within a philosophical framework that emphasises its metaphysical foundations. However, in this thesis I will explore this idea within a biosemiotic framework where I highlight the fact that the inferential process that Newman describes is akin to Peirce's logic of abduction and thus grounded in natural, biosemiotic forms of logic. An implication of this, namely that faith is not founded on investigation, argument and proof, but it is the result of our abductive reasoning or creativity, is developed further in the chapter on Newman.

Lady Welby has been recognised in recent years as the 'founding mother'[27] of the twentieth-century semiotics alongside Charles S. Peirce with whom she corresponded. However, Welby's name is not well known outside semiotic studies and is not present in mainstream accounts of Victorian literature. Nevertheless her influence on leading figures in the world of science and literature in her time, as documented by her published letters, was great. [28] With the exception of the pioneering work of Walter H. Schmitz (*Essays on Significs: Papers Presented on the Occasion of the 150th Anniversary of the Birth of Victoria Lady Welby (1837–1912)*, and Susan Petrilli, (*Su Victoria Welby: Significs e la Filosofia del Linguaggio 1998*; *Victoria Welby: Senso Significato Significativitá*, 2007; *Signifying and Understanding*: *Reading the work of Lady Victoria Welby* 2009, *Semiotica* Special issue on Victoria Welby 2013 and *Victoria Welby and the Science of Signs*, 2015) there is little scholarly work on Welby that reflects her importance as a thinker during this era and, in particular, the unique contribution she made through her theory of signs and meaning

[27] S. Petrilli and A. Ponzio. *Semiotics Unbounded: Interpretive Routes through the Open Network of Signs*. Toronto: University of Toronto Press 2005, p. 81.

[28] See Nina Cust. Ed. *Echoes of Larger Life: A Selection from the Early Correspondence of Victoria Lady Welby*. London: Jonathan Cape, 1929*;* Charles S. Hardwick. Ed. *Semiotic and Significs: Correspondence between Charles S. Peirce and Victoria Lady Welby.* Lubbock: Texas Tech University Press, 2001; Lawrence P. Jacks. *Other Dimensions: a Selection from the Later Correspondence of Victoria Lady Welby*. London: Jonathan Cape, 1931.

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which she called Significs. This thesis will integrate her work with that of Newman and Eliot in order to highlight their connections and the continuity of their thought particularly in relation to what I shall describe as proto-biosemiotic imagination.

An original contribution made to knowledge by this thesis takes three forms. First, it introduces biosemiotics as a theoretical framework for the analysis and interpretation of Victorian texts. Second, it contributes originally to the scholarship on the religious and literary work about Newman and Eliot by introducing them as thinkers who think in terms of non-conscious knowing or abductive logic and communicative webs in relation to (scientifically and biologically informed) religion and literature. For Newman, non-conscious knowledge or, what he calls illative sense, is at the basis of faith, while Eliot identifies aesthetic imagination as that type of inferential logic which subtends any knowledge in art and science. Third, my research into Lady Welby and the analysis of her work introduces her as a thinker and philosopher and places her among those intellectuals, such as Charles K. Ogden (1889-1957) and Ivor A. Richard (1893-1979), who contributed to the development of semiotics in Victorian England. This represents a new contribution to Victorian studies.

To address the central question, namely 'does the biosemiotic imagination identified in the thesis allow the comparison of creativity in nature and human beings?' the present thesis has been structured as follows:

Chapter One introduces the theoretical and philosophical background of biosemiotics by analysing the main concepts that historically underpin it, namely Charles Sanders Peirce's semiotics and logic of abduction and Jakob von Uexküll's *Umwelt* theory. I discuss how Uexküll's understanding of biology as dealing with organisms as holistic units, which stemmed from *Naturphilosophie*, prompted him to recognise that all

living organisms are capable of building a conceptual model of the outer cognised world (*Umwelt*) through semiosis, that is, through the active interpretation of signs. I show how these interpretive acts in the animal world are primitive as compared to human acts of interpretation. Nonetheless, both acts stem from the non-conscious interpretation of signs or what Peirce identifies as abductive inference. Drawing on Peirce's doctrine of signs which he sees as a branch of logic, I discuss how abduction is the only logical operation that introduces a new idea and as such is the only source of adaptive and creative growth. I show how, for Peirce, abduction is closely tied to the growth of knowledge via the evolutionary action of sign relations and I will relate this to Gregory Bateson's understanding of natural metaphor.

Chapter Two presents a contextual background to the cultural and intellectual climate that informed and shaped the work Newman, Eliot and Welby. Here I focus on the conceptual heritage from German Romantic thought -*Naturphilosophie*- in relation to nature and language, in order to show how the conceptual transfers between comparative philology and evolutionary theory informed and shaped broader epistemological debates in religion, science and mind that dominated the Victorian period. I show how Newman, Eliot and Welby addressed these debates and explain the influence *Naturphilosophie* - with its emphasis on the common role of the scientist and poet in uncovering and understanding nature through imagination - had on the way in which these three authors postulated the continuity between nature and culture through what I term biosemiotic imagination. I also discuss the influence *Naturphilosophie* had on Darwin's conceptualisation of natural selection. Contrary to now yielding beliefs that Darwin conceived it in mechanistic terms, I argue that he endorsed a view that was much closer to the one proposed by *Naturphilosophen.*

Chapter Three examines the work of John Henry Newman in more detail. It considers how Newman saw that the perceived opposition between the developing idea

of scientific rationality, on the one hand, and the truth of faith, on the other, constituted a historically new challenge for the Christian tradition. Contrary to other theologians of his time, Newman tried to overcome this problem by using reason precisely to argue against the certainty of conscious reason and, instead, for reason's basis in states of belief. I discuss how Newman opposed the rationalist theory of knowledge associated with Aristotle's Logic by ascertaining that religious truth and faith are discovered and transmitted not merely in self-conscious reason but in ways of which mankind is sometimes hardly conscious through what he called implicit reason. These ideas, which he also drew from his readings of Joseph Butler's *Analogy of Religion* (1725) and S. T. Coleridge's *Aids to Reflection* (1825) were discussed as illative sense or imagination in *University Sermons* (1826-1840), and in his *Essay in Aid of a Grammar of Assent* (1870). I show that both implicit reason and illative sense are in fact a type of natural inference or reasoning and I will argue that as such they can be understood in terms of Peirce's abductive logic and Gregory Bateson's natural metaphor.

Chapter Four focuses on George Eliot's philosophical thought and on her attempts as a novelist and critic, to unravel the relation between mind, language and observed reality, by engaging with epistemological questions about the relationship between human knowledge and mind, and thus between language and any act of cognition. I argue that Eliot's adherence to the evolutionary or organic understanding of nature, which found its core in Darwin's theory and in *Naturphilosophie*, as well as in language theory and George H. Lewes's work, brought her to see and understand our experience of reality as a web of organic and semiotic relations and to propose the continuity between the natural and the cultural worlds through aesthetic practice. The chapter discusses Eliot's understanding of reality by analysing her poem 'I Grant you Ample Leave' and by looking at her novel *Middlemarch*, where her proto-biosemiotic thought seems to be most evident. Drawing on Jakob von Uexküll's concept of *Umwelt*

and upon Thomas A. Sebeok's modelling theory I argue that Eliot's realism is a biosemiotic realism. I also discuss the importance that Eliot places on aesthetic imagination as an inferential tool and therefore as a source of knowledge and growth which I address through a discussion of characters in *Middlemarch*. I further argue that Eliot's aesthetic imagination is akin to Peirce's logical category of abduction and, by inference, to the evolutionary biosemiotic notion of semiotic scaffolding, whereby evolutionary development lays down the organic layers of meaning. Emphasising metaphor as a source of creativity and world disclosure, I argue that metaphors are at the basis of Middlemarch's characters interpretation and understanding of their own reality or *Umwelten* which is nested through recursive feedback loops into a wider web of semiotic relations that form the novel. I suggest that this understanding afforded her the possibility of exploring in her novels the spiritual, psychological and ethical implications of nature as embodied through the human relational capacity for sympathy, which is, I will suggest, equally grounded in abductive logic.

Chapter Five introduces and explores Lady Victoria Welby's theory of signs and meaning which she called Significs. Drawing partially on her biographical information and on her extended correspondence with eminent scholars of the time, such as Charles S. Peirce, C. S. Stout (1860-1944), Max Müller (1823-1900) and C. K. Ogden (1889-1957), the chapter considers how Significs, with its particular focus on the generative nature of signifying processes and their capacity for development and transformation as a condition of human experiential, cognitive and expressive capacities, sets Significs apart from other philological-historical approaches to the study of language. I show how Welby's early engagement with theories of meaning and interpretation in religious matters raised her awareness of the need to view language and meaning in its dynamic and evolutionary form, in its 'plasticity' rather than in its fixed form. Welby recognised that plasticity of language - the ability to for creating connections among

seemingly different concepts through metaphors - is an essential characteristic of thought and language and she held that linguistic expressions are alive and dynamic in a way similar to living organisms. This is why she established an analogy between word and context similar to that of an organisms and its environment. This view I argue grew out of her keen interest and engagement with biological theories, specifically Darwin's evolutionary theory. The latter had an important impact on her understanding of relatedness between the cultural and biological realms which she expressed through her meaning- triad of sense, meaning and significance, whereby meaning and significance are specific to the human dimension, whereas sense or what she termed Mother-Sense, is to be understood as the immediate or interpretive intuition which she equates with the spontaneous reaction of an organism to its environment. Welby identified the original concept of Mother-Sense as being the originating source of all signifying processes at large, which she believed are shared by all living organisms. Understood in this way, Mother-Sense is common to all living organisms as it is the pre-condition for evolutionary adaptation and therefore survival of all species. Exploring the concept of Mother-Sense I will emphasise the importance of Welby's concept of plasticity and 'translation', her specific contribution to the study of language, as a key method for understanding creative discovery on the one hand, and as a key capacity for the interconnectedness and interdependency among signs, on the other. In emphasising continuity between natural and cultural realms, which are grounded in the logic of interpretive-translative processes – abduction – and by identifying that human beings uniquely possess the capacity for articulate language, I will argue that Welby's thinking prefigures ideas that later emerged within and were refined by the field of biosemiotics.

Finally, the conclusion, offers a summary and synthesis of the main themes and arguments advanced in the thesis. I will hopefully demonstrate that the notion of a

biosemiotic imagination as originally identified in the thesis, and as it has developed in the humanities from the nineteenth century, offers a useful way of both comparing and deriving important continuities between creativity in nature and culture. The application of a biosemiotic framework for the analysis of the major works of Newman, Eliot and Welby appears to open up new ways of exploring, firstly, proto-biosemiotic thinking and, secondly, the nature and development of thinking within and between the disciplines of theology, literature and philosophy in the nineteenth century.

CHAPTER 1

An Introduction to the Philosophical Origin of Biosemiotics - Charles Sanders Peirce and Jakob von Uexküll

> It is a crude mistake to oppose nature and culture, organism to environment. "Culture," so called, is implanted in nature; the environment or Umwelt, is a model generated by the organism. Semiosis links them. (Thomas Sebeok)[1]

This chapter is intended to provide an introduction to the theoretical background of biosemiotics by analysing the main concepts that historically underpin it, namely Charles Sanders Peirce's (1839-1914) semiotics and logic of abduction and Jakob von Uexküll's (1864-1944) *Umwelt* theory. Even though biosemiotics is represented, as Donald Favareau and Prisca Augustyn explain, by a very diverse group of molecular biologists, neuroscientists, anthropologists, philosophers, psychologists and cultural theorists, these two concepts have been broadly accepted as the core or philosophical foundation of this growing inter-disciplinary field.[2] The reason for this is that Uexküll's *Umwelt* – the subjective species-specific phenomenal world created by a living organism – inspired Thomas A. Sebeok's (1920-2001) definition of semiosis and the consequent view that 'life and semiosis are coextensive.'[3]

Peirce's semiotics, on the other hand, derives from the pre-Socratic tradition which embraced both natural and cultural signs as the focus of its study as well as

[1] T. A. Sebeok. *Global Semiotics*. Bloomington and Indianapolis: Indiana University Press, 2001, p. vii.
[2] D. Favareau. "The Evolutionary History of Biosemiotics." Ed. M. Barbieri. *Introduction to Biosemiotics*: *The New Biological Synthesis*. Berlin: Springer, 2007, pp. 1–67; P. Augustyn. "Uexküll, Peirce and Other Affinities between Biosemiotics and Biolinguistics." *Biosemiotics* Vol. 2 (2009): 2-17, p. 2.
[3] K. Kull, C. Emmeche, D. Favareau. "Biosemiotic Questions." *Biosemiotics* Vol. 1 (2008): 41-55, p. 43.

from the Latin tradition of John Poinsot (1589-1644), who identified triadic relations as the being common to all signs, natural and cultural.[4] The implication for biosemiotics is that Peircean semiotics offers a wider scope of investigation into the life of signs, because contrary to the European structuralist tradition of the twentieth century which restricted its field to the study of arbitrary and conventional signs used by humans, Peircean semiotics points towards the importance of biological sign processes as being antecedent to, rather than separated from, cultural ones.

Both Peirce and von Uexküll understood culture and nature through the analysis of signs and sign processes. They believed that all living organisms, not only human beings and animals, but also plants and microorganisms, are able to engage creatively with their environment through the active interpretation of signs.[5] This view not only challenges a mechanistic and reductionist understanding of nature as gene-centric and driven by biochemical processes and governed by physical laws as advocated by Neo-Darwinism, but it also leads to the biosemiotic insight that culture is evolutionarily emergent within semiotic nature.[6]

Biosemiotics holds that semiotic interactions among individual organisms are part of the natural world and that purposeful behavioural patterns emerge because of a

[4] Paul Cobley points out that Thomas Sebeok repeatedly mentioned that semiotics derives from pre-Socratic thought. The more direct link to semiotics is through the figure of Hippocrates (490-370 BC) and the study of natural signs on the body. See P. Cobley. *The Routledge Companion to Semiotics*. Ed. Paul Cobley. London: Routledge, 2010, pp. 5-6. It is however Augustine of Hippo (354-430 BC) who asks whether cultural signs function in the same way as natural signs. Augustine's general definition of a sign as 'anything that, over and above the impressions on the senses, brings something other than itself into awareness' transcended the. Anything (either natural or cultural) that makes an impression on the senses in such a way as to bring forth in our awareness something other than itself functions as a sign. For that reason it transcends the nature/culture divide. See J. Deely. "Objective Reality and the Physical World." *Green Letters: Studies in Ecocriticism* Vol. 19. n. 3 (2015): 267-279, p. 268.

[5] Winfried Nöth points out that among the agents of semiosis Peirce mentions not only animals such as 'a chameleon and many kinds of insects' (MS 318: 205-206) but also microorganisms such as 'a little creature' under a microscope (CP 1.269), but also "plants that make their living by uttering sign, and lying signs, at that'. (MS 318: 205-206). See W. Nöth. "Ecosemiotics and the Semiotic of Nature." *Sign System Studies* Vol. 29. n. 1 (2001): 71-81, p. 74.

[6] Although it is true that life is driven, among other things by biochemical processes, the semiotic framework - of which the sign relations are part - is important if we are to understand the experiential life of living organisms and their reference to meanings and purposes.

network of semiotic interactions, which Hoffmeyer terms 'semiotic scaffolding devices.'[7] These scaffolding devices, Hoffmeyer explains, 'assur[e] that an organism's activity become[s] tuned to an organism's need.'[8] These semiotic interactions, in other words, provide the necessary conditions for living systems to perform their tasks and are based on the capacity of living organisms to interpret and act upon their interpretation of signs. Hoffmeyer points out that throughout evolution, 'whole new kinds of semiotic scaffoldings have been built on top of the existing ones and thus became available to our species.'[9] Evolutionary layers of meaning are built on preceding meanings (scaffolds) which may be altered by subsequent ones and so on. This is why semiotic scaffolding involves both learning and development. Forms of natural semiosis are, therefore, antecedent and repeated with a greater degree of complexity in culture. Differently put, we could say that cultural semiosis emerges from natural semiosis inasmuch as all species on Earth, humans included, share some capacity for iconic and indexical referencing (to use Peirce's classification of signs). Yet the complexity of cultural scaffolding is embedded in symbolic referencing. This according to biosemiotics is what distinguishes human beings from the rest of the living world, and is what 'makes recursive messages available, thereby opening an infinitude of complex meanings to be thought out and socially shared.'[10] Wendy Wheeler suggests that this growth (complexity) of meanings, both in biology and

[7] J. Hoffmeyer, *op.cit.*, 2008, p. 4. Biosemiotics doesn't deny that living systems originate from molecular processes; however, Hoffmeyer argues, that 'these cannot be exhaustively explained in chemical terms since such processes, by virtue of their very participation in the constitution of the fundamental processes of life, functionally become distinctive bearers of life's critical semiotic relationships.' J. Hoffmeyer. "Semiotic Scaffolding in Living Systems." M. Barbieri ed. *op.cit.*, 2007 pp. 149-166, p. 154.

[8] See also T. Deacon. *The Symbolic Species:The Co-evolution of Language and the Brain*. New York: W.W. Norton & Compamy, 1997; T. Deacon. *Incomplete Nature. How Mind Emerged from Matter.* New York: W.W. Norton & Company Ltd., 2012; T. Schilhab, F. Stjernfelt, T. Deacon. Eds. "The Symbolic Species Evolved." *Biosemiotics* Vol. 6 (2012): 9-38.

[9] J. Hoffmeyer. "Semiotic Scaffolding: A link Between Sema and Soma." *The Catalyzing Mind. Beyond Models of Causality. Annals of Theoretical Psychology*. Eds. K. R. Cabell and J. Valsiner. Vol. 11 (2014): 95-110.

[10] *Ibid.*,p. 108.

culture works via Peirce's abductive logic or via what Gregory Bateson, following Peirce, called natural metaphor.[11]

It must be said at the outset that von Uexküll and Peirce were writing, to various extents, in the tradition of German Romantic *Naturphilosophie* of Kant, Goethe and Friedrich Wilhelm Joseph Schelling. *Naturphilosophie* focused specifically on the organic core of nature and its relationship to mind, while the Romantic part, as Robert J. Richards points out 'added aesthetic and moral features to this conception of nature.'[12] The consequence was that nature was seen as a creative, evolutionary force and, for German *Naturphilosophen,* the artist and scientist were especially capable of the profound articulation and understanding of such creativity. The latter lay, for Peirce, in the logic of abduction – in that non-conscious inference, often or usually expressed in the form of a hunch or guess, that precedes deduction and induction and is at the basis of any knowing (CP 5.172). It is this non-conscious knowing that becomes one important aspect in understanding the link between nature and culture in biosemiotics. It also provides the theoretical underpinning for analysing the biosemiotic imagination in the work of John Henry Newman, George Eliot and Lady Victoria Welby in this thesis.

This chapter will firstly introduce contemporary biosemiotics and its core concepts. It will then go on to analyse Uexküll's *Umwelt* theory and its relation to the biosemiotic concept of semiosis and modelling drawn initially from the semiotic work of Juri Lotman (1922-1993). Next it will focus on Peirce's semiotics and logic of abduction. This analysis will involve a discussion of the differences between two

[11] W. Wheeler. "The Wrecked Vessel: The Effects of Gnosticism, Nominalism and the Protestant Reformation in the Semiotic Scaffolding of Modern Scientific Consciousness." *Biosemiotics* Vol. 8 (2015): 305-324.
[12] R. J. Richards. *The Romantic Conception of Life: Science and Philosophy in the Age of Goethe*. Chicago and London: The University of Chicago Press, 2002, p. 516.

schools of semiotics - Saussurean Semiology and Peircean Semeiotics - and their understanding of sign and sign relations.[13] In addition, the discussion of abduction will introduce Gregory Bateson's understanding of abduction as natural metaphor. This will show the link between abduction and the biosemiotic imagination in the work of Newman, Eliot and Welby.

Biosemiotics and the nature/culture paradigm

Biosemiotics (*bios* = 'life' and *semeion* = 'sign') is an interdisciplinary field of research including among others molecular biology, neurobiology, theoretical biology, cybernetic and system theory, philosophy of mind, psychology and cultural theory, which is based on the recognition that 'life is fundamentally grounded in semiotic processes'[14] and that signs and meaning exist in all living systems. This implies that processes of sign and meaning cannot be assumed to be the fundamental criteria marking human communication alone, and thus distinguishing the realms of nature and culture. Rather cultural processes can be viewed, as the molecular biologist Jesper Hoffmeyer explains, as 'special instances of a more general and extensive biosemiosis that continually unfolds and acts in the biosphere.'[15] In other words nature and culture stem from a continuous, unified and creative process which is based on semiosis or the 'production, exchange and interpretation of signs.'[16]

The unifying process of signification has been extensively described by Charles S. Peirce and other semioticians, most notably Thomas A. Sebeok. As it will become clear in the section on Peirce's semiotics a sign or representamen is for Peirce 'something which stands to somebody for something in some respect' (CP 2.228).

[13] Peirce used Semeiotics - although not very frequently- as an alternative spelling to Semiotics.
[14] J. Hoffmeyer, *op.cit.,* 2008.
[15] *Ibid.*, p. 3.
[16] J. Hoffmeyer. "God and the World of Signs: Semiotics and the Emergence of Life: A Biosemiotic Approach to the Question of Meaning." *Zygon* Vol. 45. n. 2 (2010): 367-390, p. 368.

According to Peirce, a sign is in its very essence a triadic relation where the sign (representamen) stands for, represents or conveys an object of awareness (something other than itself) to a third thing or cognitive power (interpretant). The structure of the sign is thus triadic, always linking these three elements, but the being of the sign is the triadic relation itself, not the elements related to or structured according to their respective roles within the relation. The implication of this view is that a sign, or what is usually called a sign in common usage, is not a sign, but is a particular being which can be either internal (psychological state) or external (sound or movement) that occupies the position of 'standing for' in a triadic relation referring what is stood for as object to some third (a cognitive organism either human or not).[17] Peirce recognised that anything can become a sign regardless of its subjective constitution since anything among the terms of the sign triad (sign, object, interpretant) is what makes something we can see, smell, hear, point to be called a sign. Differently put, a sign is not a physical thing or experienced object, but is the very relation that unites the sign to its semiotic object through the production of an interpretant. This triadic relation is what Peirce calls semiosis and is what transcends the orders of nature and culture precisely because it is not linked to the identification of a sign with any definite class of things, existing either as a physical or psychological realities, but is the very relation itself where a sign signifies beyond itself.

Investigations into the semiotic nature of living systems is not new, as John Deely's *Four Ages of Understanding* (2001)[18] and Donald Favareau's introduction to the *Essential Readings in Biosemiotics* (2006)[19] demonstrate. However the

[17] J. Deely. *Semiotic Animal*: *A Postmodern Definition of "Human Being" Transcending Patriarchy and Feminism.* South Bend: St. Augustine's Press, 2010, p. 22.
[18] In his book John Deely offers a sustained argument on the centrality of the theory of signs in our understanding of the world from ancient Greek philosophy, through the medieval times into the twentieth century. See J. Deely. *Four Ages of Understanding: The First Postmodern Survey from Ancient Times to the turn of the Twenty-First Century*. Toronto: Toronto University Press, 2001.
[19] D. Favareau, *op. cit.*, 2007, pp. 1–67.

examination of the close relations between living systems and their sign systems took a long time to emerge in human understandings, mainly because of the prevailing ontological and metaphysical assumptions of both the natural and the human sciences.[20] These assumptions had been set in motion in the early modern development of science in seventeenth-century Europe informed mainly by Cartesian dualism and Newtonian mechanics which contributed to the separation between natural and cultural realms. The effects of the Reformation, coupled with the development of nominalism (which disallowed the reality of universals, such as relations among things) and the deterministic and materialistic account of nature, brought the exclusion of the study of signs relations from the seventeenth and eighteenth century science.[21] It was only with the emergent interest in philology in the nineteenth century that the rediscovery of signs began. However, this interest regarded the study of cultural and linguistic signs (as used by humans alone) and the natural sign was still excluded from the study of semiotics. As a consequence, in the Anglophone humanities, semiotics in the early twentieth century was regarded as a human science and as such promoted the view of the 'ability to produce, communicate and understand signs as a human privilege.'[22] A direct result of this was that structures of nature were investigated in the Anglophone humanities, as Winfried Nöth observes, 'within a cultural framework as content structures of texts. Such semiotics of nature', he continues, 'is not a theory of natural semiosis or sign processes, but a theory of how human culture interprets nature.'[23]

[20] J. Hoffmeyer, *op. cit.*, 2008, p.4.
[21] P. Harrison. *The Bible, Protestantism, and the Rise of Natural Science*. Cambridge: Cambridge University Press, 2001.
[22] F. Stjernfelt. "Biosemiotics and Formal Ontology." *Semiotica* Spec. issue Biosemiotica Vol. 127. n. 1/4 (1999): 537-566, p. 538.
[23] W. Nöth, *op.cit.*, 2001, p. 73.

This lingering anthropocentric or glottocentric understanding of nature was challenged in the mid-1960s by Thomas A. Sebeok.[24] Today regarded as a founding father of contemporary biosemiotics and a linguist by training, Sebeok saw linguistics as a branch of biology. Thus, he 'uprooted semiotics from the philosophical, linguistic and hermeneutic terrain in which it has been cultivated for centuries and replanted it into the larger biological domain from where it sprang originally.'[25] Sebeok did this initially through his concepts of zoosemiotics (1963) and later through biosemiotics (1991) and finally through global semiotics (2001).[26] Although Sebeok's work in the humanities was seminal in the conceptualisation of biosemiotics,[27] its proliferation, to use Sebeok's term, is not only attributable to his work, but also to the work of biologists in the sciences. As Donald Favareau points out, it was the joining together of "Sebeok's people", that is, semioticians exploring biology such as John Deely and Floyd Merrell, with "Hoffmeyer's people", that is, biologists inspired by semiotics such as Kalevi Kull, Claus Emmeche and Anton Markoš, that signalled the development of the contemporary field of biosemiotics.[28] From the early 1990s important publications such as *The Biosemiotic Web* by Sebeok and Jean Umiker-Sebeok (1991), *The Garden in the Machine* by Claus Emmeche (1994), Terence Deacon's *The Symbolic Species: the co-evolution of language and the human brain* (1997) as well as Jesper Hoffmeyer's *Signs of Meaning of the Universe* (1996)[29] all

[24] T. A. Sebeok. *Global Semiotics*. Bloomington: Indiana University Press, 2001, p. 31.
[25] M. Danesi quoted in D. Favareau, *op.cit.*, 2007, p. 34.
[26] Sebeok defines zoosemiotics as "a discipline within which the science of signs intersects with ethology, devoted to the scientific study of signalling behaviour in and across animal species" in T. A. Sebeok. "Communication among Social Bees; Porpoises and Sonar; Man and Dolphin." *Language 39*. (1963): 448-466.
[27] The term Biosemiotics was not coined by Sebeok. It was firstly used by Juri Stepanov in 1971. Sebeok came across the term possibly soon after the book was published, however he hesitated to use the term until much later. See K. Kull. "Sebeok and Biology." *Cybernetics and Human Knowing* Vol. 10. n.1 (2003): 8-20.
[28] D. Favareau. Ed. *Essential Readings in Biosemiotics: Anthology and Commentary*. Berlin: Springer, 2010, p. 49.
[29] According to Favareau (2010), this book remains one of the most widely read and cited books in biosemiotics.

contributed to the maturation of biosemiotics as an interdisciplinary field concerned with investigating life as semiosis.[30]

Yet the theoretical and philosophical foundations of biosemiotics owe much to Sebeok's re-discovery of the work of two important thinkers, namely the American scientist and philosopher Charles Sanders Peirce (1839-1914) and the Estonian-born German biologist Jakob von Uexküll (1864-1944). Their respective concepts of the action sign processes – especially Peirce's logic of Abduction and von Uexküll's *Umweltlehre* (the proto-semiotic theory of *Umwelt*) came to play an important role in the biosemiotic understanding of life as based on sign relations as a semiotic scaffolding for physical processes.[31] This also involved the consequent view that culture is evolutionary and emergent in natural evolution rather than a wholly different process often thought of as opposed to it. The following section will discuss Jakob von Uexküll's concept of *Umwelt* in more detail and show its relation to Sebeok's conceptualisation of semiosis and modelling theory.

Umweltlehre and World Modelling

Cited by both Konrad Lorenz (1903-1989) and Nico Tinbergen (1901-1972) as the founder of modern ethology, Jakob von Uexküll devoted his entire life to the study of animals, first as a zoologist and later as a physiologist.[32] In his early monograph (1905)[33] he made a very clear distinction between the roles of physiology and biology. Uexküll held that:

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[30]Other key writings are: Marcello Barbieri. *Introduction to Biosemiotics: The new Biological Synthesis.* Berlin: Springer, 2007; Jesper Hoffmeyer. *A Legacy for Living Systems: Gregory Bateson as a Precursor to Biosemiotics.* Berlin: Springer, 2008a; Jesper Hoffmeyer. *Biosemiotics: An examination into the Signs of Life and Life of Signs.* Scranton and London: University Scranton Press, 2008b; Donald Favareau. *Essential Readings in Biosemiotics: Anthology and Commentary.* Berlin: Springer, 2010; Wendy Wheeler. *Biosemiotics: Nature/Culture/Science/Semiosis.* January 2012. Web. 23 March 2013.

[31] J. Hoffmeyer, *op.cit.*, 2014.

[32] See D. Favareau, *op.cit.*, 2010,p. 30.

[33] J. von Uexküll. *Leitfaden in das Studium der experimentellen Biologie der Wassertiere*. Wiesbaden: J.F. Bergmann, 1905.

> Physiology's role is to organise the knowledge of organic systems by looking for causalities. Having preserved the experimental method, it should help inform biology. In distinction to physiology, biology has to use the scientific method to go beyond the investigation of causalities and to focus on exploring those laws that account for the purposefulness of living organisms. Therefore biology should not study organisms as objects, but as active subjects and focus on the organisms' purposeful abilities that provide for the active integration into a complex environment.[34]

Biology's role was, therefore, to deal with organisms as holistic units and to study the interactive unity between the environment and the world sensed by it. This unity is what von Uexküll termed *Umwelt*. Differently put, *Umwelt* is the phenomenal world of the animal species, or rather, the subjective world as the animal itself apprehends it. As John Deely observed, von Uexküll uniquely realised that the physical environment which may be said to be the 'same' for all living organisms, is not the world in which an organism lives out its life. This is because each organism, by nature of its distinctive bodily constitution, develops different cognitive capacities, which allow it to construct different models of the reality it inhabits.[35] According to von Uexküll, this reality – *die Natur* – reveals itself only through signs.

In *Bedeutungslehre* (Theory of Meaning) which was published in 1940, von Uexküll illustrated this point by giving the example of a flower stem and its transformation in the four *Umwelten* (plural) of a girl, ant, cicada larva and a cow. The flower stem represents a decoration, a path, a supplier of material for a building of a house and food respectively.[36] He explained that because each of these acts 'imprints its meaning on the meaningless object […] every object becomes a conveyor of meaning in each respective *Umwelt.*'[37] In other words, meaning does not reside in the object, but in the organism's relation to the object. What this example shows is that

[34] J. von Uexkül, quoted in D. Favareau, *op.cit*., 2010, p. 30.
[35] J. Deely. "Umwelt." *Semiotica* Vol. 134 n.1/4 (2001): 125-135.
[36] J. Von Uexküll. "The Theory of Meaning." In D. Favareau. Ed., *op.cit.,* 2010, p. 102.
[37] J. Von Uexküll. "An Introduction to Umwelt." *Semiotica* Vol. 134 n. 1/4 (2001): 107-110, p. 108.

although the physical environment is objectively the same for all, its subjective world or the world as a particular organism is aware of as either cognized or apprehended, is something different. What exists in an organism's awareness depends on the aspects of the environment which evolution has sculpted access to in sensation, which represents the 'direct channel through which physical features of the environment are objectified, or made into semiotic objects for the organism.'[38] In addition to sensation which, as an external sense, only selects among environmental features that can be objectified, the cognitive process of an organism also needs an internal sense that organizes the objectified features in awareness. This internal sense, which comprises memory, imagination, estimation, is perception. The latter ties sensations together to form our objects of experience. It is important to stress here that von Uexküll was among the first to see that the difference between objects of experience and elements of sensation is not determined by anything in the physical environment as such, but by the relation, or network and set of relations. These relations concern above all how the limited and partial sensory aspects of the physical world are connected among themselves in such a way as to form objects of experience for a sensing organism.[39]

John Deely argues that it is 'through these various channels or avenues of internal (perception) and external (sensation) sense working together, the *Innenwelt,* (the interior state or 'pyschology' on the basis of which the organism relates to its physical surroundings) which is subjective, and *Umwelt,* which is objective, develop as correlative structures.'[40] Moreover, it is the relation between the two, the internal and external, subjective and objective, *Innenwelt* and *Umwelt* that permits each species to construct (or model) and live within its own life world. This whole process is

[38] J. Deely, *op.cit*, 2001a, p. 7.
[39] J. Deely, *op.cit.,* 2001, p. 127.
[40] *Ibid.,* p. 8. Von Uexküll also argued the same in his major monograph *Umwelt and Innenwelt der Tiere* (The Outer world and The Inner World of Animals) 1909.

executed, as von Uexküll understood, by means of signs, and more precisely, by what he terms *Funktionskreis* (or functional cycle).[41] Every living organism, according to Uexküll, lives in its *Umwelt,* which is constructed via semiotic loops whereby the organism perceives the signs, acts upon them and then communicates something to others in its environment. As Wheeler points out these semiotic loops 'flow ceaselessly between *Umwelten* and *Innenwelten* (semiotic-inner worlds) of creatures, each making a ceaseless ecological process.'[42] Von Uexküll's *Funktionskreis* is widely recognized as an early expression of cybernetic understanding concerning information flows.

As Hoffmeyer indicates, animals throughout their lifetime conjure up models of the outer reality that they have to cope with.[43] However, the non - human animal is quite unaware that this happens, since, as Deely points out quoting Maritain, 'it [the organism] simply uses signs without realizing for a moment that there are signs.'[44] For, Deely argues, 'whenever one element of experience makes present something besides itself, be that other real or not, the element in question is functioning as a vehicle of signification.'[45] In other words, no non-human animal knows the objects of its world in their entirety, because all it has access to is the relation of something other than itself rather than the direct object of its being. Thus experience is based on whatever is accessible, or on that (the representamen) which signifies an object for its observer, that is, to signs of that world.

In Peirce's semiotics, a sign is neither a physical thing (a candle or car) nor a psychological reality, but a triadic relation that unites the sign to its semiotic object through the production of an interpretant. Although the structure of the sign, as already

[41] J. von Uexküll. [1920] *Theoretische Biologie*. Frankfurt am Main: Surhkamp, 1973, p. 116.
[42] W. Wheeler. "Semiotic Nature of Life." *Ecocritical Theory: New European Approaches*. Eds. Axel Goodbody and Kate Rigby. Charlottesville and London: University of Virginia Press, 2011, p. 272.
[43] J. Hoffmeyer, *op.cit.,* 2008, p. 174.
[44] J. Deely. *The Green Book: The Impact of Semiotics on Philosophy*. 2000. PDF File. Web. 15 Apr. 2012, p.17.
[45] *Ibid.,* p.17.

noted, always links these three elements, the being of the sign is the triadic relation itself which is neither subjective (observer dependent) nor objective (observer independent), but as Deely points out, is suprasubjective.[46] What Deely means is that for a cognizing organisms neither the relation nor the thing become object (in one's cognition) is inside the knower, but is over and above both of them. In order to understand this view, it is essential to note the following interrelated points; the first is that although object and thing have become synonymous in modern day English, the two notions are not quite the same. In fact, as Deely argues, a thing refers to what it is as it is regardless of being known, whereas an object, to be an object, requires a relation to a knower in and through which relation the object apprehended exists as a terminus.[47] So whatever exists as an object does so only within a network of sign relations (that Sebeok characterized as semiotic web and von Uexküll called *Umwelt*) indifferently from nature or mind. Von Uexküll compared each *Umwelt* to an invisible bubble within which each species lives.[48] The bubble is invisible precisely because it consists of relations, since all relations as such, in contrast to things which are related, are invisible. So it is possible to see that the objective meaning of each world depends less on physical being than it does on how the relations constituting the *Umwelt* intersect. As Deely notes, the difference between objects and things makes mistakes possible, but it is also what makes for the possibility of meaning in life, and different meanings in different lives.[49]

The second interrelated point to note is that these relations do not exist in the individual, but between the individual and whatever the individual is aware of, and whatever the individual is aware of exists, as pointed out above, as the terminus

[46] J. Deely. *Purely Objective Reality*. Berlin: Mouton De Gruyter, 2009, p. 5.
[47] J. Deely, *op.cit.*, 2015, pp. 271-272.
[48] J. Deely, *op.cit*. 2000, pp. 18-19.
[49] J. Deely, *op.cit*, 2001, p. 130.

(semiotic object) of the relation. A relation thus functions as a semiotic bridge connecting some things that are known to some things that exists independently of being known. Sign relations always involve three factors: that on which the relationship is founded (basis), the relationship itself, and that at which the relation terminates.[50] The relation itself, however, is in neither the basis nor terminus, but over and above both, in other words is suprasubjective. So the experiential worlds of living organisms or *Umwelten* are suprasubjective as they are based on sign relations where 'the interpretant of the Peircean triad is foregrounded as the active mediator between the physical universe of things and the objective universe that includes things, but is not reducible to them.'[51] In biosemiotics terms, reality is a triadic relation which includes an experiencing organism (an interpretant), the object experienced and the basis on which the object exists (representamen or the sign vehicle or basis) as experienced.

Although humans and other animals live in a world or realm of signs, sign relations are not manifest to the animal because they are imperceptible, that is, they are neither mind-dependent nor mind-independent. Indeed, animals are aware of their specific *Umwelten*, but not of the relations themselves since all relations as such, in contrast to things which are related, are invisible. Only human animals are aware of relations because they are able to distinguish things from objects (and the relation from both) within anthroposemiosis (the human use of signs).[52] What this means is that although human beings share the awareness of being-in-the-world as objective with animals, 'their objective world is further structured through language which convey a

[50] J. Deely, *op.cit*. 2001, pp. 6-7.
[51] P. Bains. *The Primacy of Semiosis: An Ontology of Relations*. London: University of Toronto Press, 2006, p. 11.
[52] *Ibid*., pp. 60-62.

cultural heritage linked to a specific biological constitution.'[53] This distinction lies at the heart of the difference between animal *Umwelt* and human *Lebenswelt* and is going to be addressed in the section on Sebeok's modelling system theory.

The importance of seeing semiotic relations as suprasubjective is threefold; firstly, by recognizing that relations are an intrinsic dimension of being means that these persist or exist regardless of the circumstances under which they came into existence, whether in nature or thought. This understanding not only defies the traditional dichotomy of realism vs nominalism, but also posits the basis of a continuity between nature and culture through semiosis. Secondly, by accepting that relations are an intrinsic dimension of being, it is possible to see how the continuity between natural and cultural forms of semiosis is based on von Uexküll's *Funkionskres* (semiotic loops) where every being, from the less complex to the more complex organism (including human beings), becomes the active centre of a web of semiotic relations with other beings.[54] The *Umwelt*, or semiotic web is thus a network of interpretive relations which constitute objects as such as publicly accessible elements shared by every member of each biological species. In this way every subject also becomes inserted into an environment not merely as a physical thing, but as a semiotic subject. In other words, and this is the third interrelated point, the notion of subjectivity or self rather than being linked to a psychological state, is here expanded, since it exists as a sign relation.

As noted before, von Uexküll's idea of organisms as active agents, able to create their own *Umwelten* and in so doing become a part of nature's design, stemmed from his understanding of *Naturphilosophie* and this is partly the reason why his

[53] J. Deely. "Philosophy and Experience." *American Catholic Philosophical Quarterly*. Vol. 66 n. 3 (1992): 299-319, p. 309.
[54] P. Bains, *op.cit.,* 2006, p.76.

Umwelt theory was not well received in the main stream twentieth-century biology.[55] The latter was less interested in the creative dynamic processes in organisms and more in what, after the modern synthesis of the 1930s and 1940s, was to be seen as behaviourism, namely the view that organisms were to be understood as being operated upon by external forces of mutation and environmental selection.[56]

Nevertheless, von Uexküll's *Umwelt* theory became an important contribution to biosemiotics. Although von Uexküll never used the term biosemiotics, and, as Hoffmeyer suggests, it is highly unlikely that he was acquainted with Peirce's work which is at the basis of the biosemiotic understanding of sign relations,[57] his theory attracted the attention of such thinkers as Martin Heidegger, Maurice Merleau-Ponty, as well as Thomas Sebeok, John Deely and Jesper Hoffmeyer precisely because he showed that living organisms respond to signs rather than causal impulses as held by twentieth-century mainstream biology.[58] Organisms are, from a biosemiotic perspective, selective interpreters – perceiving, acting subjects – that do not respond to the environmental stimuli merely in causal-mechanical ways, but also in a semiotic-causal way, or by way of sign interpretation. Life, in biosemiotic terms, is therefore characterised by semiosis, by natural relations which are suprasubjective and are not reducible simply to chains of causal mechanical interactions. Life, according to this view, is made of many non-human signs, biological messages and narratives from

[55] Uexküll's theory presents an important conceptual tool in the biosemiotic re-evaluation of natural selection as the central factor in evolution. Since semiotic interactions among living organisms are part of the natural world, and these give emergence to purposeful behaviour, natural selection cannot be viewed as the only exhaustive explanation of end-directed activity in the natural world. Although the organism is shaped by the interplay between genes and environment, the environment is also shaped by the organism. In other words, it plays an active role in its own construction. This is why biosemiotics holds that the integration of Uexküll's *Umwelt* theory with natural selection gives rise to a more encompassing understanding of natural processes. See J. Hoffmeyer. "Astonishing Life." *Semiotica* Eds. Jesper Hoffmeyer and Claus Emmeche. Vol. 127 n. 1/4 (1999): 191-207.
[56] J. Hoffmeyer, *op.cit.*,2008, p. 174.
[57] J. Hoffmeyer. *Signs of Meaning in the Universe*. Bloomington: Indiana University Press, 1996, p. 54.
[58] P. Bains, *op.cit.*, p. 59.

which human narratives emerge and this is why biosemiotics breaks with the traditional materialist and mechanical understanding of life.

Another significant contribution of the *Umweltlehre* is to be found in Sebeok's definition of semiosis as 'the processual engine which propels organisms to capture the "external reality" and thereby come to terms with the cosmos in the shape of species specific internal modelling systems.'[59] What Sebeok means is that all living organisms, humans included, possess an internal model of the outer cognized world – *Umwelt* – that they inhabit through the circulation of signs. Sebeok adopted the concept of world-modelling from the Moscow-Tartu school (A. A. Zaliznjak, V. V. Ivanov, V. N. Toporov and J. Lotman). In 1967 Juri Lotman defined the modelling system as:

> A structure of elements and of rules for combining them that is in a state of fixed analogy to the entire sphere of an object of knowledge, insight or regulation. Therefore a modelling system can be regarded as a language. Systems that have a natural language as their basis and that acquire supplementary superstructures, thus creating languages of a second level, can appropriately be called secondary modelling system.[60]

Natural or non-verbal language, according to this model, is understood as a primary modelling system, or as Sebeok comments as 'the basic infrastructure for all other human sign systems.'[61] Other sign systems could include religion or myth, literature and art, and these superstructures which are based on a primary modelling system, form secondary modelling systems. Sebeok noted that in Lotman's semiotic study of culture, language is viewed as carrying out a specific communicative function which indicated that the linguistic and communicative capabilities of human beings were taken as a starting point of semiotic analysis. Sebeok found that, in this predominantly anthroposemiotic analysis, the Soviet school did not take into account

[59] T. A. Sebeok. *Global Semiotics*. Bloomington: Indiana University Press, 2001, p. 15.
[60] J. Lotman quoted in T. A. Sebeok, *op.cit.*, 2001, p. 140.
[61] T. A. Sebeok, *op.cit.*, 2001, p. 140.

how human beings could communicate or build cultures before their ability to use speech. The latter, according to Sebeok, organises and externalises language.[62]

Sebeok held that language appeared as an adaptation much earlier than speech in the evolution of the genus *Homo*. Along with other scholars such as Merlin Donald and Terence Deacon,[63] he referred to the archeological literature to point out that hominids, *Homo habilis* and *Homo erectus* possessed only a mute verbal modelling device (mute syntax) which would allow, for instance, the use of tools or the organisation of settlements, but not the encoding of communication in articulate linear speech.[64] For Sebeok believed that language at its inception was not used for exterior communication, but 'only as an interior modelling device – a modelling device or system being a tool wherewith an organism analyses its surroundings.'[65] Members of early hominids species communicated through non-verbal means very successfully (*Homo erectus* lasted for 2 million years) and it was only with *Homo sapiens* that 'speech developed out of language as a derivative *exaptation*.'[66] The exaptation of language into speech developed as a biological adaptation in order to enhance the survival of the species.[67]

In his reconstruction of the phylogeny of the genus *Homo,* Sebeok showed that there are systems that are antecedent to linguistic systems and are based on non-verbal communication. This type of semiosis is an adaptive communicational system possessed by all living organisms. According to Sebeok, only human beings possess both, the non-verbal and the verbal, or in Sebeok's words 'only hominids possess two mutually sustaining repertoires of signs, the zoosemiotic nonverbal, plus,

[62] See T. A. Sebeok and M. Danesi. *The Forms of Meaning. Modeling System Theory and Semiotic Analysis.* Berlin and New York: Mouton De Gruyter, 2000.
[63] M. Donald. *Origins of the Modern Mind: Three Stages in the Evolution of Culture and Cognition*. Harvard: Harvard University Press, 1993; T. Deacon. *The Symbolic Species. The Co-Evolution of Language and Brain*. New York: Norton, 1997.
[64] T. A. Sebeok, *op.cit*, 2001, p. 146.
[65] *Ibid*, p. 28.
[66] *Ibid*., p. 147.
[67] See T. Deacon, *op.cit.*, 1997.

superimposed, the anthroposemiotic verbal.'[68] Sebeok pointed out that Lotman failed to see that anthroposemiosis is linked to zoosemiosis and that human semiosis is played out predominantly in the pre-linguistic, extra verbal mode. In light of the recognition that there is non-verbal communication prior to the verbal, Sebeok proposed a re-conceptualisation of the Russian semiotic modelling by considering non-verbal language or *Umwelt* as the *primary modelling system.* [69]

The *secondary modelling system,* which in the Russian school was the primary, is based on language. As we saw, every species is endowed with a model-*Umwelt* that produces its own world, but language is one that belongs to human beings alone. As a modelling device, human language is completely different to other modelling devices of other species since it rests on what Sebeok called mute syntax.[70] This syntax orders the events and objects of human experience, transforming them into elements of their *Umwelt*. Susan Petrilli, Augusto Ponzio and John Deely all agree that language thus understood functions like a 'Tinkertoy set' or 'Lego Building Blocks' where a limited number of pieces can be assembled and reassembled creating an indefinite number of models or rather possible worlds.[71]

The *tertiary modelling system* is based on symbolic modelling processes and is the human cultural system which includes literature, religions, mathematics and so on. It is this system that the Moscow-Tartu school has traditionally called a secondary modelling device and that Sebeok redefined as tertiary. According to Sebeok, it is on this level that 'nonverbal and verbal sign assemblages blend together in the most creative modelling that nature has thus far evolved.'[72]

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[68] T. A. Sebeok, *op.cit.,* 2001, p. 146.

[69] Non-verbal communication takes place within or between two or more organisms by means of chemical, thermal, mechanical and electrical sign operations or semiosis. This type of modelling is shared by all living organisms. See T.A. Sebeok, *op.cit*., 2001, p. 105.

[70] A. Ponzio and S. Petrilli. *Thomas Sebeok and the Signs of Life*. Duxford: Icon Books, 2001, p. 49.

[71] *Ibid*., p. 49 and J. Deely, *op.cit.,* 2001a, p. 9.

[72] T. A. Sebeok, *op. cit.,* 2001, p. 149.

Von Uexküll's *Umwelt* theory has pointed to important semiosic commonalities between humans and animals and to the link between nature and culture in semiosis. As we saw, the human communication repertoire includes primary modelling – *Umwelt* – which is at the basis of more complex and sophisticated forms of communication that take place in the secondary and tertiary modelling levels. The concept of *Umwelt* brings forth the realisation that living organisms are not passive entities but are active agents that create their own world through the interpretation of signs. The interpretive acts in the animal world are extremely primitive compared to human acts of interpretation. As we saw, the latter are somewhat different in kind, since they involve linguistic competence. However, as Hoffmeyer argues, human life depends only marginally on processes of conscious interpretation.[73] In fact, the majority of human choices depend on the non-conscious interpretations of signs which Charles Sanders Peirce identified as abductive inference which is invariably based on non-verbal components. Abduction is for Peirce that act of inferential logic that is at the basis of formulating hypotheses and is creative since it introduces newness. Newness or creative discovery are not based on rational syllogistic logic, but nonetheless require a semiotic operation. This is hidden from conscious thinking and is grounded in natural logic or in what Peirce called iconic and indexical signs. The next section will discuss Peirce's logic and his doctrine of signs in more detail in order to show the relevance of Peirce's sign theory in biosemiotics' conceptualisation of biological sign relations – semiosis in different types of *Innenwelten* and *Umwelten*.

[73] J. Hoffmeyer, *op.cit.*, 2010, p. 372.

Semiotics and Logic

Regarded as the founding father of contemporary semiotics, Charles Sanders Peirce was among 'the most informed logicians of his time'[74] and one of the true polymaths of the nineteenth century. Deeply involved in the main currents of thought in mathematics, philosophy and logic, Peirce was convinced that the mission of logic ought to be the study of representation, argument and inference and that it should make classifications and establish norms within these areas. Logic, according to Peirce, should not be the foundation of mathematics, but a beneficiary of it since mathematics provides the formal structures and relational models needed in logic.[75] Peirce's early opinion was that logic, in the broadest sense, was to be equated with semiotic, or as he put it: 'logic is another name for *semiotic* (sémeiötiké), the formal doctrine of signs' (CP 2.227). In *Logic of Mathematics* (1896), Peirce elaborates his view and states that:

> Logic is the science of the necessary laws of thought, or still better, (thought always taking place by means of signs) it is general semeiotic treating not merely of truth, but also of the general conditions of signs being signs. (CP 1.444)

Two things are important to note in the quotes above: the first is that for Peirce every thought is a sign, and consequently every act of reasoning consists of the interpretation of signs. The second is that Peirce's sign logic is fundamentally a scientific one. This is because his philosophical system is firmly embedded in mathematics, and for Peirce mathematics also included the relations that are part of what we call today formal logic.[76] The focus of Peirce's logic, however, is not

[74] N. Houser. "Peirce, Phenomenology and Semiotics." *The Routledge Companion to Semiotics*. Ed. Paul Cobley. London: Routledge, 2010, pp. 89 -101, p. 89.
[75] *Ibid*., pp. 89-90.
[76] In his division of sciences, mathematics is the fundamental discipline which draws necessary conclusions from purely hypothetical constructions independently whether these constructions are real or not. From mathematics he turns to philosophy which is divided into three categories: phenomenology (which considers what comes before the mind when we reason), the normative sciences (ethics, aesthetics and logic) and metaphysics. Physics and psychology are considered as special sciences. See C. De Waal. *On Peirce*. Belmont, CA: Wadsworth, 2001.

restricted to the theory of right reasoning and truth, but includes also the study of a sign qua sign and the laws that signs follow in their inter-relating. This is why he divided semiotics into *speculative grammar, critical logic,* and *speculative rhetoric* or *methodeutic*, since each division serves as a way of distinguishing different semiotic functions.

Speculative grammar refers to the criteria something must meet to be a sign and studies the classification of signs.[77] *Critical logic* refers to what we usually understand as logic, or the theory of reasoning and modes of inference. It is related to representation, which studies the conditions under which a sign can refer to its object. *Speculative rhetoric* or *methodeutic* is, for Peirce, the analysis of communicational interactions and strategies, and their bearing on the evaluation of inferences.[78] Rhetoric is the study of the conditions under which signs can refer to their interpretants. It is important to stress that each of these branches or divisions rely on the preceding one for its result: for instance, the first division defines a sign as such, the second builds on that definition and focuses on the reference of signs to objects. The third builds on the preceding ones and focuses on the interpretation of signs or the effects of the sign on the interpreter. This division is related to Peirce's triadic theory of sign.

Peirce spent a considerable amount of time elaborating a definition of the sign. One of the early definitions, as seen already, is that a sign or *representamen* 'is something which stands to somebody for something in some respect or capacity' (CP 2.228). De Waal argues that this definition is somewhat vague and prone to Peirce's own critique of confusing logic with psychology.[79] Although it may be vague, this definition already

[77] Speculative is intended by Peirce as in Latin '*speculari'*, meaning theoretical.
[78] R. Burch. "Charles Sanders Peirce." *The Stanford Encyclopedia of Philosophy*. Winter 2014 Edition. Web. 5 Jun. 2014.
[79] Peirce critiqued the emotivist response to logic which holds that logic should be grounded in a descriptive account of actual mental processes, such as the association of ideas, which fall under the domain of psychology. See De Waal. *Peirce: A Guide for the Perplexed.* London: Bloomsbury, 2013, pp. 50-59.

introduces one of Peirce's distinctive ways of seeing signs, namely signs are not things, but triadic relations. Hoffmeyer's example of a child who breaks out in red spots is a fine explanation of how this triadicity works. He points out that as a consequence of the child having red spots, the mother will take the child to the doctor, who will establish that the child has measles. To the doctor the red spots are a sign of measles, yet to the mother these red spots mean that the child is unwell. So the red spots are not automatically a sign of measles to anyone, but just to 'someone'. The sign as a whole consists of the relation between the sign vehicle, or representamen (red spots), the object to which the sign vehicle refers (something wrong with the child, or the illness showing on the skin) and the interpretant (the process that goes on in the physician's or the mother's mind).[80] For a sign to be a sign, it has to have all three of these elements: a representamen or sign vehicle, an object and an interpretant. Anything can be a sign that is used as a sign. Nothing is a sign unless is used as a sign.

Another definition Peirce offers is that a sign:

> [...] is anything which is related to a Second thing, its Object, in respect to a Quality, in such a way as to bring as Third thing, its Interpretant, into relation to the same Object. (CP 1.92)

According to this definition, signs are always potential since there are always things whether material (a stone), or immaterial (a unicorn), or whether external (a sound) or internal (a psychological state) which are not necessarily signs, but which can also become or act like a sign for some living, embodied entity or cognitive organism (human or not). This sign-relation, as we saw, is triadic connecting the representamen to its object through the production of an interpretant. It is the triadic relation that Peirce called semiosis. These relations, it is important to recall here, are not material. Peirce believed that signs can give rise to new signs in an unlimited process of semiosis. In

[80] J. Hoffmeyer, *op.cit*, 1996, p. 19.

this process the representamen refers to an object, which upon engagement produces an interpretant, which in turn becomes a representamen referring to a new object that creates another interpretant in a new sign relation. Semiosis is potentially illimitable.

Semiotics versus Semiology

According to Peirce any act of semiosis cannot involve less than three entities. In fact, semiosis is 'the cooperation of three subjects, such as sign, its object, and its interpretant, this tri-relative influence not being in any way resolvable into actions between pairs'(EP 2.411). This statement goes right to the heart of the critique in contemporary semiotics of Ferdinand de Saussure's Semiology and his approach to signs.[81] Although Peirce and de Saussure were contemporaries, they developed their views independently of each other and with very different results. They seemed, however, to be in accord with one aspect of their sign model, namely that it is a relation.[82] Saussure's semiology is fundamentally anthropocentric, since it is concerned with human language alone and it takes into consideration the linguistic sign only. This sign is based on a dyadic relation which unites a concept or a signified (signifié) with an acoustic sound or signifier (signifiant)[83] and it is entirely arbitrary, which means that it is decided by conventional rules. The arbitrariness comes from the fact that Saussure observed that different cultures would use different acoustic images for the same concepts; therefore he thought that the arbitrariness must be a defining characteristic of the sign and consequently of semiosis. Another consequence of his insistence on the arbitrariness of signs is that Saussure excluded natural signs, the extra

[81] The Swiss linguist Ferdinand de Saussure along with Charles Peirce has been the key figure in the development of semiotics. De Saussure's *Course de linguistique generale* (1916) inspired the work in semiology in the later twentieth century and was taken up by semiologists (such as Roland Barthes) who confined their analysis to a limited range of cultural artefacts, which were analysed using linguistic principles. Peirce's work, on the other hand has inspired Thomas Sebeok and biosemiotics and he is regarded today as the founder of modern semiotics.
[82] J. Deely, *op.cit.,* 2010, p. 20.
[83] F. De Saussure. *Course of General Linguistics*. Transl. by Ed Baskin, Perry Meisel and Haun Saussy. New York: Columbia University Press, 2011.

linguistic signs such as the red spots on the child for instance, from his study. Although he did not deny the existence of natural signs, he felt that as a linguist he did not have to dwell on those.

From this brief account we can see that there are substantial differences between the two schools of semiotics. Contrary to Saussure who develops semiotics as a general theory of linguistic sign, Peirce's semiotics is a general theory of signs which focuses on sign and sign activity whether in humans, animals or any other living organism and encompasses all signs, linguistic and natural. A second difference is that by making semiotics part of linguistics, which Saussure considers part of social psychology, semiotics becomes a psychological theory. Peirce, on the contrary, grounds semiotics in logic and mathematics as well as semantics. A third difference is that Peirce defines a sign as a triadic relation between a representamen, object and interpretant, and shows how this relation or semiosis is potentially unlimited since it points toward a generation of new sign relations and consequently growth.[84] Saussure, on the other hand, defines the linguistic sign as a dyadic, arbitrary relation between a signifier and a signified, where semiosis is intrinsic in the arbitrariness of the sign.

These differences have fundamental consequences in understanding sign and sign relations. Peer Bundgaard and Frederik Stjernfelt highlight that the emphasis on language as the central example of a semiotic system leads to the structuralist 'linguistic imperialism', which is defined as the notion of understanding all other

[84] Deely points out that Peirce's understanding of signs stems from his extensive reading of the Latins, specifically of St. Augustine (A.D. 354-430) and John Poinsot's (1589-1644) semiotic theory. St Augustine was among the first to distinguish clearly between natural signs (symptoms, animal signals) and conventional signs (human-made) and to promote the view that there is an inbuilt interpretive component in the whole process of interpretation. John Poinsot, on the other hand, extended St. Augustine's work by asking what a sign must be in order to function as a sign. Deely argues that it was Poinsot who saw the triadic relation of signs first, yet it was only through the influence of Peirce that the emphasis shifted from a dyadic to a triadic understanding of sign. The move from a dyadic to a triadic understanding of sign is of fundamental importance in contemporary semiotics. See J. Deely, *op.cit*., 2001.

semiotic phenomena through a linguistic model.[85] Thomas Sebeok referred to this view as the '*pars pro toto fallacy*' since it mistakes the part (human signs and in particular verbal signs) for the whole (all possible signs, human and non- human).[86] Peirce's model, on the other hand, represents a clear departure from the standpoint advocated by cultural semiotics since it extends sign action across all living nature.

Semiosis and Mind

For Peirce, anything can be a sign as long as it has an interpreting living organism. In this respect, it is important to note that the third element in Peirce's sign relation is called an interpretant and not an interpreter. This is because Peirce wanted to avoid confusion in the way mind interprets things. For Peirce, mind is not narrowly identified with the concept of human mind, but is a process of semiosis, a pure relation. Another way to put this is to say that mind, thought and semiosis are basically synonyms.[87] This is why he proposed the radical thesis that where there is semiosis there is mind. According to Peirce, thinking and ideas belong to all living organisms and not only human minds, since ideas and concepts are themselves signs, or rather provenating relations of something other than themselves. For Peirce even the universe is, in some sense, minded since he states the universe 'is perfused with signs, if it is not composed exclusively of signs' (EP 2.394).

A similar idea was expressed by Gregory Bateson (1904-1980), another important precursor of biosemiotics.[88] Much like Peirce, Bateson believed that thinking and ideas

[85] P. Bundgaard and F. Stjernfelt. "Logic and Cognition." *The Routledge Companion to Semiotics*. Ed. Paul Cobley. London: Routledge, 2010, pp. 67-68.
[86] J. Deely. 'Semiotics "Today": The Twentieth-Century Founding and Twenty-First-Century Prospects.' Peter Pericles Trifonas. Ed. *International Handbook of Semiotics*. Dordrecht: Springer, 2015, p. 43.
[87] L. Santaella Braga. "Peirce's Broad Concept of Mind." *European Journal for Semiotic Studies*. Vol. 6. (1994): 399-411.
[88] J. Hoffmeyer. Ed. *A Legacy for Living Systems. Gregory Bateson as Precursor to Biosemiotics*. Berlin: Springer, 2008.

belong to all living organisms. For Bateson, working within a cybernetic theory, a mental process or ecology of mind is the activity involved in receiving and responding to information or signs and since all living organisms respond to signs, Bateson claims that 'the living world is a single intermeshing hierarchy of process relationships that are all mental in kind: comparable to thought.'[89] This is why Bateson states that 'mind is everywhere, in the entire living world'[90] and mind, just like semiosis for Peirce, is for Bateson not a thing, but a kind of pattern, the systemic relating via recursive sharing of information.[91]

By equating mind with semiosis/information, both Peirce and Bateson transcend Cartesian dualism and postulate a new kind of epistemology. This is one which emphasises that the process of knowing is based on the capacity of all living organisms 'to respond to differences, on the one hand, ... [and to interact] with the material world in which those differences somehow originate, on the other.'[92] In other words, knowing is a form of learning evidenced by the ability of living organisms or organic systems to respond to information[93] – here understood in Bateson's terms as 'a difference which makes a difference' and to change their patterns of behaviour

[89] G. Bateson. *Mind and Nature: A Necessary Unity*. Creskill: Hampton Press, 2002, p. 31.
[90] G. Bateson.Qquoted in N. G. Charlton. *Understanding Gregory Bateson: Mind, Beauty and the Sacred*. New York: New York State University, 2008, p. 140.
[91] The term information raises many interpretational questions specifically because of the underlying ambiguity of the term itself. In current debates in quantum information physics information can refer to the sign or signal features themselves, irrespective of any meaning or reference or it could refer to what these signs or signals convey in terms of meaning. Similarly to physics, the concept of information in biology presents a twofold interpretation; one which is based on mechanically causal information or biochemical processes and the other which is based on semiosis, interpretation and semiotic causality. In this dissertation, however, information is understood in biosemiotic terms as semiosis, as the active exchange of meaning among living organisms rather than a mechanical process. For a detailed discussion on the information debate see T. W. Deacon. "Shannon-Boltzmann-Darwin: Redefining information." Part 1. *Cognitive Semiotics.* Vol.1. (2007): 123-148; T. W. Deacon. "Shannon-Boltzmann-Darwin: Redefining information." Part 2. *Cognitive Semiotics.* Vol. 2 (2008): 167-194; D. Neubauer. "From a Mechanistic to a Natural Interpretation of the World: a Biosemiotic Perspective." *Semiotics. The Semiotics of Worldviews*. Karen Haworth, Jason Hogue, Leonard G. Sbrocchi. Eds. 2011, pp. 44-50.
[92] G. Bateson. *Angels Fear: An Investigation into the Nature and Meaning of the Sacred*. London: Rider, 1987, p. 20.
[93] S. Brier. "Bateson and Peirce on the Pattern that Connects the Sacred." *A Legacy for Living Systems. Gregory Bateson as Precursor to Biosemiotics*. Ed. Jesper Hoffmeyer. Berlin: Springer, 2008, pp. 229-255, p. 232.

accordingly.[94] The interaction among living systems, Gregory Mengel points out, 'brings forth patterns of relationship that then establish the conditions for novel forms of interaction, and so forth.'[95] In Peircean terms these patterns are in fact semiosis, and similarly to semiosis which grows and evolves, these patterns also grow and develop or evolve forming what Hoffmeyer terms semiotic scaffolding for new forms both physical and cultural. Following Peirce's and Bateson's insight, evolution can be defined as an all-embracing, learning and creative process, since learning is evidenced by adaptive evolutionary change, and creativity is demonstrated when new forms, patterns or types of activity emerge. This is why Bateson proposed that 'evolution is a mental process'[96] and that the particular mental process known as human mind is best understood as a subsystem of these larger processes.

As we have seen for both Peirce and Bateson, mind and semiosis or mind and patterns that connect nature and culture, are synonyms, yet the capacity of living organisms or systems to recognize and interpret signs which form their *Umwelt* is very different. Based on Peirce's classification of signs according to the way they relate to their object, biosemiotics tends to distinguish three types of *Umwelt*: a vegetative, an animal and a cultural.[97] Before explaining this division, a description of Peirce's classification is needed. In *A Sketch of Logical Critics* (1909) Peirce makes a distinction between three signs: icon, index and symbol[98] and explains that:

> [...] the most frequently useful division of signs is by trichotomy into firstly Likenesses, or, as I prefer to say, *Icons*, which serve to represent

[94] Bateson presented his definition of information as 'difference that makes a difference' for the first time in "Form, Substance and Difference" in 1970. In this article he observed that complex dynamic systems involve a process of feedback through which they are self-corrective. What this means is that the structure of living systems is altered by information so that the subsequent information will produce change responses which are triggered from within the system. According to Bateson, cybernetic feedback systems are ubiquitous in nature and they exist at all levels of organisation. See G. Bateson. *Steps to an Ecology of Mind*. Chicago: Chicago University Press, 1972.
[95] G. Mengel, "Re-Enchanting Evolution." Ed. Jesper Hoffmeyer, *op.cit.*, 2008, pp. 213-227, p.225.
[96] G. Bateson, *op. cit.*, 1987, p. 8.
[97] K. Kull. "Umwelt and Modelling." Ed. P. Cobley, *op.cit.*, 2010, pp. 49-53.
[98] In addition to this triad, Peirce also distinguished a triad of signs reflecting the nature of the quality of the sign in itself and a triad of signs based on the nature of their relations to the interpretant.

> their objects only in so far as they resemble them in themselves; secondly, *Indices***,** which represent their objects independently of any resemblance to them, only by virtue of real connections with them, and thirdly *Symbols***,** which represent their objects, independently alike of any resemblance or any real connection, because dispositions or factitious habits of their interpreters insure their being so understood. (EP2. 460-461)

In Peirce's view, icons refer to their objects by means of similarity (a diagram, a picture, image, metaphor etc); indices refer to their objects by a direct connection (e.g. smoke as the sign of fire); whereas symbols refer to their objects by means of habit or convention (language, road signs etc). In this trichotomy, icons represent the most basic level of meaning, whereas indices and symbols appear through more logically complex interpretants. Applied to the biosemiotic concept of *Umwelt,* Kalevi Kull states that the most basic typology of *Umwelt* is the vegetative since it is based on iconic signs; the animal *Umwelt* is both iconic and indexical, whereas the cultural is iconic, indexical and symbolic.[99] What this division shows is that where iconic and indexical relations occur throughout nature (plants, animals, fungi, human beings), symbolic relations are used and produced by humans alone. In *The Symbolic Species*, Terrence Deacon argues that there is an evolutionary component to the way iconic, indexical and symbolic signs are related. In fact, when reflecting upon the human ability to think and communicate via symbolic reference, he highlights that this capacity does not appear out of the blue, but that it develops from the capacity for iconic reference, which gives rise to the capacity for indexical relation which becomes the basis for the symbolic one.[100]

As can be seen from this discussion, Peirce's semiotics provides an important theoretical basis for the biosemiotic postulation of the continuity between nature and culture through semiosis. It also points to the understanding that communication and

[99] K. Kull, *op.cit.*, 2010, pp. 40-53.
[100] T. Deacon. *The Symbolic Species: The Co-Evolution of Language and the Brain*. New York: Norton, 1997.

sign processes are not, as Claus Emmeche observes, 'solely bound to human society, but are also bound to the several levels of organization beneath conscious human semiosis.'[101] Human sign processes are emergent from natural ones since human beings not only share the iconic and indexical sign relations with the natural world, but their symbolic sign relations emerge from those. Wendy Wheeler suggests that the implication of this view is the understanding that 'human beings as "semiotic animals" are evolutionarily grounded in forms and layers of semiosis which are natural.'[102] Forms of natural semiosis are not separated from the cultural ones, on the contrary, they precede and exist alongside them and form the semiotic scaffolding on which more complex meaning is built. According to Peirce and Bateson, one of the most important forms of semiosis in both nature and culture is that relating to creative adaptation in the face of chance. This type of creative process is what Peirce called the logic of abduction and Bateson, following Peirce, called abduction or syllogism by metaphor. The next section is going to discuss Peirce's concept and show its links to both Gregory Bateson and what I term the biosemiotic imagination in John Henry Newman, George Eliot and Lady Welby.

Abduction as natural metaphor or biosemiotic imagination: the pattern that connects nature and culture

As seen in the previous discussion, Peirce held that every thought is a sign and as such connects three elements: a representamen, an object and an interpretant. Thought, in Peirce's system, is thus understood as semiosis, or as a dynamic and continuous process of sign action, in which each sign gives rise to an interpretant which in turn gives rise to its own interpretant in an endless chain. Peirce also asserted that logic,

[101] C. Emmeche. "Modeling Life: a Note on the Semiotics of Emergence and Computation in Artificial and Natural Living Systems." *Biosemiotics. The Semiotic Web*. Eds. T. A. Sebeok and Jean Umiker-Sebeok. Berlin: Mouton De Gruyter, 1991, pp. 77-99, p.77.

[102] W. Wheeler. "Postscript on Biosemiotics: Reading beyond Words - and Ecocriticism." Spec. issue of *Earthographies: Ecocriticism and Culture*. Guest eds. W. Wheeler and H. Dunkerley. *New Formations* Vol. 64 Spring (2008): 137-154.

seen as the ability to reason, is not a divinely inspired faculty equally distributed to all men; rather, it is a natural accomplishment grounded in our problem-solving activity.[103] This problem-solving activity is not something that has been given, but is the result of men's evolution since it is based on the countless problem-solving activities that previous generations engaged in. Reason, rather than being eternal, develops over time.

Peirce's evolutionary thinking is also seen in his belief that the ability to reason is the product of our interaction with or adaptation to the universe. For Peirce, human reason is a reflection of the order of the universe and not a special instantiation of Divine power. In other words, Peirce believes that the universe is itself reasonable and our ability to reason is a reflection of that. This belief, as we saw, leads to Peirce's postulation of the principle of continuity he called *synechism*, where mind and the natural environment are seen as a continuous unity rather than separated entities. Peirce's argument, as Winfried Nöth states, is that our knowledge of the natural environment comes from our co-evolution with nature[104] and this is why 'human intellect is particularly adapted to the comprehension of laws and facts of nature' (CP 2.750).

This naturalist account also influenced Peirce's view of the relationship between reason and instinct. Instinct, like reason, is for Peirce a product of the individual's interaction with the environment and a reflection of the 'reasonableness' of the universe.[105] What distinguishes Peirce from his contemporaries and from the traditional classical view that reason is superior to instinct, is his belief that humans are driven primarily by instinct. Instinct is for Peirce an inferential process which he

[103] C. De Waal, *op.cit.* 2013, p. 54.
[104] W. Nöth, *op.cit*., 2001, p.78.
[105] C. De Waal, *op.cit.*, 2013, pp. 54-55.

terms abduction. He defines it as 'the spontaneous conjectures of instinctive reason' (CP 6.475) and given the attunement to nature through centuries of evolutionary development, this faculty endows human beings with the natural inclination of 'guessing correctly' when forming hypotheses. In this respect Peirce states that scientific discovery rests on the inferential logic of abduction, which is the only one that introduces newness, since induction merely confirms that something is so, whereas deduction draws out further logical implications.[106] He explains this view in his 1903 *Lecture on Pragmatism* thus:

> Abduction is the process of forming an explanatory hypothesis. It is the only logical operation which introduces any new idea; for induction does nothing but determine a value, and deduction merely evolves the necessary consequences of a pure hypothesis. Deduction proves that something *must be*; Induction shows that something *actually is* operative; Abduction merely suggests that something *may be*. […] Every single item of scientific theory which stands established today has been due to abduction. (CP 5. 172)

Although abduction, deduction and induction may appear as three distinct methods of thinking, it would be a mistake to assume so. Gerard Deladalle points out that these three inferential processes are elaborated on the triadicity of signs processes, and are de facto linked, since 'an unverifiable abduction suggests a general idea from which deduction draws various consequences which are put to the test by induction.'[107] These inferential processes are semiotic processes in which abduction is based on iconic sign relations, deduction on indexical sign relations and induction on symbolic sign relations. In Peirce's words:

> Abduction, or the suggestion of an explanatory theory, is inference through an icon [...] Induction, or trying how things will act, is inference through

[106] W. Wheeler. "Gregory Bateson and Biosemiotics: Transcendence and Animism in the 21st Century." Spec. Issue of Ecophenomenology and Practices of the Sacred. Guest Eds. P. Curry and W. Wheeler. *Green Letters*. Vol. 13 (2010): 35-54.
[107] G. Deladalle. *Charles S. Peirce Philosophy of Signs. Essays in Comparative Semiotics*. Bloomington: Indiana University Press, 2000, p. 22.

> an Index, [...] Deduction, or recognition of the relations of general ideas, is inference through a Symbol [...]. (PPM 276-277)[108]

The implication of grounding abduction in the iconicity of signs is that it shows how knowing is based on semiotic processes which are often hidden from conscious reasoning and are grounded in natural forms of logic. These forms of logic are not based on syllogism in Barbara as in the classical form of deductive reasoning as in 'Men are mortal, Socrates is a man, Socrates is mortal', but are based on what Gregory Bateson termed 'syllogism in grass' or metaphorical syllogism from the observation of analogic and metaphorical reasoning in the form of 'Grass die, men die, men are grass.'[109] According to Bateson, the syllogism in grass is 'the dominant form or mode of communicating interconnections of ideas (a difference that makes a difference is an idea) in the pre-verbal world,'[110] since syllogism in Barbara presupposes the identification of classes and subject-predicates which are only available in language. This, however, does not imply that all verbal communication is non-metaphoric. On the contrary, metaphors run through culture and are a constituent part of human communications. In other words, Bateson sees that metaphor, which is based on iconic sign relation or the recognition of the similarity and difference, is the logic upon which the biological world has been built and is the pattern that connects nature and culture.

Where induction and deduction encourage linear hypothesis building and testing, abduction, understood as syllogism in grass, is a non-linear or recursive semiotic process whereby signs or information (understood in Batesonian terms as difference that makes a difference) are interpreted by living systems (cells, organism, cultures) by way of recognising similarity (iconic-metaphor) and differences which bring forth new semiotic associations (indexical signs or metonymy which are

[108] C. S. Peirce. *Pragmatism as a Principle and Method of Right Thinking. The 1903 Harvard Lectures on Pragmatism.* Ed. Patricia Ann Turrisi. Albany: State University of New York Press, 1997.
[109] G. Bateson, *op.cit*., p. 25.
[110] *Ibid.*, p. 26.

associations of signs that are habitually found together). These associations or meanings are then fed into the environment which, in turn, feeds them back into the system's biological response which will change according to the information received and will feed back into the environment in an endless process. This recursive abductive process in which natural and cultural scaffolding are interlinked and connected is, from a biosemiotic perspective, at the basis of evolution (or learning in human culture) because the development of meaning through metaphors (the recognition of patterns of similarity and difference of forms) changes in response to environmental pressure. As Wheeler suggests, 'allowing the possibility of new metaphors emergent from the evolution of hierarchically nested meaning provides for the beginning of new abductions.'[111]

Peirce and Bateson both recognised that such abductions are at the basis of creative evolution in nature and culture and they both held that induction and deduction, although important tools for human reasoning, cannot give any account of creativity. Creativity, as Brewster Ghiselin notes is 'a process of change and development'[112] and is a movement beyond the established. Creative acts in culture, in art or science, stem, Ghiselin states, from 'a hunch or other preverbal intimation.'[113] This hunch is what Peirce and Bateson identified as abductive logic. From a biosemiotic perspective, abduction becomes the means by which human beings make links between their non-conscious or tacit knowledge based on the interpretation of iconic, indexical and symbolic signs, and the possibility of new meanings. As we saw, these non-conscious processes are based on natural forms of reasoning. In the human mental sphere, Bateson sees that 'metaphor, dream, parable, allegory, the whole of art,

[111] W. Wheeler. "Play." *A More Developed Sign: Interpreting the Work of Jesper Hoffmeyer*. Eds. Donald Favareau, Paul Cobley and Kalevi Kull. Tartu: Tartu University Press, 2012, p. 204.
[112] B. Ghiselin. *The Creative Process. A Symposium*. Los Angeles: University of California Press, 1954, p. 2.
[113] *Ibid.,* p. 5.

the whole of science, the whole of religion, the whole of poetry, totemism [...] and the organization of facts in comparative anatomy'[114] are all instances of abduction since they all stem from creative processes nested in the recognition or 'identification of similarity of elements where meaning resides in the patterned whole.'[115]

Semiotic processes in nature are also creative precisely because they depend on the organism's ability to interpret or recognise similarities and differences of pattern (in iconic signs or metaphors) which will bring new meaning, and therefore a change and a move beyond the established. Abduction thus understood not only becomes a bridge between living nature and human culture, but also becomes a model of knowing which is grounded in biological, non-conscious semiotic processes.

Biosemiotic Imagination: Approaching John Henry Newman, George Eliot and Lady Victoria Welby

Peirce's abductive logic is a substantial part of what in this thesis I term biosemiotic imagination. It provides the theoretical underpinning in analysing what Newman, Eliot and Welby identified respectively as Illative Sense, Aesthetic Imagination and Mother-Sense. As I argue in the chapters that follow, Newman, Eliot and Welby all sought to find, in their distinctive ways, a common grammar between natural and human practices. They did so through their postulation of what in the light of subsequent development we can now think of as proto-biosemiotic imagination. All three tried to propose a holistic way of thinking about the world which would encompass, rather than separate, various disciplines (evolutionary theory and language theory being the two main ones) they drew from. In this respect their efforts were very close to those that, in the twentieth century, guided Thomas A. Sebeok in his endeavour to establish biosemiotics as an interdisciplinary field (by merging semiotics

[114] G. Bateson, *op.cit.*, p. 137.
[115] W. Wheeler, *op.cit.*, 2014, [online].

and biology) where living nature and culture are not seen as separate, but, on the contrary, culture is seen as being both emergent in nature and repeating, at greater levels of complexity and abstraction, antecedent natural patterns.

Of course, the cultural climate in which biosemiotics arose in the second half of the twentieth century was different to the cultural climate of the Victorian period. However, they share two important and interlinked similarities which cannot be neglected; the first is the way in which nineteenth-century biologists and linguists (and similarly the biologists and semioticians in the second half of the twentieth century) were deeply connected in their attitudes toward the understanding and study of living nature and the need for an interdisciplinary approach to study it. The second, and closely related to the first similarity is that this common attitude toward life and the scientific study of all that lives, that we can see in von Uexküll and in Peirce, as well as Eliot's Welby's and Newman's epistemologies, was inspired by *Naturphilosophie*'s view of nature as an organic, creative force where its complexities are particularly visible to the scientist/poet.

Eliot's indebtedness to *Naturphilosophie,* for instance, is seen specifically in her belief in the correspondence she finds between the creativity in nature and culture through aesthetic practice or imagination. Based on Schelling's demonstration that art and science depend on the same activity, which is both conscious and non-conscious Eliot comes to argue that creative reasoning in art and science is based on aesthetic imagination. Emphasising metaphor, the aesthetic imagination or biosemiotic imagination is a form of inferential logic which is akin to Peirce's abduction and which becomes a form of world disclosure or modelling.[116] This is most clearly at work in *Middlemarch* where the interlinked web of metaphors - the perception of analogies,

[116] A. Bowie, *op.cit.*, 1993.

connections and affinities between separate objects - are not only set as examples of figurative speech, but rather, they are a source of that type of creativity that begins with the discovery of similitude in difference and goes on to explore the nature of semiotic relations that Peirce identified as semiosis. Metaphors, as semiotic relations, are at the basis of *Middlemarch*'s characters interpretation and understanding of their own reality or *Umwelt* which is nested through recursive feedback loops into a wider web of semiotic relations with other characters. Each character is thus seen as a sign, or rather, as a sign relation or interpretant of the Peircean triad in an open evolutionary process of semiosis where sign relations become the connective links not only between characters, but also between characters, the narrator and reader.

Where Eliot rightly sees abduction or biosemiotics imagination as a source of creativity in art and science,[117] John Henry Newman sees abduction or the Illative Sense as a common source of inspiration in his quest to show that science and religion are not two entirely separate endeavours, but that they both rely on the same human processes of inquiry or investigation. For Newman all significant believing, be it in science or religion, is deeply anchored in and mediated through an implicit or non-conscious inferential process which he calls in the *Essay in Aid of a Grammar of Assent* (1870) the Illative Sense. As it will become clear in Chapter Three, Newman's Illative Sense or natural inference, is similar to Bateson's natural metaphor and Peirce's abduction. For all of them the belief in God or the intimation of the sacred are represented through natural forms of logic that are for Bateson and Peirce also found in forms of natural abduction in nature. Newman, following the *Naturphilosophen* tradition, compared natural logic to true poetry and held that it was a gift to all minds.

[117] The philosopher of science Russell Norwood Hanson used Peircean abduction to show that abduction is an important aspect of scientific discovery. Thomas Khun was influenced by Hanson. See R. N. Hanson. *Patterns of Discovery: An Inquiry in the Conceptual Foundations of Science*. Cambridge: Cambridge University Press, 1958; T. Khun. *The Structure of Scientific Revolutions*. Chicago: University of Chicago Press, 1962.

In his discussion on Christian Dogma he stresses that the first principle through which one perceives God is that of the instinct of the mind which he compares to the instinct of other living organisms, thus implying that there is a continuity between the natural and cultural realm.

Lady Welby, much like Newman before her, also realised the need to consider religious questions in relation to other spheres of reflection and research in science and philosophy. Echoing Peirce, with whom she corresponded between 1903 and 1911, she viewed religion as a system of signs and values which interact with other systems. She introduced her philosophy of language, that is, Significs as a methodology which aimed to bridge, as Petrilli describes, 'the various sciences, theoretical trends, and practices in human experience, be they scientific or pertaining to everyday's life.'[118] Central to Welby's thought system and her theory of language is the original concept of Mother-Sense which she defined as the generating source of meaning and language as well as of all signifying systems at large. In contrast to intellect, which cannot create any newness, Mother-sense is for Welby that creative or abductive type of inference which, like natural metaphor, allows for the association of things which would seem distant from each other and which, instead, share homological similarities.[119] In her writings, Welby maintained the importance of the practice of translation, her specific contribution to the study of language, as a cognitive–interpretive method grounded in figurative expressions of language (metaphor) which is at the basis of understanding and interpretation, discovery and new acquisition of knowledge. Significs represents Welby's aim to develop a more comprehensive view of the various dimensions and

[118] S. Petrilli. *Signifying and Understanding: Reading the work of Lady Victoria Welby*. Ed. Paul Cobley. Berlin: Mouton De Gruyter, 2009, p. 102.

[119] Peirce and Welby were familiar with each other's work, yet they developed their sign theory completely independently from each other. See G. Deladalle. "Welby and Peirce: Meaning and Signification." *Foundations of Semiotics, Essay on Significs*. Ed. H.W. Schmitz. Philadelphia: John Benjamins Publication, 1990, pp. 133-146.

levels of interconnectedness in life as she was aware, just like Peirce, that the universe is permeated with meaning, or as Peirce's would say that 'the universe is perfused with signs'(EP2 394).

Conclusion

This chapter's main purpose was to introduce the philosophical background that underpins biosemiotics and to show how Peirce's philosophy of signs and Jakob von Uexküll's *Umweltehre* represent two fundamental concepts which led to the biosemiotic insight that culture and nature are not separated, but rather that culture is evolutionarily emergent in nature. Uexküll's *Umwelt* as well as Peirce's semiotics introduces a way to see the natural world as being shaped by processes and organisation which are based on the living organism's ability to interpret and act upon the sign relations discovered in the environment. The implications of Peirce's theory are far-reaching since, on the one hand, it suggests that mind, thinking and reasoning cannot be narrowly identified with human cognition; instead, mind, thinking and reasoning are a process of semiosis and therefore a capacity of all living organisms. On the other hand, it points to the insight that the bulk of knowing is non-conscious knowledge shared by all organisms or living systems, as Bateson would say, throughout the living world. These ideas lead to the biosemiotic view that creative knowing in culture is not based on linear logic, but emerges from natural metaphor or abduction which is a recursive process based on the recognition of similarities and differences of patterns. Any form of creativity in art, science and religion is grounded in abductive inferences and it represents a link between nature and culture. In the nineteenth century, Newman, Eliot and Welby all envisaged a unity of life, or a holistic understanding of life based on a different epistemology which I have preliminarily shown is grounded in a mode of non-conscious inference, akin to what Peirce called the logic of abduction, in which they believed the sacred, aesthetic, scientific and practical aspects of life are deeply

ingrained and intermixed. In order to understand how they came to advocate this position a contextual background of the cultural and intellectual climate that shaped Newman's, Eliot's and Welby's views and work is needed. This is the aim of the next chapter.

CHAPTER 2

Languages and Species: Signs and Evolution in Victorian Frames of Mind[1]

> The formation of different languages and distinct species are curiously parallel. [...] We find in distinct languages striking homologies due to community of descent, and analogies due to a similar process of formation. (Charles Darwin, 1871)[2]

The aim of the present chapter is to offer a contextual background to the cultural and intellectual milieu that informed the work and ideas of John Henry Newman, George Eliot and Lady Victoria Welby in relation to their understanding of language as an organic medium and their postulation of imagination as an intuitive inferential process, which they saw as common source of inspiration in religion, art and science. These concepts, and in particular the connection they saw between language and nature as well as mind and nature, emerged as I will argue in this chapter, from a shared aesthetic ethos that was rooted in German Romantic biology or *Naturphilosophie* of Immanuel Kant (1724-1804), Johan Wolfgang von Goethe (1749-1832) and Friedrich Wilhelm Joseph Schelling (1775-1854).

Naturphilosophen commonly thought individual organisms and nature as a whole to be teleologically ordered. In his *Critique of Judgement*, Kant observed, for instance, that 'an organised product of nature is that in which everything is an end and on the other hand also a means. Nothing in it is in vain, pointless or to be attributed to

[1] I have here borrowed the term 'Victorian Frame of Mind' from Houghton's work: W. E. Houghton. *The Victorian Frame of Mind, 1830 –1870*. London: Yale University Press, 1957.
[2] C. Darwin. *The Descent of Man, and Selection in Relation to Sex*. London: John Murray, 1871, pp. 89-90.

a blind mechanism of nature.'[3] Although biological organisms may, as the rest of nature, obey particular laws, organisms, according to Kant, cannot be solely explained in terms of the blind interaction of these laws. This is because Kant noted that organisms are self-organising wholes where the parts are the cause and effect, or 'end and means to an end', of one another rather than a mere assemblage of relatively independent parts.[4]

Kant's view of living nature as self-organising had a profound impact on nineteenth-century thinkers such as Charles Darwin and George Henry Lewes.[5] For both, empirical reductionism - the mode of analysis which presupposes the dissection of a biological entity or system into its constituent parts in order better to understand it- seemed to miss the very nature of organisms.[6] Lewes in fact states that:

> Theoretically taking the organism to pieces to understand its separate parts, we fall into the error of supposing that an organism is a mere assemblage of organs, like a machine which is put together by juxtaposition of different parts. But this is radically to misunderstand its essential nature and the universal solidarity of its parts. The organism is not made, not put together, but evolved.[7]

This particular view of nature was endorsed, as already mentioned in the introduction to this thesis, by other Victorian intellectuals, such as James Ward, George J. Romanes, George Eliot and Lady Welby, and it opposed the mainstream mechanistic understanding of nature as advocated by T. H. Huxley, Herbert Spencer, William Thompson or James Clerk Maxwell. The basic postulate of mechanical philosophies was that nature operates according to mechanical principles, the regularity of which

[3] I. Kant. *Critique of Judgement*. Quoted in A. Bowie. *Introduction to German Philosophy*: *From Kant to Habermas*. Cambridge: Polity Press, 2003, p. 36.
[4] *Ibid.*, p. 37.
[5] As already pointed out, Darwin never explicitly referred to natural selection as operating in a mechanical fashion. Instead, nature, to which selection gave rise, was perceived in its parts and whole, as a teleologically self-organising structure. See R. J. Richards, *op. cit.*, 2002, pp. 533-545.This point was also argued by von Uexküll who held that natural selection cannot be viewed as the only exhaustive explanation of end-directed activity in the natural world.
[6] See C. R. Woese *op.cit*., 2004, , p. 174.
[7] G. H. Lewes. Quoted in G. Levine. *The Realistic Imagination: English Fiction from Frankenstein to Lady Chatterley*. Chicago: Chicago University Press, 1981, p. 19.

can be expressed in the form of natural laws, formulated in mathematical terms.[8] Nature, in all its beauty and complexity, it was believed, could be explained away using aspects of mechanical philosophy. Yet, as Kate Rigby notes, the discovery of self-production and evolution, which culminated in Darwin's *Origins of Species* (1859), revealed that nature was not linear. Rather, nature moved from simple, less organised earlier states to more complex and developed states. This is a particularly important aspect in Darwin's theory since it points to the more advanced biosemiotic view of the evolutionary complexity of organisms and of the emergence of such complexity in terms of semiotic scaffolding as advocated by Jesper Hoffmeyer.

The move from a linear to an evolutionary (emergent) understanding of nature implied that holistic problems in biological discourses, such as evolution, genesis and the nature of biological form (organisation) could not be adequately studied through the application of empirical reductionism. This is because 'the parts [didn't] give a real sense of the whole.'[9] Romantic biologists, in line with Kant's analysis of the similarity between teleological and aesthetic judgement and Schelling's theory of creative agency of metaphor, came to argue that approaches of art and literature, and more specifically imagination, could reveal patterns and meaning in nature that could not be uncovered through rationalistic philosophy and science alone. By recognizing the fundamental role that imagination or aesthetic intuition plays in both philosophical illumination and scientific discovery, Schelling, as Kate Rigby notes, moved towards a specifically biosemiotics insight inasmuch as he saw these processes involving what Peirce called abduction.[10] Schelling theory can be seen as a precursor to what later

[8] C. R. Woese, *op.cit.*, 2004.
[9] *Ibid.*, p. 174.
[10] K. Rigby. "Art, Nature, and the Poetry of Plants in the Goethezeit: A Biosemioitc Perspective." *Goethe Yearbook*. Vol. 22. (2015): 23-44; p. 33.

Newman, Eliot and Welby came to identify as illative sense, aesthetic imagination and Mother-Sense respectively.

A further, significant consideration which can be drawn from the shift from a liner to an evolutionary understanding of nature is that nature became an historical entity and as such was no longer the product of a Creator's design, who would produce a world which was stable, coherent and perfect from the start.[11] For *Naturphilosophen*, Richards argues, 'history was understood as being inherent or inscribed in nature since they held that individual organisms recapitulated the history of their species as they went through their own ontogenetic development.'[12] The inherent historicity of nature also had a direct effect on the way language was understood. *Naturphilosophen* held that language is a living organism, just like plants and animals, and as such experiences birth and death, as well as continual change, including growth. In nineteenth century, for instance, the German linguist August Schleicher (1821-1868), Charles Darwin's contemporary and friend, held that language was part of the evolution of life and therefore subjected to the same laws of change and development as nature.[13] A similar view had already been expressed in 1827 by Franz Bopp who stated that 'languages must be regarded as organic bodies, formed in accordance with definite laws; bearing within themselves an internal principle of life, they develop and gradually die out.'[14]

What these examples indicate is that German linguists took an evolutionary approach to their subject matter long before Darwinian evolutionary thinking had become fashionable. Importantly, comparative investigations, as Prysca Augustin

[11] *Ibid*., pp. 10-11.
[12] *Ibid.*, p.11.
[13] See P. Augustyn, "Language from a Biosemiotic Perspective." *Biosemiotic Perspectives in Linguistics*. Eds. Ekaterina Velmezova; Stephen Cowley; Kalevi Kull. Cahiers de l'Institut Linguistique et des Science du Langage. Lausanne: Institut de Linguistique et des Sciences du Langage, 2015, pp.169-190; J. Richardson. *A Natural History of Pragmatism*. Cambridge: Cambridge University Press. 2007; G. Beer. *Open Fields: Science in Cultural Encounter*. Oxford: Oxford University Press, 1996.
[14] F. Bopp. Quoted in I. Rauch. *Semiotic Insights: The Data do the Talking*. Toronto, Buffalo, London: University of Toronto Press, 1999, p. 34.

argues, were well accepted as a consonant methodology before the nineteenth century and therefore fully available as a model of evolutionary process at the time when Darwin was elaborating his evolutionary theory.[15] In this respect Stephen G. Alter observes that it was 'the historical quality that linked philology so readily to metaphors of organic growth' which ultimately led to 'the comparison with biological evolution.'[16] In fact the slow transformation of languages provided an apt analogy for Darwin's transmutation of species.

Evolutionary theory and language theory played an important role in the Victorian way of thinking. This is because they offered a concept map or model of thought which emphasised kinship and relatedness based on their common understanding of nature as a living organic whole. In this way they both questioned assumed certainties in revealed religion and mechanistic science and consequently challenged the understanding of man's origin and place in nature. It must be pointed out here, however, that the relationship between science and nineteenth-century religion was not, as commonly believed, 'characterised by crises of faith and contentious exchanges between bishops and scientists'[17] as the proverbial debate on evolution between Bishop Wilberforce and Thomas H. Huxley in 1860 would suggest. On the contrary, in early Victorian times as Richard England and Jude V. Nixon observe, 'science and religion shared assumptions about the coherence of a world which included God and Nature.'[18] Natural theology rather than being limited to the argument from design as seen in William Paley's *Natural Theology* (1802) or Robert Chamber's *Vestiges of the Natural History of Creation* (1844), was interested in

[15] P. Augustyn, *op.cit.*, 2015, pp. 170-171.
[16] S. G. Alter. *Darwinism and the Linguistic Image. Language, Race and Natural Theology in the Nineteenth Century*. Baltimore and London: The John Hopkins University Press, 1999, p. 3.
[17] R. England and J. V. Nixon. Eds. Science, Religion and Natural theology. *Victorian Science and Literature*. Vol. 3. London: Pickering and Chatto, 2011, p. ix.
[18] *Ibid.*, p. x.

finding the correspondence between the creator's and man's mind and contributed to a way of thinking that shaped both scientific and religious narratives. It was only with the later division of the intellectual community into specialised fields, and after Darwin's evolutionary theory more specifically, that this common context was gradually dismantled or rather eased out.[19] This was because, as previously mentioned in this chapter, evolutionary theory with its naturalist account of the origins and its emphasis on common descent and natural selection, challenged the idea of nature bearing everywhere the marks of God's design.

As I will show in this chapter, contrary to now yielding beliefs that Darwin's concept of nature and specifically natural selection was conceived in a mechanistic way, Darwin endorsed a view of nature and natural selection, that is much closer to the one proposed by the *Naturphilosophen* and Kant in particular. The emphasis in this chapter, therefore, will be to look more closely at the conceptual heritage derived from German Romantic thought and to show how the metaphorical transfers between comparative philology and evolutionary theory informed the cultural debates surrounding the origin of man and human speech and interpretation, on the one hand, and the link between mind and nature on the other. Following a brief outline of the contribution that German Romantic thought gave to the rise of comparative philology in Britain, and the debates these generated in relation to the truthfulness of a literal interpretation of Genesis, I will focus on the impact *Naturphilosophie* and comparative philology had on Darwin's elaboration of natural selection and his view of language. Moving from a discussion on the link Darwin finds between the mental capacities of animals and human beings, I will conclude by looking at the second important influence of *Naturphilosophie*, that of the reconceptualization of the link between mind and nature. The latter gave rise to the idea of imagination as a non-conscious

[19] *Ibid*., p. x.

inferential tool which paved the way to Newman's, Eliot's and Welby's conceptualisation of the biosemiotics imagination.

The German Legacy: Natural language and the linguistic image

The study of language has traditionally been seen as the central question defining the nature of man and as such linked to questions concerning intelligence, reason, thought, and progress of knowledge. In its eighteenth-century formulation, as Hans Aarsleff notes, the origin of language and speech was the key to the history of thought and mankind.[20] John Locke, for instance, had noted that any inquiry into the human race would necessarily involve an inquiry into the origin of language. John Locke (1632-1704) and the French philosopher, epistemologist and psychologist Étienne Bonnot de Condillac (1715-1780).

Locke's *Essay Concerning Human Understanding* (1690) is a philosophical landmark devoted not only to the understanding of the nature and limits of human knowledge in terms of concepts and ideas, but also to the discussion of the role language plays in human cognition. Locke's classification of science into three domains, language falls under the third one which he calls 'σημειωτικ', or *the Doctrine of Signs* and which he equates with logic. According to Locke it is the business of semiotics, which, like Peirce, he calls the doctrine of signs and, like Peirce, equates with logic. Condillac, echoing Locke, based his explanation of the operation of mind and the origin of human knowledge on a theory of signs. Condillac's *Essai* is divided into two parts; the first discussed the operations of mind and postulated the importance

[20] H. Aarsleff. "An Outline of Language-Origins Theory since the Renaissance." *Origins and Evolution of Language and Speech. Ed*. Stevan R. Harnard, Horst D.Steklis, and Jane Lancaster. *Annals of the New York Academy of Sciences*. Vol. 280 (1976): 4-17. Also reprinted in H. Aarsleff. *From Locke to Saussure: Essays on the Study of Language and Intellectual History*. London: Athlone, 1982, pp. 278-292.

of an active and deliberate use of signs which he divided into three categories: the accidental, natural and instituted.

> I distinguish three sorts of signs: 1. accidental signs, or the objects which particular circumstances have connected with some of our ideas, so as to render the one proper to revive the other. 2. Natural signs or the cries which nature has established to express the passions of joy, of fear or of grief. 3. Instituted signs or those we have chosen ourselves, and bear only an arbitrary relation to our ideas.[21]

As Aarslef explains, all knowledge, according to Condillac, is based on these three internalised signs and its progress depends on the sign's capability to open the way to reflection which is an expression of reason. Progress in knowledge and language is possible only from this. However, to be able to use the third type of signs, the instituted or conventional ones, human beings need to have control over the first two signs. In order to answer how this is possible, Condillac turned to the study of the origin of language which formed the second part of his essay. He argued that language developed from animal cries or what he called natural signs which human beings used to communicate in situations of danger and fear. It was the repetition of the same gestures and cries over a long period of time that enabled man to recall specific signs at will rather than use them instinctively as previously done. In this way, Condillac believed that mind and the use of signs would interact to the mutual advantage of both.

Although Condillac's view of linguistic signs is relegated to the notion that they are a special category outside the mind and that they are arbitrary, what is important to highlight is the fact that he, like Peirce and Welby later, would think of the relation of signs in terms of triads and that he turned to nature and natural signs in order to understand the origins and nature of language thus paving the way for the possibility of an analogical correspondence between the natural world and the cultural one. Yet, his assertion that animals do not have reason, despite his concession that they have

[21] *Ibid*., p. 51.

rudimentary forms of thought, meant that man and animal were separated by the higher capacity of human beings to use arbitrary signs in the form of language and speech. In the nineteenth century this view was challenged by both comparative philology which, in turn, informed Darwin's evolutionary theory.

John Wyon Burrow[22] notes that the development of comparative philology in England was closely linked to the central doctrines of German Romanticism, specifically in its understanding of language as something not made, but natural and thus growing and evolving. Two central figures who contributed to the German re-conceptualisation of language as natural were the philosopher Johan Georg Hamann (1730-1788) and Johann Gottfried Herder (1744-1803) a clergymen who studied with Kant and had and intellectual influence on Goethe while the latter was in Strasbourg. Both broke with the Enlightenment tradition that viewed language as a product of reason. As Andrew Bowie points out, the Enlightenment conceived language as either the result of consciousness coming to make animal cries into meaningful signs, as we have seen was proposed by Condillac, or as the result of the social nature of humankind that lead to the establishment of social conventions which gave agreed meanings to certain signs.[23] Hamann broke that tradition by seeing language as a creative force which was capable of revealing new aspects of existence that are usually associated with the role of art. A similar view had been expressed by Immanuel Kant and by Wilhelm Joseph von Schelling, who pondered on the role of metaphor in language and its potential to reveal new possibilities and meanings. A metaphor constitutes a bridge whereby that which is unknown enters the sphere of the known through a process which is based on non-conscious inference. In this sense, Wendy Wheeler suggests

[22] J. W. Burrow. "The Uses of Philology in Victorian England." *Ideas and Institutions of Victorian England. Essays in Honour of George Kitson Clark.* Ed. Robert Robson. London: G. Bells and Sons, Ltd. (1967):180-240, p. 189.
[23] A. Bowie. *Introduction to German Philosophy: Form Kant to Habermas.* Cambridge: Polity Press, 2003.

that Schelling's theory of the creative agency of metaphor constitutes a significant biosemiotic insight as it prefigures the Peircean notion of abduction.[24]

Hamann believed that our primary contact with the world is in terms of feeling or sensation and not in terms of ideas as advocated by the Enlightenment. For Hamann, 'human beings have a fundamental conviction of the reality of things which are prior to any abstract philosophical attempt to establish the nature of that reality.'[25] Such belief is supported not by reason but by the immediate, or non-inferential, thinking. In other words, the world is revealed as something that is always already intelligible due to the fact that the intelligibility of language and things are inseparable, because they are created by God's word. While it is God's word that brings utterances concretely into existence, it is human language which reveals how what God had said can be translated into new forms.

Hamann's insights are important for two main reasons. The first is that the connection he posited between the creativity of language and art prefigured developments in early Romantic thought which emphasised the shift from a mechanistic to an organic model of the natural world. This, in turn, afforded the possibility to explore the spiritual, psychological and ethical implications of nature which represents a constitutive aspect Eliot's understandings of continuity as well as Welby's and Newman's concept of language. The second is that the introduction of a historical dimension of language helped the institutionalisation of philology and anthropology as it implied that language changes and evolves over time. Philology held that the meaning of words is not fixed and immutable, but rather grows and changes in history and in cultural context. This particular aspect was taken up in the

[24] W. Wheeler. "Introduction to Biosemiotics: Nature/Culture/Science/Semiosis". Ed. W. Wheeler. *Living Books about Life.* January 2012. Web. 23 Nov. 2015.
[25] *Ibid.,* p. 46.

nineteenth century by Newman and Welby who applied it to their study of biblical exegesis. Newman, for instance, addressed this issue his *Essay on Development of Christian Doctrine* (1844, revised 1878), where he came to the conclusion that any statement can be interpreted in multiple ways and that meaning cannot be fixed and severed from intention. Similarly, in *Links and Clues* (1881) Lady Welby identified issues which were to become central to her later work such as the essential ambiguity of signs and the concept of textual interpretation.

Johann Gottfried Herder (1744-1803) also understood language as natural and as having a historical dimension. By asserting that language works in the manner of nature he equated the development of language to the various stages of the development of man. For instance, in the childhood stage the language is determined by affective reaction to the environment, and it is based on feeling and instinct. In the next stage, when human beings move to a more developed stage of thought, language becomes more able to deal with abstract concepts, until it reaches its youth or the poetic stage when a direct link is visible between man and nature. In the final, mature phase, language reaches what he termed the era of prose and philosophy where language 'loses the pure poetry of nature.'[26] Herder's equation of the development of language to the various phases of human evolution prefigures concepts developed by Darwin's evolutionary theory and is akin to the views developed by Welby.

One of the most enduring insights of the Romantics was that separating what either the mind or the world contribute to knowledge is an impossible task. Perception is always in a way mediated by language which they perceived as the creative and interpretive medium of the human sensuous experience of the world. Language thus conceived could not be understood, as the Enlightenment advocated, as the symbolic

[26] J. G. Herder. *Über Die Neuere Deutsche Literatur. Fragmente*. Berlin: Aufbau, 1985, p. 441.

medium originating in God in which a pre-existent order of things is reflected, but rather as a constitutive agent in the human capacity for world modelling or rather for any act of knowledge creation.

The idea that language extends beyond the human plays an important role in German Romantic thought, specifically in its formulation as natural language or *Natursprache.*[27] This is already present in both Hamann's and Herder's considerations on language specifically in their theological inquiries which focused on the relationship between God and creation. For both Hamann and Herder, language was still to be understood as something inherent in human beings and God-given, yet for later philosophers such as Schelling, *Natursprache* was also to be understood in its poetic form, or rather, as the relationship between poetic language and natural symbols. Kate Rigby argues that during the Romantic period 'the primary deployment of the *Natursprache* topos was to construe the natural world as a hieroglyphic script, comprising a network of symbolic associations which can only be disclosed in the noninstrumentalizing language of poetry.'[28] An important implication of this view is that the symbolic meaning that emerges from the aesthetic contemplation of nature is no longer fixed. Meaning, rather than being arbitrary, is open to potentially endless interpretations since it arises from the hidden interconnections among natural phenomena, and nature more broadly, as well as human beings on the non-conscious level, or as Peirce would say through abduction. The German Romantics held that nature could be understood only when it was viewed as subjects in their own right, an aspect which finds its voice later in von Uexküll's view of nature, and only to those who were ready to see themselves as being part of nature. Seen in this light, *Natursprache* endorsed a non-mechanistic, non-dualistic and non-instrumentalist view

[27] K. Rigby, *op.cit.*, 2014, p. 34.
[28] K. Rigby, *op.cit.*, 2015 p. 34.

of language which also influenced the way language was conceived in comparative philology, that is, as a living medium which grows and changes in time.

The rise of comparative philology in England

The historical-comparative study of language in England sprang from the work of Sir William Jones who in 1789, delivered his famous lecture 'On the Hindus' to the Asiatic Society of Calcutta which was a part of his wider contribution called *The Sanskrit Language*,[29] in which he offered his famous conclusion about the relationship between Greek, Latin and Sanskrit :

> The Sanskrit language, whatever be its antiquity, is of a wonderful structure; more perfect than the Greek, more copious than the Latin, and more exquisitely refined than either, yet bearing to both of them a stronger affinity, both in the roots of verbs and in the forms of grammar, than could possibly have been produced by accident; so strong indeed, that no philologer could examine them all three, without believing them to have sprung from some common source, which, perhaps no longer exists […][30]

While many other Europeans had previously noted similarities between Greek, Latin and Sanskrit, Jones was able to see a different type of relationship: descent.[31] Alter points out that this finding laid the foundation for Darwin's later analogy of the common derivation of widely different phenomena from a single extinct progenitor.[32] Jones' influence became widespread throughout Europe. Among the most influential philologists who adhered to his ideas were Franz Bopp (1791-1867) and Jacob Grimm (1785-1863). Bopp was the first who gave a more scientific treatment of language which would 'trace the natural-historical laws' according to which language developed and was the first real practitioner of

[29] See H. Aarsleff. *The Study of Language in England 1780-1860*. Princeton: Princeton University Press, 1983.
[30] W. Jones. "The Sanskrit Language." *The Works of Sir William Jones*. 6. Vols., Vol.1. London: 1799.
[31] J. von Whye. "The Descent of Words: Evolutionary Thinking 1780-1880." *Endeavour.* Vol. 29 n. 3 (2005): 94-100, p. 95.
[32] S. G. Alter, *op.cit*., 1999, p. 8.

comparative philology. Grimm's *Deutsche Grammatik* published between1819-1837, on the other hand, used phonetic correspondences to reveal consistent trends that bound together Greco-Latin and Germanic languages.

By the end of the 1830s, the British Scientific elite became thoroughly exposed to the cross-disciplinary analogic relations between philology and natural history mostly through the work of Heinsleigh Wedgwood (1803-1891), Charles Darwin cousin, who later helped establish the Philological Society of London.[33] Darwin referred to Wedgwood in the *Descent of Man* (1871) and indirectly acknowledged his indebtedness to Grimm as a source for ideas about the evolutionary descent of languages. However, one of the strongest influences on Darwin is represented by August Schleicher, (1821-1868) who held that contemporary languages had gone through a process in which simpler languages or *Ursprachen* had given rise to descendant languages. In his *Darwinsche Theorie und die Sprachwissenschaft* (1863), Schleicher maintained that this fact was perfectly in line with Darwin's theory and that the linguistic model was a repeated analogue for the biological one.

This historical philology of genealogical descent, which originated in the Romantic conception of nature and language, became a model for different kinds of inquiry into the remote past. Moreover, the emphasis that German Romanticism put on symbolic meaning which was no longer to be seen as fixed or arbitrary, but rather, was open to potentially endless interpretations, became two of the most enduring concepts in nineteenth-century discourses on language and interpretation as well as evolution. It was the attempt to trace phenomena in an unbroken line to a remote past, which appealed to nineteenth-century scholars working along these lines in geology

[33] J. Van Wayne. *op.cit.*, 2005, p. 95.

and biology. Charles Lyell and Charles Darwin, for instance, both found in comparative philology a consonant analogue to discuss evolutionary process.

Linda Dowling notes that many Victorians seemed to be mistrustful and harboured doubts about the new philology, because of the anxiety it raised in relation to religious dogma and the literal interpretation of the Bible and the Genesis more specifically.[34] In the next section I will address this issue by looking at the way in which religious certainties were challenged by the new philology and focus on Newman's response to these.

Comparative Philology and biblical exegesis: a challenge to Victorian Faith

In the nineteenth century, the threat to religious accounts was caused not only by scientific advancements, but also by comparative philology and geology which, drawing on each other's metaphors, cast doubts on fundamental religious orthodoxy during the period. For instance, Charles Lyell's *Principles of Geology* (1830) undermined the account of the Book of Genesis by asserting that the mineralized remains of dead organisms preserved in the layers of the stratified rock formations told of a universe vastly older than the one in the Bible.

Comparative philology also undermined the account in Genesis of the common origin of mankind with the description of distinctive Indo-European and Semitic families which suggested a chronology of human speech that was far older than the one advocated by the Church. Possibly one of the best examples of such an exchange of metaphors is represented by Robert Chambers's *Vestiges of the Natural History Creation* (1844), which was published anonymously. His argument of the development hypothesis was mainly drawn from sciences such as geology and astronomy, as well

[34] L. Dowling. "Victorian Oxford and the Science of Language." PMLA. Vol. 97 n. 2 (1982): 160-178. See also L. Dowling. *Language and Decadence in the Victorian Fin de Siecle.* Princeton: Princeton University Press, 1986.

as Lamarck's evolutionary theory and he turned to ethnographical philology when discussing the history of mankind. He introduced the doctrine that the original state of humankind was barbarous rather than civilized, that animals possessed a kind of sign language and gestures on which speech was merely a refinement typical of man, and, most importantly, that language was not of divine origin, but had a material source in man's constitution, both mental and physical.[35]

Chambers's argument produced uproar in Victorian orthodoxy and it is not difficult to understand why exponents of natural theology such as Adam Sedgwick (1785-1873) and William Whewell (1794-1866) condemned it. Whewell's response to the *Vestiges* was elaborated in his *Indications of the Creator* (1845), which was based on the theological argument that the origin of language was not material, so neither onomatopoeic nor developed from animal cries and that material science cannot grasp those aspects which are beyond the domain of matter. Chambers attacked the fundamental conception of Christian humanity and the argument from design which was advocated by William Paley's *Natural Theology* in 1802, and upon which Cardinal John Henry Newman commented in a Sermon in 1839, that the argument for design would only convince those with a pre-existing faith. Later, in a letter to Mr Brownlow dated 13 April 1870 Newman would reinforce this statement by writing that:

> I have not insisted on the argument from design, because I'm writing for the nineteenth century, by which, as represented by its philosophers, is not admitted as proved. And to tell the truth, though I shall not wish to preach on the subject, for 40 years I have been unable to see the logical force of the argument myself. I believe in design because I believe in God; not in God because I see design.[36]

[35] See H. Aarsleff, *op.cit.*,1983, specifically chapter vi, for an in-depth discussion of the consequences of such debates.
[36] J. H. Newman. Quoted in W. Ward. *Life of Cardinal Newman; Based on his Private Journals and Correspondence*. Vol. 2. London: Longmans, Green and Co., 1912, p. 269.

Newman believed that one of Paley's fundamental mistakes was to couple religion with natural theology because by doing so, he would leave religion at the mercy of the changing views in scientific discoveries.

If, however, for many Victorians of faith the insights from geology and comparative philology posed a threat as they undermined the certainty of their central doctrines, it is also true that many used the new-found knowledge to argue in favour of biblical accounts, specifically of the Babylonian confusion. A good example is represented by the Cardinal Nicholas Wisemen who, in 1835, when still a student, delivered a series of twelve lectures, known as *Twelve Lectures on the Connexion between Science and Revealed Religion*, where the first two lectures where devoted to comparative philology and which he argued would help in seeing 'the Mosaic account of the dispersion of mankind most pleasingly confirmed.'[37] In a similar fashion, Reverend W. B. Winning's *Manual of Comparative Philology, in which the Affinity of the Indo-European Languages is Illustrated, and Applied to the Primeval History of Europe, Italy, and Rome* (1838) argued, as the title of his work suggests, that comparative philology gave proof of the divine origin of language and the biblical account of the Babylonian confusion.[38]

Yet, the biggest threat to the Victorian orthodoxy possibly came from within the Church itself and as a consequence of biblical textual studies which, as geology, evolutionary theory and comparative philology before it, cast doubts on the historical truthfulness of the Genesis and dismissed a literal interpretation of it.

[37] N. Wiseman. "Twelve Lectures on the Connexion between Science and Revealed Religion." Quoted in H. Aarsleff, *op. cit*., 1983, p. 208. See also N. Wiseman. *Twelve Lectures on the Connexion between Science and Revealed Religion*, London: J. Booker, 1836.

[38] It is important to highlight that the Babylonian confusion was open to many interpretations; however, the most yielding would advocate that although the single language of mankind had been scattered into unintelligible forms of speech, they all still retained original elements of their natural language, hence comparative grammar would reveal those forms.

At the heart of the debate between the opposing views was the highly controversial *Essays and Reviews* (1860). This was a collection of writings by six Anglican liberal clergymen, which caused, as Philip Davis explains 'more immediate controversy than Darwin's *Origin of Species.*[39] Central to the essays was the idea that the Bible was a historical document and the aim was to educate the public into a more truly historical understanding of Scripture. In his *On the Interpretation of Scripture*, Benjamin Jowett, Anglican clergyman and classical and textual scholar, maintained that the Scripture is like any other book and that it has 'one meaning, the meaning which it had to the mind of the prophet or evangelist who first uttered or wrote, to the hearers who first received it.'[40] Differently from his fellow essayists, Jowett was less interested in offering a specific praxis for scriptural interpretation, but to develop what Anger calls an 'intentionalist account of meaning.'[41] Only by placing the text in its historical context, he maintained, one can understand the author's intentions which in turn gives the possibility of discarding all possible false meaning that had accumulated through centuries.[42] By arguing that ecclesiastical interpretation should be disregarded, Jowett wished for a rewriting of the history of theological interpretation.

Such a study could show that church dogma was a victim of its own biases as it reflected the interpretation of its own time. Jowett insisted that interpretations are not creative, because they should not create new meaning, but retrieve the original one.[43] The logical consequence of this view is that meaning and words are fixed and they can be reconstructed through historical and philological criticism. These views, however, were perceived to be highly damaging to biblical authority since they reduced religion

[39] P. Davis. *The Victorians. The Oxford Literary History. Vol.8. 830-1880.* Oxford: Oxford University Press, 2002, p. 109.
[40] B. Jowett. *Essays and Reviews: The 1860 Text and its Reading*. Ed. Victor Shea and William Whitla. Charlottesville: The University Press of Virginia, 2000, p. 489.
[41] S. Anger. *Victorian Interpretation.* New York: Cornell University Press, 2005, p. 28.
[42] P. Hinchcliffe. *Benjamin Jowett and the Christian Religion*. Oxford: Clarendon Press, 1987.
[43] S. Anger, *op.cit.*, 2005, pp. 25-28.

to the terms of a progressively enlightened human reason, hence the Archbishop of Canterbury sought to make the stance of the Anglican Church clear by issuing an encyclical against the incriminated essays.[44] In the same wake, Bishop Samuel Wilberforce wrote a harsh review of *Essays and Reviews* in the *Quarterly Review* (1861), highlighting that their aim to offer a middling way between opposite views in the Church of England resulted more in their not knowing on which side to stand.

In contrast to Jowett and the Broad Church, John Henry Newman's Oxford Movement, also known as the Tractarian Movement, demanded a new reformation which could restore the necessity for both dogma and the Church's authority on exegetical questions. In his famous *Essay on the Development of Christian Doctrine*, (1844, revised 1878), which appeared almost at the same time as Chamber's *Vestiges* and well before *Essays and Reviews*, Newman declared that the 'Bible is written on the principle of development.'[45] In other words, Newman argued that meaning is not fixed, but that it changes over time. This view clearly shows Newman's indebtedness to the Romantic thought.

Unlike Jowett, Newman did not believe that an interpreter should overcome historical differences in understanding a text, but instead a text should be understood in the light of one's historical moment. The fact that the Church provided many interpretations of the Sacred Scripture does not mean, as Jowett maintained, that those were corruptions of the original, but were in fact important aspects of what was already there and what may look like a new meaning is, in fact, an apprehension of other aspects of the total meaning and this process will continue indefinitely. He stated that:

> Revelation is [...] a process of development ...the earlier prophecies are pregnant texts out of which the succeeding announcements grow; they

[44] P. Davis, *op. cit*., 2002, pp. 103-115.
[45] J. H. Newman. *Essay on the Development of Christian Doctrine*. London: Blanchard and Son, 1846, p. 93.

> are types. It is not that first one truth is told, then another; but the whole truth or large portions of it are told at once, yet only in their rudiments, or in miniature, and they are expanded and finished in their parts, as the course of revelation proceeds.[46]

Newman also argued against an 'individualistic' interpretation of the Scripture and maintained the need for authority because, as he observed:

> it is abundantly evident to anyone, who mixes ever so little with the world, that, if things are left to themselves, every individual will have his own view of them, and take his own course; that two or three will agree today to part company tomorrow; that Scripture will be read in contrary ways, and history, according to the apologue, will have to different comers its silver shield and its golden; that philosophy, taste, prejudice, passion, party, caprice, will find no common measure, unless there be some supreme power to control the mind and to compel agreement.[47]

In other words, Newman feared that without sanctioned interpretations, scriptural exegesis is subjected to endless interpretations making agreement impossible. Yet he conceded that sanctioned interpretations change for different reasons, most importantly because they are subjected to social and cultural changes which make new interpretation necessary.

Newman's essay needs to be understood in the light of his theory of language. This is going to be explored in more detail in Chapter three of this thesis. Here it is important to highlight that since interpretation relies on an understanding of words, and for Newman words are not like mathematical symbols which denote a specific value that cannot be interpreted in any other possible way but are, on the contrary, open to interpretation, it becomes impossible to determine a correct interpretation and meaning of a text. The idea that a single word or text can generate multiple interpretations was also important to Welby who devised her theory of signs and meaning, Significs, in order to study the interrelation between sign, meaning and value not only at the level

[46] J. H. Newman, *op.cit.*,1846, p. 103.
[47] *Ibid.*, p. 93.

of verbal language, but throughout the universe to show continuity between the natural and cultural world.

Newman's and Welby's concept of interpretation and meaning is founded on the Romantic conception of language. As discussed in the previous section, the idea of language as organic, evolving, and more than human combined with the aesthetic apprehension of nature were important themes in the *Naturphilosophie*'s concept of life. These intellectual ideas also informed Charles Darwin in his early writings on transmutation and natural selection and on the evolutionary emergence of humankind in *The Descent of Man, and Selection in Relation to Sex* (1871). Contrary to yielding beliefs that Darwin saw natural selection as a mechanistic force, as argued by Michael Ruse for instance, Darwin never overtly wrote about it in mechanistic terms.[48] According to Hajo Greif, David Steffes and Robert Richards, nature to which natural selection gave rise, was understood by Darwin as part of the self-organising nature of organisms and as such was not mechanistic.[49] In the following section I will explore these ideas in more detail and discuss the influence of *Naturphilosophie* on Darwin's elaboration of evolutionary theory and in his concept of the evolutionary emergence of man and language and their inter-relations in the *Descent of Man*.

Darwin's evolutionary theory, the Descent of Man, and Selection in relation to Sex (1871) and the Linguistic Rubicon

At the heart of Darwin's evolutionary theory, proposed in *The Origin of Species* (1859), stood two fundamental principles: the tree of life, where he postulated that any group of similar species is descended in irregularly branching divergences from a single, common ancestral species, and Natural Selection, which he suggested has been

[48] M. Ruse. *The Darwinian Revolution: Science Red in Tooth and Claw*. Chicago: Chicago University Press, 1999.
[49] H. Greif. "The Darwinian Tension. Romantic Science and the Casual Laws of Nature." *Studies in History and Philosophy of Science.* Vol. 53 (2015): 53-61*;* D. Steffes. "Darwin and Environment." *The Cambridge Encyclopaedia of Darwin and Evolutionary Thought*. Michael Ruse ed. Cambridge, New York: Cambridge University Press, 2013, pp. 391-396; R. Richards, *op.cit.*, 2004.

the main cause or agency responsible for all this divergent, adaptive and progressive change from ancestral to descendent species.[50]

In advancing the principle of the tree of life, Darwin challenged the view that species were immutable which placed him in opposition to two sets of beliefs. The first set concerned the idea of acquired properties as inheritable, whereas the second set concerned the well-established phenomena of adaptation. As far as the idea of heritability was concerned Kenneth Waters argues, similarly to the biologist and biosemiotician Jesper Hoffmeyer, that at the time not much was understood about it, or as Hoffmeyer puts it: 'nobody at the time had the faintest idea about the existence of genes, and there was, therefore, no good reason to distinguish so sharply between *biologically innate* and *biologically acquired* properties.'[51] Biologists believed that the range of variation within a given species was fixed. In other words, they thought that the form of any given species could not change beyond fixed limits.

On the other hand, works in natural history indicated that species were perfectly adapted to their environment and the question became how species could change and still remain so well-adapted to their environment. Darwin answered the question with the idea of natural selection. According to this idea, evolutionary change was produced by selection of individuals who presented variations that enabled them to have a better chance of survival and, at the same time, of producing better descendants. Their descendants were likely to inherit these traits or variations hence these generations would shift to the forms of the fittest parents. Darwin held that when the process of variation, selection and inheritance repeats itself over thousands of years, the

[50] C. Kenneth Waters. "The Arguments in the Origin of Species." *The Cambridge Companion to Darwin*. Eds. Johnatan Hodge and Gregory Roddick, 2009, pp. 120-122. See also J. Hedley Brooke. *Science and Religion: Some Historical Persp*ectives. Cambridge: Cambridge University Press, 2006.
[51] J. Hoffmeyer, *op.cit.*, 2008, p. 208.

descendants will have features that will be markedly different from their distant ancestors.[52]

Although Darwin's natural selection is today understood within a conceptual framework which emphasises the belief that nature is primarily an arms race among selfish survival machines, Darwin never really conceived of natural selection as a mechanism.[53] On the contrary, much under the influence of *Naturphilosophie,* he perceived nature, to which selection gave rise in its part and in the whole as a harmonious, teleologically self-organising structure.[54] Greif notes that Darwin showed a deep sympathy for a wave of ideas from Germany which were mainly embodied in Goethe's work and in the work of the romantic naturalist-geographer Alexander von Humboldt. Darwin referred to Goethe's morphology, which he came to know via Richard Owen's view of embryonic development, in his early formulations of the theory of transmutation.[55] Although Darwin accepted Goethe's theory, he devised a significant modification; for Darwin the archetype was simply the ancestor, rather than being an ideal form of concrete phenomena as seen by Goethe.[56] Closely related to this view, and informing Darwin's theory was the recapitulationist embryology, another important aspect of *Naturphilosophical* thinking and central to debates in nineteenth century; for Darwin embryonic development recapitulates phylogenetic history.[57]

[52] M. Ruse. *Darwin and Design: Does Evolution have a Purpose*? New York: Harvard College, 2003.
[53] David Steffes notes that this particular framework has been popularised by 'red Darwinists', such as Richard Dawking and G.C. Williams who emphasise the mechanistic nature of natural selection. See D. Steffes, *op.cit.*, 2013, p. 392.
[54] R. J. Richards, *op.cit.,* 2002, p. 534.
[55] H. Greif, *op.cit.,* 2015. Darwin refers to Goethe twice in the *Origins of Species* (see p.147) as well as in his historical sketches.
[56] *Ibid*., p.16.
[57] These debates surrounded the issue whether and in which way embryonic development recapitulated either an ideal or a phylogenetical (historical) hierarchy of living forms. See D. Ospovat. *The Development of Darwin's Theory.* Cambridge, New York: Cambridge University Press, 1981, pp. 153-157; R. Richards. *The Meaning of Evolution. The Morphological Construction and the Ideological Reconstruction of Darwin's Theory*. Chicago: Chicago University Press, 1992.

In the morphological and recapitulationist thinking, to which Darwin related, it was presupposed that nature is an inherently teleologically and harmoniously ordered whole. Steffes notes that in composing the *Origin of Species*, Darwin adhered to this deeper understanding of nature via his reading of Alexander von Humboldt's *Relation Historique du Voyage aux Région équinoxiales du Nouveau Continent* (1825) while on his voyage on the Beagle. Humboldt provided a holistic concept of nature where his description started from the *Naturphilosophie's* assumption of an intrinsically lawful, all-encompassing order of nature that manifests itself in manifold local phenomena. Humboldt's mode of inquiry into natural phenomena emphasised the view that 'any comprehensive representation of nature should be guided by aesthetic intuition under which the properties detected in nature where arranged in such a way as to enable apprehension, through all the details, of its structuring features.'[58] Darwin followed Humboldt's mode of inquiry and portrayed nature, as Steffes argues, as a positive force or set of forces in creation, preservation and advancement of diversity of life.[59] Nature's diversity rather than being the result of a stable balance in nature, was the product of a dynamic environment in which natural selection played a central role. Seen in this context, it becomes clearer how Darwin could conceive natural selection in a non-mechanistic way.

In the *Origin of Species*, for instance, Darwin compared the way nature practices selection and the way man does it and he noted that:

> Man can only act on external and visible characters: nature cares nothing for appearances, except insofar as they may be useful to any being. She can act on any internal organ, on every shade of constitutional difference, on the whole machinery of life. ... It may be said that natural selection is daily and hourly scrutinizing, throughout the world every

[58] H. Greif., *op.cit*., 2015, p. 11.
[59] D. Steffes, *op.cit*., 2013, p. 394.

> variation, even the slightest; rejecting that which is bad, preserving and adding up all that is good.[60]

It must be pointed out that although the word machinery appears in this extract it is clear from the context, Richards observes, that 'it has no semantically significant role.'[61] This passage, which describes nature as looking into the intricate web of life, selecting altruistically, bears no signs of a machine-like operation. In an earlier essay, Darwin also presented natural selection more as god-like rather than machine-like:

> Let us now suppose a Being with penetration sufficient to perceive differences in the outer and innermost organization quite imperceptible to man, and with forethought extending over future centuries to watch with unerring care and select for any object the offspring of an organism produced under the foregoing circumstances; I can see no conceivable reason why he should not form a new race (...) adapted to new ends. As we assume his discrimination, and his forethought, and his steadiness of object, to be incomparably greater than those qualities in man, so we may suppose the beauty and complications of the adaptations of the new races and their differences from the original stock to be greater than in the domestic races produced by man's agency.[62]

What both passages suggest is that natural selection works through penetrating to the very core of organic life, working aesthetically and teleologically and as such is very different to man's production and bears no true resemblance to the machine-like operation which is usually described as.

As already noted in this chapter, in the period leading to his elaboration of the theory of species transmutation, Darwin became increasingly interested in the workings of language. As Alter points out, Darwin began to speculate on the evolutionary emergence of man and the linguistic emergence of speech at the time he was thinking about the evolutionary change.[63] In fact, as early as 1839, Darwin had

[60] C. Darwin. *On the Origin of Species by Means of Natural Selection or the Preservation of Favoured Races in the Struggle for Life.* London: Murray, 1859, pp. 83-84.
[61] R. J. Richards, *op.cit.*, 2002, p. 534.
[62] C. Darwin, Essay 1842, quoted in Richards, *op.cit.*, 2002, p. 536.
[63] S. G. Alter, *op.cit.*, 1999, p. 15.

been fascinated by Lord Henry Brougham's *Dissertations of Subjects of Science Connected with Natural Theology* which insisted that both animals and humans shared the capacity for abstraction because they could understand signs. Beer notes that what Darwin did not understand about this work is that Brougham thought, and, I suggest, much as Condillac before him, that signs are to be understood as arbitrary, in a view later developed by the Swiss linguist Ferdinand de Saussure (1857-1913) in the *Course in General Linguistics* (1916).[64] Brougham argued that the relation between signifier and signified (to use Saussure's terminology) is as arbitrary in animal communication as it is in human language and states:

> [...] Have not animals some kind of language? At all events they understood ours. A horse knows the encouraging or chiding voice or whip, and moves and stops accordingly. [...] But they seem to have some knowledge of conversational signs. If I am to teach a dog or a pig to do certain things on a given signal, the process I take to be this. I connect his obedience with reward, his disobedience with punishment. But this only gives him the motive to obey, the fear of disobeying. It in no way can give him the means of connecting the act with the sign. Now connecting the two together (action and sign), whatever be the manner in which the sign is made, is Abstraction; but it is more, it is the very kind of abstraction in which all language has its origin – the connecting the sign with the thing signified; for the sign is purely arbitrary in this case as much as in human language.[65]

Although Darwin could have used Brougham's suggestion of the common origins between man and animal and animal intelligence, it was the move from the idea of abstraction to that of language which Darwin found difficult to grasp as he found no evidence for it in Brougham's work. In a passage in the *Descent of Man*, Darwin questions the claim that *animals* do not have the power of abstraction or that of forming general concepts and he states that '[...] when a dog sees another dog at a distance, it is often clear that he perceives that it is a dog in the abstract; for when he gets nearer his

[64] G. Beer. *Open Fields: Science in Cultural Encounter*. Oxford: Oxford University Press, 1996, p. 105.
[65] H. Brougham. *Dissertations on the Subject of Science Connected with Natural Theology*. Vols. 2, vol. 2. London: C. Knight, 1839, pp. 195-6.

whole manner suddenly changes if the other dog be a friend.'[66] Yet Beer suggests that Darwin's concern was the result of his preoccupation at the time with ideas of continuity and connections and that the idea of semiotic arbitrariness as the prototype of abstraction would have undermined Darwin's primary concerns.[67] Beer here makes a valid point since it is known from Darwin's very early theorising in his notebooks *M* and *N* and from the *Descent of Man* that he believed in the non-arbitrary understanding of the relation between words and things at the origin of language. Darwin came to believe that there was a necessary connection between 'things and voice' or rather he believed in the musical basis of language which implied either a mimetic or an abstract relation between thing and voice. In the *Descent of Man*, in fact, Darwin states that:

> With respect to the origin of articulate language, after having read on the one side the highly interesting works of Mr. Hensleigh Wedgwood, the Rev. F. Farrar, and Prof. Schleicher, and the celebrated lectures of Prof. Max Müller on the other side, I cannot doubt that language owes its origin to the imitation and modification of various natural sounds, the voices of other animals, and man's own instinctive cries, aided by signs and gestures. It is, therefore, probable that the imitation of musical cries by articulate sounds may have given rise to words expressive of various complex emotions. The strong tendency in our nearest allies, the monkeys, and in the barbarous races of mankind, to imitate whatever they heard deserves notice, as bearing on the subject of imitation. [...] This would have been a first step in the formation of a language. As the voice was used more and more, the vocal organs would have been strengthened and perfected through the principle of the inherited effects of use; and this would have reacted on the power of speech.[68]

In other words, Darwin thought that it was through natural selection that the primitive vocal efforts of animals and human beings had evolved into a vast array of songs, sounds and cries and ultimately into speech. In his notebook *N*, some thirty

[66] C. Darwin. *The Descent of Man and Selection in Relation to Sex.* Reprinted in facsimile. Princeton: Princeton University Press, 1981, p. 64.
[67] G. Beer, *op.cit*., 1996.
[68] C. Darwin, *op.cit.*, 1981, p. 68.

years before the publication of the *Descent of Man*, as Richards notes,[69] Darwin already supposed that our aboriginal ancestors began imitating the sounds of nature and that language developed from these simple beginnings.

The correspondence between animal language and human language and its origins postulated by Darwin in the *Descent of Man* encountered severe criticism. An early criticism of the implications of Darwin's theory of natural selection is to be found in M. Müller's *Lectures on the Science of Language* (1861) where he argued that the use of language implied the ability to form concepts and, since animals cannot do that, there must be an impassable barrier between the two. Müller's point of view emerged from his conviction that language and thought coincide and, as Dowling argues, since Müller believed there is an exact coincidence between the two, 'all language becomes meaningful, with reason transpiercing its apparent opacities and formal elements from within.'[70] Given the inherent meaningfulness of words, Müller also believed that language could never arise conventionally as a system of external signs and as Saussure would later assert of arbitrary signs, because he held that humans would have needed words to hold the convention. Instead he portrayed it as internal and expressive in origin. Also, given the fact that Müller argued for a perfect identity between thought and language, he retorted that language stood in opposition to the evolutionary view proposed by Darwin. In fact he declared that:

> One of the great barriers between the brute and man is *Language*. Man speaks and no brute had ever uttered a word. Language is our Rubicon and no brute will dare to cross it. [...] It admits of no cavilling, and no process of natural selection will ever distil significant words out of the notes of birds and the cries of beasts.[71]

[69] R. J. Richards, *op.cit.*, 2009, p.109. See also Jonathan Hodge. "The Notebook Programmes and Projects of Darwin's London Years." *The Cambridge Companion to Darwin.* Eds. Jonathan Hodge and R. Gregory Raddick. 2nd edn. Cambridge: Cambridge University Press, 2009.

[70] S. Winter."Darwin's Saussure: Biosemiotics and race in expression." *Representations* Vol. 107 n. 1 (2009): 128-161, p. 128.

[71] M. Müller. *Lectures on the Science of Language, Delivered at Royal Institution of Great Britain in April, May and June*. 2nd rev. ed. New York: Scribners, 1862, p. 354.

Although there are differences between Darwin's and Müller's views, the fact that they both believe in the non-arbitrariness of language is an important element which they concur. As John Deely points out, Saussure's definition of a sign rests on the notion that a sign is linguistic in essence and dyadic in character, and is arbitrary in the sense that it rests upon a stipulation.[72] In other words, Saussure postulates the relationship between form and meaning, arbitrarily restricting signs to the human sphere thus 'severing their connection with the motivating history of the sign users as embodied in their language.'[73] The severing of this connection also serves to separate human beings from animals, contrary to Darwin's view. In this respect, Darwin's view on language is closer to Peirce's doctrine of sign and sign relations where iconic and indexical signs (non-arbitrary signs) are shared between the human species and animals.

Darwin's attempt to show continuity between the animal and human species also encompassed a discussion in the *Descent of Man* on the similarities between human and higher mammals and their faculties, including rationality. Darwin believed that human intellectual activity was a modification of instinct. Human intelligence was not opposed to animal instinct, but grew out of it in the course of ages. As Richards maintains, 'in finding the antecedents of human rationality in animal instinct Darwin didn't open any new epistemological ground,'[74] since ideas that mind and matter run together through nature were already advocated by *Naturphilosophen* such as Schelling, Strauss and Carl Gustav Carus, Goethe's disciple and Schleicher, who stated that:

> Thought in the contemporary period runs unmistakably in the direction of monism. The dualism, which one conceives as the opposition of mind and nature, content and form, being and appearance, or however one wishes to indicate it - this dualism is for the natural scientific

[72] J. Deely. *The Semiotic Animal: A postmodern Definition of "Human Being" Transcending Patriarchy and Feminism.* South Bend: St. Augustine Press, 2010, p. 20.
[73] *Ibid*., p. 21.
[74] *Ibid.*, pp. 98-100.

> perspective of our day a completely unacceptable position. For the natural scientific perspective there is no matter without mind [*Geist*] (that is, without that necessary power determining matter), nor any mind without matter. Rather there is neither mind nor matter in the usual sense. There is only one thing that is both simultaneously.[75]

Darwin's indebtedness to Schleicher is here visible in his postulation of a fundamental continuity of human with animal mental life. With the reference not only to instinct, but also higher-mental activities[76] such as reason, Davis suggests that 'Darwin subverted any concept of the subject as a rational self and suggested that human mind is shaped by many of the same formative influences as exists in animals.'[77] This aspect of Darwin's theory had been formalized by George J. Romanes (1848-1894), with whom Darwin entertained an epistolary friendship and to whom he made available various short papers and materials on animal instinct which he published as an appendix in his *Mental Evolution in Animals* (1883).[78] It was, however, in his later work, *Mental Evolution in Man* (1888) that Romanes endeavoured to show that there is an essential similarity between the reasoning processes of higher animals and human beings and based it on his discussion of language and philology in chapters V, XII and XIII. It was this particular aspect that attracted Welby and prompted her to address this issue from her unique language theory perspective and to propose a correspondence between animal and human thought processes based on her understanding of the different levels in sign activity.

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[75] Quoted in R. J. Richards. *The Tragic Sense of Life: Ernst Heckel and the Struggle over Evolution.* Chicago: Chicago University Press, 2008, p. 126.

[76] As Rick Rylance points out the distinction between higher and lower mental abilities was a direct legacy of a religious perspective in philosophy which postulated the superiority of human beings in relation to animals by way of arranging faculties hierarchically. For instance higher abilities included reason, faith, love and spiritual apprehension, whereas lower included sensation, feeling, appetite and desire. It becomes evident why Darwin's theory threatened this view and why the mathematician W. K. Clifford who was concerned with conceptual modelling found no evidence of such difference. See R. Rylance. *Victorian Psychology and British Culture 1850-1880*. Oxford: Oxford University Press, 2000.

[77] M. Davis. *George Eliot and Nineteenth Century Psychology: Exploring the Unmapped Country*. Aldreshot: Ashgate Publishing Company, 2006, p. 51.

[78] See R. M. Young. *Mind, Brain and Adaptation in the Nineteenth Century: Cerebral Localization and its Biological Context from Gall to Ferrier*. Oxford: Oxford University Press, 1990 and F. M. Turner. *Between Science and Religion: The Reaction to Scientific Naturalism in Late Victorian England*. London: Yale University Press, 1974, for a discussion of the relationship between Darwin and Romanes.

Welby's and Darwin's view that mind and matter run together through nature owe much to the conceptual heritage of *Naturphilosophie*, which not only informed their epistemologies, as argued here, but also contributed to the shift from a philosophical to a biological realm in the study of mind in the second half of the nineteenth century. In the last section of this chapter I will consider the impact of *Naturphilosophie's* view on the continuity between mind and matter and the importance of imagination as a non-inferential tool in understanding this continuity.

On mind, matter and continuity in the second half of the nineteenth century

Rick Rylance, in accordance with Robert M. Young and Philip Davis, notes that the study of mind in the second half of the nineteenth-century was divided between two schools of thought, one philosophical and the other scientific. These schools offered opposite conceptual models in their consideration of what is to be understood as mind and its relation to human knowing.[79] The scientific school of thought was represented by associationism, a physical and passive theory of mind which developed from Locke and Hume by David Hartley in the eighteenth century.[80] Associationism held that mind's structure, organisation and development depended on environment; or differently put, mind was created in experience and that therefore the role of innate ideas was negligible. Human nature, it asserted, was not a given, but it was a product of the various forces active in the environment.

The opposing view to associationism was represented by faculty psychology. This argued that the faculties of human mind were innate. This view was in part the legacy of Kant's postulation of innate ideas such as time and space, as well as the work of the Scottish Enlightenment philosopher Thomas Reid who was committed to prove

[79] R. Rylance. *Victorian Psychology and British Culture 1850-1880*. Oxford: Oxford University Press, 2000; R.M. Young, *op. cit.*, 1990; P. Davis, *op. cit.*, 2002, specifically chapter 4, OUP.
[80] M. Davis, *op. cit.*, 2006, p. 174.

the sovereignty of higher mental functions compatible with the premises of revealed religion. However, it was another aspect of Kant's philosophy, namely his critical insight that all human knowledge was in a way determined by subjective principle that prompted a shift in the understanding of human knowing. This shift was included into a larger and subtler debate on knowing which was initiated by Goethe with his study of natural forms and continued by Friedrich Wilhelm Joseph von Schelling, Georg Wilhelm Friedrich Hegel (1770-1831) and Samuel Taylor Coleridge. This influence prompted a shift in the study of psychological theory in the nineteenth century.

Although each of these thinkers gave his own distinct emphasis to this perspective, one thing that was 'common to all,' as Richard Tarnas points out, 'was a fundamental conviction that the relation of the human mind to the world was ultimately not dualistic, but participatory.'[81] What this view entailed was that human thought does not or cannot mirror a ready-made objective truth, but rather that nature's reality emerged only with the active participation of human mind which was inherent in nature's order. In such knowledge, the human mind 'lives into the creative activity of nature'[82] and the faculty of imagination, as Schelling and Coleridge proposed, was the method for understanding and interpreting nature.

In *System of Transcendental Idealism* (1800) for instance, Schelling establishes the following parallel between mind and nature: he defines nature as the absolute producing subject whose predicates are synthesized objects in the natural world and he sees the spontaneous thinking subject as the condition for the syntheses required to produce objectivity which is dependent upon judgement. As Bowie explains, the issue that this parallelism opens is to understand how these two subjects and their related

[81] R. Tarnas. *The Passion of the Western Mind: Understanding the Ideas that have Shaped our World*. London: Pimlico, 1999, p. 288.
[82] *Ibid*., p. 287.

predicates relate to each other. The fact is that Schelling wants to make nature independent of thought. At the same time he wonders how nature, which he postulates as being productive, produces the subject that makes our knowledge possible. He believes that the reason why nature presents resistance to our knowledge is because most of its productivity is non-conscious.[83] From this it follows that reality is constituted by the interplay of conscious and unconscious, an aspect which is going to be important in Lewes's epistemology, and Schelling believes that in order to understand the unconscious working, philosophy should not seek to explain it via conceptual and rule based terms, or by geometry to use Coleridge's term, but via art or rather via aesthetic imagination. A work of art, Schelling maintains, cannot be created by applying strict technical rules, but it is created by the unconscious faculty. In other words, it is through aesthetic imagination that we gain access to the otherwise intelligible realm and therefore art points to a more inclusive understanding of reason. Schelling's articulation of the link between mind and nature and the concept of aesthetic imagination is echoed, as already pointed out in the introduction, by S.T. Coleridge who distinguishes between primary imagination and secondary imagination. In *Biographia Literaria* he explains the distinction between the two thus:

> The Imagination then I consider either as primary, or secondary. The primary Imagination I hold to be the living power and prime agent of all human perception, and as a repetition in the finite mind of the eternal act of creation in the infinite I AM. The secondary Imagination I consider as an echo of the former, co-existing with the conscious will, yet still as identical with the primary in the kind of its agency, and differing only in degree, and in the mode of its operation.[84]

[83] See F. W. J. Schelling. *System of Transcendental Idealism*. Trans. Peter Heath. Charlottesville: University press of Virginia, 1978. See also A. Bowie. *Introduction to German Philosophy: From Kant to Habermas*. Cambridge and Malden: Polity Press, 2003 and A. Bowie. *Schelling and Modern European Philosophy: An Introduction*. London: Routledge, 1993 for a commentary on Schelling's work as well as Robert J. Richards. *The Romantic Conception of Life: Science and Philosophy in the Age of Goethe*. Chicago: University of Chicago Press, 2002.

[84] S. T. Coleridge. *Biographia Literaria*. Ed. by Nigel Leask. London: Everyman, 1997, ch. xiii, p. 212.

The influence of German idealism is clearly visible in Coleridge's definition of primary imagination and his rather cryptic phrase of 'the infinite I AM'. However what is also important to note is that Coleridge saw imagination as the active force behind the constructive formation of new ideas, and, as Rylance suggests, of 'problem solving.'[85] And it is precisely the idea of imagination as an intuitive-inferential process that will become the defining force in both Newman's argument for the common grammar between faith and reason, and also in Eliot's argument for the common enterprise of the scientist, novelist and ethicist whose willingness to explore the significance of that which cannot be registered by instruments and unaided senses is based on the same process of imagination. It is this type of scientific imagination that Welby states 'points us beyond the sense of things, beyond even the meaning of things, to their significance, their highest value for us.'[86]

Schelling's and Coleridge's understanding of imagination will bear important consequences in the intellectual discourse of science in Victorian England since a number of theorists, among them George H. Lewes, William B. Carpenter (1813-1885) and Karl Pearson (1857-1936), recognised that humans have limited access to the reality that lies outside, or rather beyond human consciousness and language. All three came to believe that science involves creative imagination and interpretation. Lewes believed that interpretation and subjectivity were the conditions of any understanding. In *Problems of Life and Mind* (1879), he argued that the methods of understanding mental processes cannot be subjected to the standard methods of investigation since those would not shed any light on its processes. Instead he suggests that the only observation possible for mental processes is interpretation, or as he put it:

[85] R. Rylance, *op.cit.*, 2000, p. 44.
[86] V. Welby. *What is Meaning? Studies in the Development of Significance*. London: MacMillan and Co., Ltd, 1903, p. 30.

> We have no microscope, no balance, and reagent, to see what is too minute for the unassisted eye, to measure what is quantitative, to test what is compound in mental processes: our closest 'observation' is interpretation. [...] Nay, even the observations of external data have all to be interpreted, and their value lies wholly in interpretation.[87]

Lewes's allusion to the fact that even external data, which depend on sense experience, needs to be interpreted implies that scientific work is active rather than passive, and that it necessarily goes beyond the observable. This is because, Lewes states, 'Science is no transcript of Reality, but an ideal construction framed out of the analysis of the complex phenomena given synthetically in Feeling, and expressed in abstractions.'[88] In other words, what we perceive is not immediate experience but a re-elaboration of it through the medium of language, and as such is subjected to interpretation and it is, therefore, provisional and relative. This is why Lewes argued that although human beings feel they perceive things, in reality they only apprehend signs from which they need to infer meaning, or why Henry Holland (1788-1873) Charles Darwin's cousin, perceptively recognized that what is sometimes perceived as progress in knowledge can simply be the effect of a performance in language.[89] What these views implied is that reality is inscribed in symbol. As David Amigoni points out, scientists, such as John Tyndall (1820-1893), asserted that 'consciousness of the external world is inscribed in symbolic form.'[90] Likewise, Herbert Spencer held that our perceptions are 'merely symbols' and that we conceive as external objects what in fact 'are only signs of objects.'[91]

There is, however a key distinction to be made between the position Herbert Spencer and George H. Lewes advocated and the distinction is to be traced in their

[87] G. H. Lewes, *Problems of Life and Mind*. 3rd series. *The Study of Psychology*: *Its Subject, Scope and Method*. London: Trübner, 1879, p. 85.
[88] *Ibid.*, pp. 82-83.
[89] H. Holland in R. Rylance, *op.cit.* 2000, p. 1.
[90] D. Amigoni. *Colonies, Cult and Evolution: Literature, Science and Culture in the Nineteenth-Century Writing*. Cambridge: Cambridge University Press, 2007, p. 131.
[91] H. Spencer. *First Principles*. New York: D. Appleton and Company, 1864, p. 137.

conception of language and mind. Although both drew on evolutionary theory in their concept of mind, Spencer's view of language was in line with the Associationist and Utilitarian tradition which, based on an empirical account, emphasized its indicative and nominal function derived from mathematics and chemistry, to the detriment of its creative usage.[92] On the other hand, Lewes emphasized the organic and creative aspect of language and its use, which is akin to the theories of language proposed by Herder and Hamann, where language is not merely a means of representing the world, but is a form of social action which enables things to be manifest in the world and in ourselves. It is the latter view that is going to have a lasting impact on Newman's, Eliot's and Welby's conceptual frames of mind.

Conclusion

In this chapter I presented a historical and contextual overview of the role both language theory and evolutionary theory played in the Victorian frame of mind. In particular, I highlighted how these theories are indebted to the core principles of *Naturphilosophie,* namely that nature is a self-organising, living whole and that language is a living, organic medium that changes and adapts over a period of time. These concepts, which emphasised ideas of continuity and relatedness and introduced the notion of historicity, became of central importance in the debates in religion, science and mind, since they challenged and questioned the very notion of man's place in nature. In discussing the importance of *Naturphilosophie*, I pointed out how it helped inform Darwin's evolutionary theory and his concept of natural selection, which he thought of, in its preliminary stages, in a non-mechanistic way. I also argued how

[92] See R. Rylance, pp. 256-258. It is against this type of language, as a mathematical symbol, that G. H. Lewes will address his concerns.

Naturphilosophie furnished important metaphors that Newman, Eliot and Welby drew upon in their respective view of language as a living organism.

CHAPTER 3

John Henry Newman and the Illative Sense as Abduction: the Challenge to the Epistemology of the Enlightenment

Ex umbris et imaginibus in veritatem[1]

This chapter is concerned with the exploration of John Henry Newman's philosophy and epistemology. In particular it considers his view that all significant believing, including scientific and religious, is deeply anchored on and mediated through imagination understood as a non-conscious inferential process. In doing so I wish to show the importance of Newman's contribution to nineteenth-century epistemological debates on the question of religious knowing as well as emphasise his originality in recognising there is a common grammar, a relationship, between religion and science in their reliance on natural forms of logic. These I argue prefigure Peirce's and Bateson's views on the relation between faith and the logic of abduction as creative processes based on metaphor rather than on conscious formal logic.

Newman, much like S. T. Coleridge before him, believed that religious knowing was 'a problem of the rational character of faith and the faithful character of true reason.'[2] For both religious knowing and belief originated in imagination which they conceived as a holistic activity encompassing emotions, intellect and will and as such was contrasted to pure intellect. For Newman, there was no dichotomy between faith and reason as they both stemmed from the same inferential process he called

[1] This Latin phrase is commonly translated as "From shadows and images into truth." Newman selected this phrase as his Memorial Epitaph at Birmingham Oratory.
[2] J. H. Newman.Quoted in T. Merrigan. *Clear Heads and Holy Hearts: The Religious and Theological Ideal of John Henry Newman*, Louvain: Peters, 1990, p. 3.

'logic of imagination'[3] and in his later work called illative sense which could be evaluated as epistemologically legitimate.

Newman had a remarkable impact on his age, both as a theologian, a term he never used to describe himself,[4] and a philosopher. He was, as many of his contemporaries were, deeply influenced by the intellectual debates of his time concerning the relationship between science and theology as well as understanding the nature of human mind and therefore human knowledge. This is reflected in his works as a theologian, specifically in his *An Essay to the Development of Doctrine* (1845) where he presented a creative dialectic between church authority and individual intellect, and in his works as a philosopher. Newman's theology and philosophy were conceived, as Gerard Magill explains, in terms of 'the intellectual and spiritual needs both of the age that was passing and the one dawning.'[5] What Newman realised was that scientific advancement and thought had shaken people's beliefs to the point where by the 1840s what was at issue was no longer the validity of Anglican orders, but of Christianity itself. He was increasingly aware that on various fronts, ranging from intellectual to social assumptions, a new age of widespread atheism and agnosticism was becoming possible for the first time in human history.[6] For Newman empirical reason almost always tends to atheism because, in his view, such reason has been truncated or uprooted from its true home of religious consciousness. He was convinced that religious 'given' was intelligible and 'pertained to an order of experience which

[3] H. M. de Achaval and J. Derek Holmes. Eds. Introduction by Charles Stephen Dessain. *The Theological Papers of J.H. Newman on Faith and Certainty*. Oxford: Clarendon Press, 1976, p. 94.
[4] T. Merrigan, *op.cit.*,1990.
[5] G. Magill. *Personality and Belief: Interdisciplinary Essays on John Henry Newman*. Lanham, MD: University Press of America, 1994, p. xi.
[6] H. Urs von Balthasar. "Newman on Imagination and Faith." *Milltown Studies* n. 49 Summer (2002): 84-101, p. 84.

nineteenth-century scientific thought deemed inadmissible as an object of critical reflection.'[7]

Newman's criticism was at first directed towards the 'Enlightened' conception of reason and scientific experience, and secondly to the identification of such sciences with liberalism and the consequent scepticism towards faith it aroused. He felt this would only encourage a superficial view of human nature. Newman spent his entire life trying to reconcile empirical reason with metaphysical truth, first as an Anglican and then as a Roman Catholic after his conversion in 1845. What is most distinctive in his way of trying to supersede this problem, and what separates him from other thinkers and theologians of his time, is his belief in the use of reason precisely to argue against the certainty of reason and its subordinate relation to faith. He opposed the rationalist theory of knowledge, by ascertaining that religious truth and faith are discovered and transmitted not merely in reason as the empiricist tradition following Locke and Hume would hold, but in ways of which mankind is sometimes hardly conscious. It is through what he called implicit reason in his *University Sermons* (1826-1840) or illative sense or imagination in his *Essay in Aid of a Grammar of Assent* (1870) that man comes to faith. Both implicit reason and the illative sense are in fact a type of natural inference or reasoning which, as I shall discuss in this chapter, present an important similarity with what Charles Sanders Peirce called 'abductive' logic. What Newman calls illative sense and Peirce calls abduction is what I argue is in fact biosemiotic imagination. According to Newman, and similarly to Peirce, faith is not founded on investigation, argument and proof, but it is the result of our 'abductive reasoning or creativity' or imagination which uses natural forms of logic.

[7] T. Merrigan, *op.cit.*,1990, p. 4.

At the basis of Newman's belief lay the conviction that science only gives facts and not their meaning. In his *Essay in Aid of a Grammar of Assent*, Newman laments the fact that empirical science, based on deductive logic, offers a model of thought in which 'first comes knowledge, then a view, then reasoning and then belief.'[8] Religion, on the contrary, involves a whole different order of thought, which cannot simply start from knowledge, because he asserts that nothing can. He insists that human beings always start from a belief and that this belief is no different whether in science or religion. This view was inspired by both, the bishop Joseph Butler (1692-1752) and Samuel T. Coleridge. For both belief was not a matter of deductive logic, evidence and proof, but rather as the product of a creative act of what Coleridge called imagination and Butler identified as antecedent or non-conscious probabilities.[9]

In his reading of Butler's most influential philosophical work - *Analogy of Religion* (1729) - Newman found two ideas which were to be of lasting importance; first the principle of analogy which taught him that there are similarities between the works of God in nature and in divine revelation and second the affirmation of non-scientific reasoning through a convergence of antecedent probabilities that is the basis of our practical decisions.[10] This kind of reasoning, according to Butler, both illuminates our faith explicitly and is contained implicitly in the apprehensions of religious imagination. Butler's ideas are echoed in Coleridge's view of the imaginative life of man which he sees as being linked to the life of God through the experience of nature. In his view, as already pointed out in previous chapters, Coleridge relates creation, God, the self and nature through the creative act of imagination. In Newman, this organic unity is to be found in his understanding of the interplay between implicit

[8] J. H. Newman. *An Essay in Aid of a Grammar of Assent*. London: Longmans Green &Co., 1903, p. 65.
[9] J. Coulson, *op.cit*., 1981, pp. 52-54.
[10] J. R. Connolly. *John Henry Newman: A View of Catholic Faith for the New Millennium*. Oxford: Rowan and Littlefield Publishers Inc., 2005, p. 3.

and explicit reason which are part of the process we need in order to come to religious belief. By emphasising the interplay between implicit and explicit reason, Newman was trying to show the ever increasing number of sceptics that religious faith is rational and that it is reasonable to believe.

These ideas were first developed in what Newman scholars have called his 'Anglican years' which coincide with the period that is historically known as the Oxford Movement or Tractarianism (1830-1843).[11] However, Newman addressed these issues more systematically in what is considered to be his most accomplished work on matters of faith, science and language, *An Essay in Aid of a Grammar of Assent* which was published in 1870, almost thirty years after his conversion to Roman Catholicism. Contrary to the *University Sermons* and many other important writings such as *An Essay on the Development of Christian Doctrine* and *The Idea of a University* (1852 and 1858), which were triggered by a particular occasion or in response to cultural shifts, the *Grammar of Assent* was written in response to Newman's lifelong search for an understanding of the relation between faith and reason. In this chapter I shall analyse these writings in more detail in order to trace the development of Newman's thought and to highlight the importance of his insights as contributing to a proto-biosemiotic interpretive framework. In particular I'm interested to show how his argument of the illative sense echoes Peirce's view of abduction and prefigures Bateson's view that forms of the sacred expressed through natural forms of reasoning are also found in forms of abduction in nature.

[11] For a detailed discussion on Tractarianism see S. Gilley. *Newman and His Age*. 4th edition, London: Darton and Todd, 2002 especially chapters 2 and 3; P. Davis, *op. cit.*, 2002, chapter 3.

On Faith, Religion and Science in the 'Fifteen Sermons Preached at the University of Oxford' (1826-1840)[12]

In the opening sentence of his first University sermon, entitled '*The Philosophical Temper, First Enjoined by the Gospel'* (1826), Newman voiced a concern over the credibility of religion, which was already very deep in him, thus: 'Few charges have been more frequently urged by unbelievers against Revealed Religion, than that it is hostile to the advance of philosophy and science.'[13] Newman was fully aware that the credibility of religion has suffered a serious decline in the eyes of the leading intellectuals of his day. He saw that this perceived opposition between the dominant rationality and the truth of faith constituted an historically new challenge for the Christian tradition. It was precisely this challenge he set out to address in his University Sermons.

Yet, contrary to what many would have expected, Newman did not condemn the philosophy and science of his time. Rather, he underlined the importance for Christianity of being open or well disposed towards this type of philosophy and science, which had, after all, formed in Christian people those rare positive qualities of mind and character which are necessary to those men committed to the search for the truth.[14] Indeed, according to Newman the first scientists were Christians.

> [...][T]he greatest Philosophers of modern times—the founders of the new school of discovery, and those who have most extended the boundaries of our knowledge—have been forced to submit their reason to the Gospel; a circumstance which, independent of the argument for the strength of the Christian Evidence which the conviction of such men affords, at least shows that Revealed Religion cannot be very unfavourable to scientific inquiries, when those who sincerely

[12] J. H. Newman. *Fifteen Sermons Preached Before the University of Oxford*. *Between A.D. 1826 and 1843*. London: Longman, Green and Co, 1909.
[13] J. H. Newman. "Sermon 1: The Philosophical Temper First Enjoyed by the Gospel." *Fifteen Sermons Preached Before the University of Oxford*. *Between A.D. 1826 and 1843*. London: Longman, Green and Co, 1909, p. 1.
[14] J. H. Newman. Quoted in E. Sillem. Ed. *The Philosophical Notebooks of John Henry Newman.* 2 Vols.; vol. 2. Nauwelaerts, 1970, p. 41.

> acknowledge the former still distinguish themselves above others in the latter.[15]

It is important to mention here that Newman's inclination towards maths and science stemmed from his years as an undergraduate student at Oxford and the influence exerted on him by Dr. Richard Whatley, whom he helped write the book *Elements of Logic* (1826) and the Noetics philosophy.[16] Whatley did not only have an impact on Newman, but also on Peirce who read his *Elements of Logic* as a child. In fact, according to Cornelis de Waal, it is possible to find some early seeds of Peirce's semiotics precisely in Whatley's refutation of 'abstract ideas', and his proposal that we think in signs.[17]Although Newman never specifically stated that we think in signs, he certainly drew on Whatley's logic when discussing the differences between implicit and explicit reason and in his postulation of implicit reason as a non-conscious logical inference which is not based on words, but on inferences that go beyond words.

Although Newman was interested in scientific developments of the time, as Gillian Evans observes, 'it could not be said he kept up assiduously with the latest developments'; in fact 'it would be fair to say that his interest reflected the influence contemporary scientific developments had on educated readers.'[18] From his studies in mathematics and geology, however, Newman drew two things of lasting importance;

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[15] J. H. Newman. "Sermon 1."*op.cit*., 1909, p. 5.

[16] Whatley described the philosophy of Noetics: 'all reasoning, on whatever subject, is one and the same process which may be clearly exhibited in the form of syllogism' (qtd. in E. Sillem *op.cit.*, p. 164). The Noetic school was regarded as having a liberal outlook which led some Anglicans to embrace a form of anti-dogmatic liberalism, which meant that doctrine should be validated by reason. Such a liberal outlook in the Anglican Church was a direct consequence of the pressure sciences were exerting in those days, when the Scripture could not be read simply as the word of God but it had to be proved as a rational and empirical fact, thus giving an ever more distorted interpretation of the Bible. Newman highly disagreed with this liberal outlook and attacked it in his *University Sermons* and his *Essay in the development of Christian Doctrine*. The University Sermons, in particular, were written to prepare the Church against what he called the 'usurpation of the reason' and to defend Christian faith. His battle against theological liberalism culminated in his Tract 90 in 1841 where he unravelled his enterprise of catholicising Anglicanism by interpreting the 39 articles in a literal sense. (S. Gilley "Life and Writings." *The Cambridge Companion to John Henry Newman*. Eds. I. Kerr, T. Merrigan. Cambridge: Cambridge University Press, 2010, pp. 1-29.)

[17] C. De Waal, *op.cit.*, 2013, p. 5.

[18] G. Evans. "Science and Mathematics in Newman's Thought." *The Downside Review* Vol. 96 (1978): 247-266, p. 247.

first, the general attitude of approval towards the secular, particularly natural science and second, the body of technical knowledge which was substantial and which he used in his debates against empirical science. Newman was particularly fond of Newton, and he regarded him as having discovered absolute laws which, he felt, provided a point of reference on the scientific side, against which the certainties of Christian doctrine and revelation could be set. In fact in paragraph six of his Sermon One he writes that:

> Much might be said on the coincidence which exists between the general principles which the evidence for Revelation presupposes, and those on which inquiries into nature proceed. Science and Revelation agree in supposing that nature is governed by uniform and settled laws. [...] The supposition, then, of a system of established laws, on which all philosophical investigation is conducted, is also the very foundation on which the evidence for Revealed Religion rests.[19]

The 'faith' that a scientist has in physical laws and mathematical equations, is for Newman the same type of belief a religious man has in Revelation. In another passage of the same sermon he writes:

> we shall find that some of those habits of mind which are throughout the Bible represented as alone pleasing in the sight of God, are the very habits which are necessary for success in scientific investigation, and without which it is quite impossible to extend the sphere of our knowledge.[20]

Newman did not specify, at this stage, what he intended by habits of mind; however, he implied that they underpin any investigation, be it scientific or religious and, most importantly, that these habits of mind are not separated acts, but they are part of the same reasoning process. The next section is going to explore Newman's view on habits of mind in relation to belief and highlight the similarities between his and Peirce's understanding of belief as a habit of mind which is produced by non-conscious, abductive inferential processes.

[19] J.H. Newman. "Sermon 1." *op.cit.,* 1909, p. 6.
[20] *Ibid.,* p.7.

Faith and Reason contrasted as Habits of Mind

A fuller account and discussion about what reason and faith are is to be found in his Sermon 10 entitled 'Faith and Reason, contrasted as Habits of Mind' (1839) where he fundamentally rejected faith as a purely moral quality dependent on reason and, instead, advocated it to be a process of reasoning (natural logic) in its own right. In the opening paragraphs of the Sermon, Newman defines faith as 'the substance of things hoped for, the evidence of things not seen.'[21] He believes, much like Peirce, that faith is an instrument of knowledge; however, it is not used in the same way as reason would be in order to acquire evidence. Moreover, he doesn't believe faith to be separated from reason. Although he concedes that their matter of inquiry is different, he asserts that:

> On the other hand, however, it may be urged, that it is plainly impossible that Faith should be independent of Reason, and a new mode of arriving at truth; that the Gospel does not alter the constitution of our nature, and does but elevate it and add to it; that Sight is our initial, and Reason is our ultimate informant concerning all knowledge.[22]

In a later paragraph he continues:

> Such is the question which presents itself to readers of Scripture, as to the relation of Faith to Reason: and it is usual at this day to settle it in disparagement of Faith,—to say that Faith is but a moral quality, dependent upon Reason,—that Reason judges both of the evidence on which Scripture is to be received, and the meaning of Scripture; and then Faith follows or not, according to the state of the heart; that we make up our minds by Reason without Faith, and then we proceed to adore and to obey by Faith apart from Reason; that, though Faith rests on testimony, not on reasonings, yet that testimony, in its turn, depends on Reason for the proof of its pretensions, so that Reason is an indispensable preliminary.[23]

In other words, reason was commonly seen as the only 'fair' judge in matters of science and religion. Following the empirical tradition, it was believed that truth can only be obtained by providing some hard evidence and only when evidence was provided and

[21] J. H. Newman. "Sermon 10." *op.cit.*, 1909, p. 176.
[22] *Ibid*., p. 181.
[23] *Ibid.*, p. 182.

accepted then belief would follow according to a person's disposition. Although Newman concedes that Reason is important as an inferential tool, this doesn't mean that faith stems from reason. To quote from Newman again:

> In attempting to investigate what are the distinct offices of Faith and Reason in religious matters, and the relation of the one to the other, I observe, first, that undeniable though it be, that Reason has a power of analysis and criticism in all opinion and conduct, and that nothing is true or right but what may be justified, and, in a certain sense, proved by it, and undeniable, in consequence, that, unless the doctrines received by Faith are approvable by Reason, they have no claim to be regarded as true, it does not therefore follow that Faith is actually grounded on Reason in the believing mind itself.[24]

Although faith falls short of the standards of clarity and precision demanded by formal reasoning, Newman argues that this doesn't necessarily mean that other types of reasoning are to be labelled as 'unscientific' and therefore unreliable. A particular point Newman examines is the controversial issue of miracles (which called into question the divine origin of earth as well as men), which became the cardinal point on which criticisms towards the Church were moved. Newman explains that according to the Utilitarian School,[25] what the Church proclaimed as miracles, for instance the parting of the sea, should be subjected to objective tests, acceptable to reason. That, however, Newman felt would be to imply that faith accepts inaccurate proofs which he refutes by stating that both reason and faith share a common ground;

> The founder of the recent Utilitarian School insists, that all evidence for miracles, before it can be received, should be brought into a court of law, and subjected to its searching forms:—this too is to imply that Reason demands exact proofs, but that Faith accepts inaccurate ones. The same thing is implied in the notion which men of the world

[24] *Ibid*., p. 183.

[25] The principle of utility - or Utilitarianism - is a moral test for the rightness of actions, based on how much pleasure or pain they produce. The most well-known and developed versions of it are found in the work of Jeremy Bentham (1748-1832) and John Stuart Mill (1806-1873). However, the 'principle of utility' is also found in the work of David Hume (1711-1776). Bentham and Mill wanted to find a secure, irrefutable and objective basis for morality. They were deeply suspicious of moral theories which did not do this, especially when it seemed they were arbitrary and subjective as they felt faith-based moralities were. In his late essay *Utility of Religion* (1874) Mill argued that it was 'perfectly conceivable that religion may be morally useful without being intellectually sustainable.' Quoted in P. Davis, *op.cit.*, 2002, p. 144.

> entertain, that Faith is but credulity, superstition, or fanaticism; these principles being notoriously such as are contented with insufficient evidence concerning their objects. On the other hand, scepticism, which shows itself in a dissatisfaction with evidence of whatever kind, is often called by the name of Reason. What Faith, then, and Reason are, when compared together, may be determined from their counterfeits,—from the mutual relation of credulity and scepticism, which no one can doubt about. [...]When, then, Reason and Faith are contrasted together, Faith means easiness, Reason, difficulty of conviction. Reason is called either strong sense or scepticism, according to the bias of the speaker; and Faith, either teachableness or credulity. [26]

Gillian Evans points out that contrary to sceptics Newman's habit was to remain open-minded in the face of mysteries and paradoxes, to hold on in faith, until they were resolved, rather than dismiss the whole area of study which generated them as unworthy of discussion. In her article, 'Science and Mathematics in Newman's Thought', she argues that what for the sceptic is a reason not to remain open minded to the truth of faith is exactly what for Newman represents a source of considerable intellectual reassurance.[27] Where sceptics, she states, find mathematical principles and scientific laws acceptable because they do not involve them in committing themselves to a creed, Newman finds them refreshing, because they provide him with dispassionate points of reference for his arguments, with principles against which he can test the principles of Christian Doctrine in the confidence that scientific laws can only confirm and strengthen the case for the orthodox Christian view.

Newman was well aware that the whole framework of scientific rationality was inimical to the depth of commitment and the unconditional assent so essential to the act of faith and he was therefore forced, as Terrence Merrigan puts it, to 'fight on two fronts: 1) to vindicate the claim of properly religious experience to legitimacy; 2) to establish the essentially rational character of the act of faith.'[28] He insisted that faith is

[26] J. H. Newman, "Sermon 10."*op.cit.,* 1909, p. 186.
[27] G. Evans. "Science and Mathematics in Newman's Thought." The Downside Review. Vol. 96 (1978): 247-266.
[28] T. Merrigan. *op.cit.*, 1990a, p. 4.

a different kind of reasoning which doesn't need empirical proof, but it relies on what he calls 'antecedent probabilities.' These antecedent probabilities, a concept he drew from Butler's *Analogy of Religion* (1729), are also Newman's case against scepticism. His concern is to show we give unconditional assent to a variety of fundamental truths and certainties and that these, although lacking justification, provide unquestioned starting points for inferring other propositions which are psychologically and logically apprehended:

> Faith, then, as I have said, does not demand evidence so strong as is necessary for what is commonly considered a rational conviction, or belief on the ground of Reason; and why? For this reason, because it is mainly swayed by antecedent considerations. [...]Faith is a moral principle. It is created in the mind, not so much by facts, as by probabilities; and since probabilities have no definite ascertained value, and are reducible to no scientific standard, what are such to each individual, depends on his moral temperament.[29]

In this passage Newman stresses again the significance of faith as a certain moral disposition of a person searching for meaning which stems from a habit of mind. This idea was also advocated by Charles S. Peirce in the paper 'The Fixation of Belief' published in 1877 where he pondered on the ability of men to draw inferences which are in his view linked to proper habits of mind. Newman's purpose in discussing antecedent probabilities or what he later called first principles (an unproved assumption that we hold as true) is to show that religious belief is no different to any other belief as it is being formed less by actual arguments than by what we think or are inclined to believe as true on the basis of our already existing attitudes and assumptions. These in turn, affect our arguments for and against this or that, and make us decide that formal arguments are compelling even though they fall short of any positive proof. Newman insists that belief cannot be subsumed under the laws of rationality and is certainly not the product of a rational analysis. He derives his view

[29] J. H. Newman. "Sermon 10." *op.cit.*,1909, p. 187.

from a particular aspect of Hume's philosophy where he rejects rational refutation. In *The Treatise of Human Nature* (1739) David Hume states that: 'reason is, and ought to be, the slave of the passions'[30] which echoes Newman's belief that mind should not be guided by the laws of formal logic, but by informal logic, grounded in instinct or imagination. Both Hume and Newman state that fundamental and necessary beliefs come from unknowable sources - unknowable in their origins, not their effects since we can see that people act in certain ways according to their 'belief' or what they hold as true. In another passage Hume also states that 'all reasoning concerning causes and effects are derived from nothing but customs; and that belief is more properly an act of the sensitive, than of the cognitive parts of our natures.'[31] What Hume describes as customs is what both Peirce and Newman see as habits of mind. For Peirce, as much as for Newman, a habit is an acquired propensity to act in a regular way in familiar circumstances. For both, habitual responses are, however, made involuntarily without reflection or conscious decision-making. According to Peirce and Newman, beliefs are habits of action produced by inferential processes which are non-conscious and are, as discussed in Chapter One, grounded in natural forms of logic. These are for Peirce identified as semiosis (sign activity).

The Nature of Faith in Relation to Reason: the Empirical tradition

Although Newman derived some of his insights from Hume, scholars seem to be divided on the role the empiricist tradition played in the development of his thought. On the one hand Jamie Ferreira asserts in *Scepticism and Reasonable doubt – The British Naturalist Tradition* (1986)[32] not only that Newman refuted scepticism, but also that he held Locke and Hume as his explicit targets. On the other hand, Terence

[30] D. Hume. Quoted in I. Williams. "Faith and Scepticism: Newman and the Naturalist Tradition." *Philosophical Investigations*. Vol. 15 n. 1 (1992): 151-166, p. 156.
[31] D. Hume. *Treatise of Human Nature*. 2nd edn. Oxford: Clarendon Press, 1975, p. 183.
[32] J. M. Ferreira. *Scepticism and Reasonable Doubt: The British Naturalist Tradition in Wilkins, Hume, Reid and Newman*. Oxford: Clarendon Press, 1986.

Merrigan and Ieuan Williams draw attention to Newman's debt to empirical tradition and more specifically to aspects of Hume's philosophy. Others brand Newman as an empiricist although it is not certain when and how assiduously he read Locke.[33] As Newman would argue, a probable '*via media*'[34] is where the truth lies. What is undeniable is the fact that Newman dwelt on notions about how much of what we know is something we learned through experience and how much of what we know is something we could have reasoned out without the benefit of particular experience.

Newman distinguished two sorts of conscious experience (although this distinction was only on paper as they are to be understood as being part of one another); one external to oneself and the other internal and represented by the world of mental impressions. The way we apprehend a world external to ourselves is through senses, but it is through conscious experience that we acknowledge it. In biosemiotic terms we could say that it is through signs, which function as mediators between the external world of objects and the internal world of ideas that we come to apprehend the world. Peirce argued that for each of us, there is an internal world consisting of private sign systems or imagination, and an outer world of action and habits.

For Newman, echoing Coleridge, the experience of conscience is a mental act, based on imagination, and is where one apprehends oneself in his relation to God. In Sermon 11, Newman frames some of these aspects which he will address at length in his *Grammar of Assent* (1871):

> We are surrounded by beings which exist quite independently of us,—exist whether we exist, or cease to exist, whether we have cognizance of them or no. These we commonly separate into two great divisions, material and immaterial. Of the material we have direct knowledge

[33] J. Hochschild. "The Re-Imagined Aristotelianism of John Henry Newman." *Modern Age.* Fall (2003): 333-342, p. 334.
[34] *Via media* is a Latin phrase meaning middle way. Newman used it in Tracts 39 and 41 where he tried to define a new Anglican ecclesiology and mediate between the Roman Catholic Creed and the Church of England on matters of the Church's teaching on justification.

> through the senses; we are sensible of the existence of persons and things, of their properties and modes, of their relations towards each other, and the courses of action which they carry on. [...] As to immaterial beings, that we have faculties analogous to sense by which we have direct knowledge of their presence, does not appear, except indeed as regards our own soul and its acts. But so far is certain at least, that we are not conscious of possessing them; and we account it, and rightly, to be enthusiasm to profess such consciousness. At times, indeed, that consciousness has been imparted, as in some of the appearances of God to man contained in Scripture: but, in the ordinary course of things, whatever direct intercourse goes on between the soul and immaterial beings, whether we perceive them or not, and are influenced by them or not, certainly we have no consciousness of that perception or influence, such as our senses convey to us in the perception of things material. The senses, then, are the only instruments which we know to be granted to us for direct and immediate acquaintance with things external to us. Moreover, it is obvious that even our senses convey us but a little way out of ourselves, and introduce us to the external world only under circumstances, under conditions of time and place, and of certain media through which they act.[35]

Newman here draws on the empiricist notion that all the knowledge human beings possess derive from sense data. This tradition dates back to Francis Bacon (1561-1626), whom Newman read and whom he regarded as being a distant precursor of Newtonian physics and pioneer in the need for the study of material phenomena.[36] Newman agreed with Newton that physics, as a science, treats the connections observable between phenomena. He also agreed with Bacon on his assertion that the Final Cause belongs to the sphere of natural theology and it should be used not as a proof for the existence of God, but as an explanation of His existence. A radical departure from the empiricist tradition, and more precisely from Hume's view on the way we apprehend reality, is that, for Newman, reality consists of objects and events as they are perceived or understood in human consciousness and not as anything independent of it, as Hume would hold. In his conception of mind, Newman sees that man thinks spontaneously in a way that

[35] J. H. Newman. "Sermon 11."*op.cit.,* 1909, p. 205.
[36] E. Sillem. *op.cit*., 1970, pp. 185-192.

accords with the logical structure of thought, which is not necessarily formal logic, but most likely natural logic or implicit reason.

It is important to highlight here that Newman, following Coleridge and the *Naturphilosophen* tradition, compares natural logic or reasoning to true poetry and states that it is 'a spontaneous outpouring of thought' and as such a gift to all minds. In biosemiotics terms this implies that poetic meaning does not obey a linear logic, but rather, 'it emerges from a recursive growth of pattern and metaphor.'[37] This contrasts with an empirical understanding of the workings of human mind where knowing is decided in accordance with predetermined laws of reason. Newman, however, is well aware that such knowledge does not take into account antecedent forms of knowledge, or what Peirce also called abduction or 'play of musement' which is that disposition in human beings that subtends all intellectual power and that contributes to the formation of new and alternative habits or hypotheses. The next section will focus on Newman's discussion of inferential process and show how implicit reason, or abduction subtends all intellectual power and how this is based on what Bateson later terms syllogism in grass.

Formal Logic or Higher Logic of Facts versus Natural Logic: On Implicit and Explicit Reason

It was in his Sermon 13, entitled 'Implicit and Explicit Reason' (1840) that Newman first addressed in more detail the workings of human mind and postulated the difference between formal and informal logic in relation to his discussion of faith and reason which he then developed in his *Grammar of Assent*. In the opening paragraphs of his sermon he states that 'reasoning is a living and spontaneous energy within us, not an art.'[38] What Newman intended by energy was a spontaneous flow very similar

[37] W. Wheeler, *op. cit*., 2014. Web. 02. February. 2016.
[38] J. H. Newman. *"*Sermon 13*."op.cit.,* 1909, p. 257.

to what S. T. Coleridge identified as imagination. It should not and cannot be interpreted in terms of Newtonian physics. He also defines reason as

> The faculty of gaining knowledge without direct perception, or of ascertaining one thing by means of another. In this way it is able, from small beginnings, to create to itself a world of ideas, which do or do not correspond to the things themselves for which they stand, or are true or not, according as it is exercised soundly or otherwise.[...] The mind ranges to and fro, and spreads out, and advances forward with a quickness which has become a proverb, and a subtlety and versatility which baffle investigation. It passes on from point to point, gaining one by some indication; another on a probability; then availing itself of an association; then falling back on some received law; next seizing on testimony; then committing itself to some popular impression, or some inward instinct, or some obscure memory; and thus it makes progress not unlike a clamberer on a steep cliff, who, by quick eye, prompt hand, and firm foot, ascends how he knows not himself; by personal endowments and by practice, rather than by rule, leaving no track behind him, and unable to teach another. *And such mainly is the way in which all men, gifted or not gifted, commonly reason,— not by rule, but by an inward faculty*.' [my italics][39]

True reasoning doesn't rely on sense data, which enables us to create a world of images or phenomena. On the contrary, true reasoning stems from an inward capacity for which we cannot account and which we cannot teach, yet we all possess. Newman maintains that in order to understand how reasoning by inward faculty operates we cannot apply the same rules as we would when investigating any reasoning process by way of syllogism as Aristotle taught.

> The boldest, simplest, and most comprehensive theory which has been invented for the analysis of the reasoning process, is the well-known science for which we are indebted to Aristotle, and which is framed upon the principle that every act of reasoning is exercised upon neither more nor less than three terms.[40]

Syllogism is a deductive argument pertaining to formal logic and as such, according to Newman, is unable to legislate for all the mental processes of reasoning. He defines formal logic as a scientific form of verbal reasoning where words do not necessarily

[39] *Ibid.*, p. 257.
[40] *Ibid.*, p. 258.

correspond to, or are not adequate, to thoughts. He makes a further distinction, to characterise formal logic in chapter eight of his *Grammar of Assent* where he states that formal logic is not concerned with words or language, but is concerned with symbols.

> What is true of Arithmetic, Algebra, and Geometry, is true also of Aristotelic argumentation in its typical modes and figures. It compares two given words separately with a third, and then determines how they stand towards each other, in a *bonâ fide* identity of sense. In consequence, its formal process is best conducted by means of symbols, A, B, and C. While it keeps to these, it is safe; it has the cogency of mathematical reasoning, and draws its conclusions by a rule as unerring as it is blind.[41]

Here the term symbol is used by Newman as a synonym for a special sign used in mathematics. It is worth recalling here that in a semiotic discourse, more specifically in typology of signs described by C. S. Peirce, a symbol is a consequence of a particular habit of mind which can include a natural disposition. For Newman, the issue starts when symbols, in his case mathematical, are later substituted with words, because differently from mathematical symbols words are polysemic and therefore they can be interpreted in various ways:

> Symbolical notation, then, being the perfection of the syllogistic method, it follows that, when words are substituted for symbols, it will be its aim to circumscribe and stint their import as much as possible, lest perchance A should not always exactly mean A, and B mean B; and to make them, as much as possible, the *calculi* of notions, which are in our absolute power, as meaning just what we choose them to mean, and as little as possible the tokens of real things, which are outside of us, and which mean we do not know how much, but so much certainly as, (in proportion as we enter into them,) may run away with us beyond the range of scientific management. The concrete matter of propositions is a constant source of trouble to syllogistic reasoning, as marring the simplicity and perfection of its process. Words, which denote things, have innumerable implications; but in inferential exercises it is the very triumph of that clearness and hardness of head, which is the characteristic talent for the art, to have stripped them of all these connatural senses, to have drained them of that depth and breadth of associations which constitute their poetry, their rhetoric, and their

[41] J. H. Newman, *op.cit.*, 1903, p. 266.

> historical life, to have starved each term down till it has become the ghost of itself, and everywhere one and the same ghost, "omnibus umbra locis," so that it may stand for just one unreal aspect of the concrete thing to which it properly belongs, for a relation, a generalization, or other abstraction, for a notion neatly turned out of the laboratory of the mind, and sufficiently tame and subdued, because existing only in a definition.[42]

Where mathematical symbols denote a specific value which cannot be interpreted in any other possible way, words, on the contrary, are open to interpretation. He laments the fact that it is through the act of syllogism that words are stripped of their meaning and become some kind of linguistic tag devoid of all their possible relations, or grammar. This concept is very similar to Lady Victoria Welby's concept of the 'plasticity' of verbal language which she developed in accordance with analogies from the organic world as she was deeply influenced by Darwin's evolutionary theory. Language, she believed, cannot and must not ever provide us with canons and limitations of permanent value and meaning. On the contrary, language is 'plastic', or rather, flexible and endowed with the capacity of 'expressive ambiguity' which renders it capable of adaptation and renewal to ever new expressive situations.[43]

Newman was not influenced by Darwin's evolutionary theory;[44] however, his organic understanding of language was the legacy of German Romanticism and *Naturphilosophie*, and more specifically of S. T. Coleridge's notion of language and words which he defined in *Aids to Reflection* as being 'more than mere counters of social intercourse, but they are living powers, by which the things of most importance are actuated, combined and humanized.'[45] Language is for Coleridge a central tenet in the

[42] *Ibid.*, p. 267.
[43] S.Petrilli, *op.cit.*, 2009, p. 21.
[44] Although Newman was familiar with Darwin's work and he professed sympathy for it, he never truly engaged with his ideas. However, as Suzy Anger notes, Newman's *Essay on Development of Christian Doctrine* (1845) could be seen as a sort of counterpart to Darwin's *Origin of Species* not so much because of its content, as Newman felt compelled to write it in order to win back the Church's absolute authority in exegetical questions, but because of the notion of change and development of thought in human mind as well as language, and the interpretation of meaning. See S. Anger, *op. cit.*, 2005, p.40.
[45] S.T. Coleridge. Quoted in J. Coulson. *Religion and Imagination: In Aid of a Grammar of Assent*. Oxford: Clarendon Press, 1981, p. 11.

cognitive process of understanding and experiencing reality. In line with Herder, he assigns an organic agency to language thus criticising the materialist's view of matter as neglecting the role of Logos as an intelligent agency in the Universe.[46]

Newman was well aware, as Coleridge and Welby were, that language was 'but an artificial system adapted for particular purposes, which have been determined by our wants.'[47] Yet a fundamental difference between Newman and Welby, as well as Peirce, is that Newman did not think in terms of signs and signs relations or semiosis - the process by which signs are exchanged and by which we generate meaning. Moreover, in line with Coleridge, Newman concentrated his efforts in the understanding of language primarily in terms of verbal signs and hermeneutics insofar as they were used in a theological discourse, whereas both Peirce and Welby extended the boundaries of signs, to non-verbal language and semiotics in a global discourse. For the latter, all things that exist, human and non-human, impose themselves on our attention as signs.

Although Newman's understanding of language was different to a certain extent to Peirce's, his view surrounding the issues of reasoning, cognition and logic show important parallels to Peirce's logic of abduction. As already discussed in Chapter One, Peirce sees abduction, or what he calls imagination 'as the spontaneous conjecture of instinctive reason' (CP 6.475) on which any inference is based. What Peirce calls abduction, is what Newman identifies as implicit reason.

In his 'Sermon 13', Newman differentiates between two distinct processes of reasoning: one is the original process of reasoning and the other is the process of

[46] A. Esterhammer. *The Romantic Performative. Language and Action in British and German Romanticism.* Stanford: Stanford University Press, 2000, pp. 162-165. According to Angela Esterhammer, the Logos, was conceived of by Coleridge in two ways; as a moral and intelligent God, and as language of Scripture. The former provides a final refutation of materialist philosophy and the latter refutes a superficial reading of the Bible for factual truth since the Bible is written using metaphors. By providing a biblical account of language, Coleridge underlined the centrality of word as Logos by means of which we can have access to an immediate conception of reality.

[47] Lady V. Welby. Quoted in S. Petrilli, *op.cit.* 2009, p. 22.

investigating our reasoning. Although all men have the faculty of reasoning, or of gaining truth from former truth, Newman believes that not all men reflect upon their own reasoning. These two exercises of mind are then defined as reasoning and arguing, or conscious and unconscious reasoning, or as implicit and explicit reasoning.

> [There] are two processes, distinct from each other,—the original process of reasoning, and next, the process of investigating our reasonings. All men reason, for to reason is nothing more than to gain truth from former truth, without the intervention of sense; to which brutes are limited; but all men do not reflect upon their own reasonings, much less reflect truly and accurately, so as to do justice to their own meaning; but only in proportion to their abilities and attainments. In other words, all men have a reason, but not all men can give a reason. We may denote, then, these two exercises of mind as reasoning and arguing, or as conscious and unconscious reasoning, or as Implicit Reason and Explicit Reason. And to the latter belong the words, science, method, development, analysis, criticism, proof, system, principles, rules, laws, and others of a like nature. [48]

If explicit reason is a form of *a posteriori* inference, implicit reason has to be antecedent or *a priori*, a form of phenomenological imagination which offers a language of creative discovery. It is precisely this type of inference on which, Newman demonstrates, faith is founded and which prefigures developments in Peirce's abductive argument for the reality of God discussed in his article 'A Neglected Argument for the Reality of God' (1908). For Peirce the belief in God is a natural product of abduction, of the 'rational instinct' or educated guess of the scientist. He defends the appropriateness of making this sort of inference from playful musing speculation on such facts as the variety, interconnectedness, and beauty in the cosmos and, like Newman, he discards argumentative reason as a form of critical rather than creative power.[49] For Newman, all significant believing, be it in science or religion, is deeply anchored in, and mediated through, implicit reason or imagination which is

[48] J. H. Newman. "Sermon 13." *op. cit*, 1909, p. 259.
[49] C. S. Peirce. "A Neglected Argument for the Reality of God." C. Hartshorne and P. Weiss Eds. *Collected Papers of C. S. Peirce*. Vol. VI. Cambridge, Massachusetts: Harvard University Press, 1965.

contrasted to pure intellect:

> Faith, then, though in all cases a reasonable process, is not necessarily founded on investigation, argument, or proof; these processes being but the explicit form which the reasoning takes in the case of particular minds.[...] Inquiry and argument may be employed, first, in ascertaining the divine origin of Religion, Natural and Revealed; next, in interpreting Scripture; and thirdly, in determining points of Faith and Morals; that is, in the Evidences, Biblical Exposition, and Dogmatic Theology. In all three departments there is, first of all, an exercise of implicit reason, which is in its degree common to all men.[50]

When analysing the Gospel to ascertain its truth, Newman states, we should not try to read it as a scientific treatise looking for evidence, or Scripture proof of doctrine, but we have to engage actively and creatively with the text, via our implicit reason or imagination. Such view is a clear legacy of the hermeneutic approach:

> It is hardly too much to say, that almost all reasons formally adduced in moral inquiries, are rather specimens and symbols of the real grounds, than those grounds themselves. They do but approximate to a representation of the general character of the proof which the writer wishes to convey to another's mind. They cannot, like mathematical proof, be passively followed with an attention confined to what is stated, and with the admission of nothing but what is urged. Rather, they are hints towards, and samples of, the true reasoning, and demand an active, ready, candid, and docile mind, which can throw itself into what is said, neglect verbal difficulties, and pursue and carry out principles. This is the true office of a writer, to excite and direct trains of thought; and this, on the other hand, is the too common practice of readers, to expect everything to be done for them,—to refuse to think,—to criticize the letter, instead of reaching forwards towards the sense,—and to account every argument as unsound which is illogically worded.[51]

In other words, for Newman formal reasoning based on scientific deductive logic which is expressed in verbal language can only represent a partial reality, since to be able to account for natural logic we would need a different exercise of mind. According to Newman, echoing Coleridge's thought, if we read words through a scientific lens, if we take them at face value as if they were fixed forms or tokens corresponding precisely to reality, we are unable to reach the depth of their true meaning. To be able to interpret the Gospel correctly, Newman notes, we should use another faculty, that of

[50] *Ibid*., pp. 263-264.
[51] *Ibid*., p. 275.

implicit reason or biosemiotics imagination which is anchored in or draws upon an essentially poetic language which is in constant dialogue with or in relation to nature. This poetic language, I suggest, uses a different type of syllogism which is based on metaphor or on what in the second half of the twentieth century Gregory Bateson called 'syllogism in grass.' As discussed in Chapter One, Bateson was a precursor of biosemiotics. Like Peirce and Newman, he relied on abduction, a term he used and borrowed directly from Peirce, as a valid form of real-world reasoning.[52] In his book, *Angels Fear* (1987), Bateson examined the nature and origin of mankind's sense of the sacred and he argued that intimations of the sacred, expressed in abductive inference in our religion are also found in forms of abduction in nature. Hence his statement that the religious sense arises from our recognition that we are part of nature, and that there is an underlying unity, a fundamental creative wholeness.

In *Angels Fear* Bateson also argues that twentieth-century science discarded the importance of the sacred mainly because of the impossibility of defining what sacred is using the common methodological tools applied in different scientific fields. He introduces the difference in methodology by distinguishing what he calls truth of metaphors and truths of mathematicians. For Bateson, as previously observed, a metaphor is one of the most effective tools for representing and describing aspects of the world and it represents a primary aspect of communication. A 'syllogism in grass' or metaphor is for Bateson the dominant mode of communicating interconnections of ideas in pre-verbal realms whereas a 'syllogism in Barbara' a syllogism that mathematicians pursue is the type of inference based on verbal communication or, as Newman would argue, which is concerned with the comparison of propositions (statements) rather than propositions themselves.

[52] G. Bateson, *op.cit.*, 1987.

Although Newman didn't use the term 'syllogism in grass', he somewhat phrased this with his distinction between notional assent (syllogism in Barbara) and real or imaginative assent (syllogism in grass). Moreover, Newman identified an important concept, that of implicit reason, which he later called 'illative sense' and sometimes 'imagination', as the basis of all reasoning and creativity and which is an important concept in today's biosemiotics. Abduction, or Neman's illative sense, becomes in biosemiotics the means by which human beings make links between their non-conscious or tacit knowledge based on the interpretation of iconic, indexical and symbolic signs, and the possibility of new meanings. These non-conscious processes are based on natural forms of reasoning.

Newman's philosophical insights into natural forms of logic, are well described by Wilfrid Ward who noted that:

> Newman showed in these sermons that not formal logic but a man's spontaneous reasoning, which is largely 'implicit' or 'unconscious' of its own methods, is the process that does the important work in most of the practical convictions of this life. The subsequent attempt of the mind to analyse that process, to trace its steps in terms of formal logic and thus show their reliability, though not without value, fails to give anything like a complete account of it.[53]

For Newman, spontaneous reasoning, which is largely based on non-conscious mode of reasoning, is at the centre of his argument for the common grammar between faith and reason. Both stem from the same kind of inferential processes which Newman tries to show, in his discussion of notional and real assent, are epistemologically legitimate.

[53] W. Ward. *The Last Lectures of Wilfrid Ward, Being the Lowell lectures 1914 and the third lecture delivered at the Royal Institution 1915* with an Introductory Study by Mrs. Wilfrid Ward. London: Longman, Green & Co., 1918, p. 78.

Notional (syllogism in Barbara) versus Real Assent (syllogism in grass) and Religious Certitude

Newman's elaboration of the difference between notional and real assent was the result of his preoccupation with the attainment of religious truth and his life-long quest to demonstrate the 'reasonableness' of religious thought. Between 1860 and 1865 Newman was involved in deeply engaging correspondence with scientist and friend William Froude who challenged him to prove logically how mind is capable of arriving at certain conclusions without falling in to the trap of 'doubts,' or, as Newman put it, 'how can one believe what one doesn't understand and, can one believe what cannot be absolutely proved.'[54] These questions were the ones he set out to answer in his *Essay in Aid of a Grammar of Assent* (1870).

In his *Oxford University Sermons* Newman already indicated that no one can function under the logical purism which demanded that everything be doubted and then proven on *a priori* grounds. If we assume that the assent of faith is impermissible until we have first successfully demonstrated it to be rationally adequate, we are, according to Newman, deeply mistaken. Having certitude, does not, as we have seen, result from strictly logical operations, by way of 'syllogism in Barbara', but it arises from another way of reasoning that reaches into areas beyond strictly logical operations. The way we can reach these areas is through what he termed 'illative sense' which is a concept Newman derived from his readings of Aristotle's *Nichomachean Ethics* and the concept of '*phronesis'*.

For Aristotle, *phronesis* is the virtue for guiding actions and it is a primarily an intellectual virtue or a perfection of thought which is likened to perception and judgement. *Phronesis* includes '*nous*' or intuition/understanding, a virtue which is also

[54] J. H. Newman. Preface to the second edition of *An Essay in Aid of a Grammar of Assent.* Web. 12 May 2012.

part of what Aristotle calls '*sophia'* or wisdom by which intellect is able to grasp indemonstrable truths.[55] For Newman, the illative sense is a kind of faculty, or a power of discernment and judgement which is not linked to strict logical reasoning, and thus verbal language or to use Thomas Sebeok's distinction of speech and language,[56] but it represents that inward capacity of reasoning, or creative power of imagination on which assent is based and which outstrips language. In biosemiotic terms, this implies that it is through abduction, that non-conscious faculty whereby metaphoric links between signs generate new hypotheses that we are able to apprehend and give assent. A letter written in 1868 to his friend Henry Wilberforce on matters of religious belief is particularly revealing of Newman's thought:

> I consider there is no such thing as a perfect logical demonstration; there is always a margin of objection even in Mathematics, except in the case of short proofs, as the propositions of Euclid. Yet on the other hand it is a paradox to say there is not such a state of mind as certitude. It is as well ascertained a state of mind, as doubt—to say that such a phenomenon in the human mind is a mere extravagance or weakness is a monstrous assertion which I cannot swallow. Of course there may be abuses and mistakes in particular cases of certitude, but that is another matter. *It is a law of our nature*, then, that we are certain on premises which do not reach demonstration. This seems to me undeniable. Then what is the faculty (since it is not the *logical Dictum de omni et nullo*) which enables us to be certain, to have the state of mind called certitude, though the syllogism before us is not according to the strict rules of Barbara? I think it is [*phronesis*] which tells when to discard the logical imperfection and to assent to the conclusion which ought to be drawn in order to demonstration but is not *quite*. No syllogism can prove to me that Nature is uniform.[57]

[55] Quoted in J. Hochschild, *op.cit.*, 2003, p. 337.

[56] It is worth recalling here that Thomas A. Sebeok distinguished between language and speech, where language is described following the Tartu-Moscow school, as a primary modelling system, as a capacity for producing and organizing world views which is common to all species. Sebeok called language natural language and it is to be understood as a pre-verbal faculty. Speech, on the other hand, is an adaptive derivation from natural language, specific to Homo Sapiens Sapiens and is used for communicative purposes. See S. Petrilli and A. Ponzio. *Interpretive Routes through the Open Network of Signs*. Toronto & London: University of Toronto Press, 2005.

[57] J. H. Newman. *The Letters and Diaries of John Henry Newman, Vol. XXIV, A Grammar of Assent, January 1868-1869*. Ed. at the Birmingham Oratory by Charles Stephen Dessain. Oxford: Clarendon Press, 1973, p. 104.

The premises which Newman suggests in this letter are in fact those premises granted by the illative sense, or implicit reason which as he states is a law of our nature. What he means by law of our nature should not be understood in terms of always reliable repeatable scientific laws, but I suggest it should be read in the light of the Romantic philosophical tradition of Schelling, Hegel and later Coleridge, for whom nature's reality only emerges with the active participation of human mind which is inherent in nature's creative order. It is through Coleridge's imagination, or Newman's illative sense or biosemiotic natural forms of reasoning that we can tap into those non-conscious aspects of knowledge on which, according to Newman, certitude in relation to faith originates.

A similar consideration was made by J. Coulson in *Religion and Imagination: In Aid of a Grammar of Assent* where he highlights the fact that for Newman religious belief originates from imagination.[58] What we hold in faith, Coulson states, is most frequently expressed in metaphor, symbol and story, and as such, prior to and as a condition of its verification requires an imaginative assent comparable to that we give to poems or novels. This is not to assert that belief and the practice of Christian religion is some kind of aesthetic activity, but it is to suggest or is an attempt to disclose the similarity between the way in which human beings respond to literature and the way in which they come to faith; the response to revelation and the response to faith it could be said share a common grammar.

Coulson's view here echoes Bateson's, although their arguments are nested in two different domains. For instance, Coulson examines it from the standpoint of a Christian believer and in the wake of the humanistic tradition where the hermeneutics of literature and religion almost overlap. Bateson, on the other hand, discusses the

[58] J. Coulson, *op.cit.*, 1981.

importance specifically in his *Angels Fear* (1987), from a standpoint of a philosopher concerned with explaining natural phenomena in the living world based on cybernetics. As I pointed out in Chapter One, for Bateson, as much as for Peirce, the living world is organised by minds, where mind is not narrowly identified as human mind, but as process relationship. For Bateson 'the living world is a single intermeshing hierarchy of process relationships that are mental in kind: comparable to thought'[59] where the mental activity he stresses is the activity involved in receiving and responding to information in gaining and using knowledge. The bulk of knowing is for Bateson, as much as we have seen for Newman, non-conscious knowledge; however, for Bateson this non-conscious knowledge is shared by organisms and living systems throughout the living world, with human beings being a part of it and not detached from it. Although Bateson does not define mind or mental processes as a function of semiosis as Peirce does, his ideas about the nature of mind run parallel. Importantly, they were both of the persuasion, much like Newman, that religious feelings are ingrained in the workings of the human mind through abduction and they both believed in the mind as an instantiation of a broader pattern that connects nature and culture.

Fundamental to Peirce's law of mind, as already mentioned, is the premise that the study of sign actions 'offers an account of how the mind functions, develops and decays' within a semiotic web.[60] And it was precisely the way that mind functions in relation to holding religious truth and certitude that Newman set out to investigate in his *Grammar of Assent* where he drew a distinction between two modes of a particular operation of the mind that he called 'assent.' In his first chapter Newman describes the

[59] G. Bateson. *op.cit.*,1987, p. 56.
[60] D. Eicher-Catt. "Bateson, Peirce and the Signs of the Sacred." *A Legacy of the Living Systems, Gregory Bateson as Precursor to Biosemiotic*s. Ed. J. Hoffmeyer. Berlin: Springer, 2008, pp. 257-277, p. 264.

type of propositions we usually hold and from which assents derives. He distinguishes between three types of propositions: 1) categorical 2) conditional and 3) interrogative each of which has three corresponding acts of assent, inference and doubt. Newman is concerned only with assent and inference since, as he wrote in a letter to Aubrey de Vere soon after the publication of his *Grammar*, he excludes doubts: 'because they *are* doubts; I don't see the need of excluding objections. The mind is very likely to be carried away to doubt *without* a basis of objections sufficient in the judgment of the [*phronesis*] to justify it. The imagination, not the reason, is appealed to.'[61] In other words, Newman is interested in investigating those processes of mind which run unconsciously, and since doubt is a form of conscious reasoning he is less interested in looking into its workings since conscious reasoning has been dealt with in writings of logic.

Newman continues by explaining that before we can assent to any proposition we should apprehend it; in other words apprehension, which doesn't mean understanding, is 'simply an acceptance of an idea or of the fact which a proposition enunciates', and is a pre-condition for assent. He defines apprehension as 'our imposition of a sense on the terms of which they are composed.'[62] If these terms are 'common nouns, as standing for what is abstract, general, and non-existing,'[63] then we are looking at a notional proposition; whereas if the terms are 'composed of singular nouns, and of which the terms stand for things external to us, unit and individual,'[64] we are in the presence of a real proposition. The former involves notional apprehension, whereas the latter involves real apprehension. In other words, an apprehension is real if it is about a certain concrete thing, whether it exists or not and

[61] Quoted in W. Ward. *The Life of John Henry Cardinal Newman; Based on his Private Journals and Correspondence.* Vol. 2, London: Longmans, Green and Co., 1912, p. 253.
[62] J. H. Newman, *op.cit.*, 1903, p. 9.
[63] *Ibid.*, p. 9.
[64] *Ibid.*, p. 10.

is expressed in language through singular nouns; it is notional if it bears upon an abstract thing and is expressed in language as common nouns, hence the possibility of generalization. Real assent, based on real apprehension, always rests upon a particular experience of a thinking subject, such as a perception and is therefore, according to Newman, stronger although assent would not admit of any degrees. Most importantly, Newman suggests that assent is unconditional, therefore does not need any proof since it is instinctive or spontaneous. Notional assent, on the contrary, bearing a relation to abstract and general entities, is less vivid, and hence weaker in the mind. Newman believed that notional assent could resemble inference due to the fact that it is based on notional apprehension and contrary to real assent, is conditional or based on evidence:

> Notional Assent seems like Inference, because the apprehension which accompanies acts of Inference is notional also,—because Inference is engaged for the most part on notional propositions, both premise and conclusion.[65]

Newman admits that both assent and inference can be based on notional and real apprehension however the purest form of assent is based on real apprehension, whereas the purest form of inference is based on notional apprehension. What this means is that real assent is dependent upon imagination, (syllogism in grass), whereas notional is based on logical inference either of deduction or induction (syllogism in Barbara).

Newman distinguishes five kinds of notional assents: 1. professions, where you assent to something which you do not fully understand; 2. credences, or assents gained by implicit reason; 3. opinion, which is explicit assent to a proposition we held implicitly; 4. presumption, an assent given to first principles underlying our reasoning and 5. speculations, the conscious acceptances of propositions explicitly held true. His purpose in drawing this distinction was not intended to highlight the difference

[65] *Ibid.*, p. 39.

between two *kinds* of assent, but two *modes* of a single operation of the mind. Newman's purpose was to show how it is that the mind is able to have certainty about the truths of religion even when there is no obvious theological inference leading to the certainty of notional assent associated with some. In the chapter entitled 'Apprehension and Assent in the Matter of Religion' Newman addresses the issue of dogma and he defines it as a proposition which

> Stands for a notion or for a thing; and to believe it is to give the assent of the mind to it, as it stands for the one or for the other. To give a real assent to it is an act of religion; to give a notional, is a theological act. It is discerned, rested in, and appropriated as a reality, by the religious imagination; it is held as a truth, by the theological intellect.[66]

Newman sees that there is no real demarcation between the religious and theological assent since man commonly has both intellect and imagination, but what it is important to note is the fact that although knowledge derives from sense perception, and similarly a Christian would get his doctrine through abstraction and inference (intellect), belief stems from conscience. In other words, to give a real assent is an act of religion; to give a notional is a theological act. It is discerned, rested in, appropriated as a reality, by the religious imagination; it is held as a truth, by the theological intellect. Newman's view is not dissimilar to Saint Thomas Aquinas with whom he was familiar even before his conversion and who was at the heart of scholastic theology of the Roman Catholic Church. In the *Summa Theologica,* specifically in the section on the discussion of whether sacred doctrine should be held as argument, Aquinas held that similarly to other sciences, theology starts from its first principles and from them argues to prove something else.

> As other sciences do not argue in proof of their principles, but argue from their principles to demonstrate other truths, in these sciences; so

[66] *Ibid.,* p. 98.

> this doctrine does not argue in proof of its principles, which are the articles of faith, but from them it goes on to prove something else.[67]

The first principles Aquinas refers to are held as true, though they cannot be proved as true by theology or reason; they are, rather, the fundamental articles of faith, the precepts of revealed religion. The first principle Newman refers to instead is conscience, since it is through conscience that we perceive God. The instinct of the mind which recognizes God is for Newman the same as the instinct other living organisms have thus implicitly saying that there is a sort of continuity between the natural and cultural world. This, shows Newman's proto-biosemiotic view of nature and living organisms and the continuity with the cultural world.

> And let me here refer again to the fact, to which I have already drawn attention, that this instinct of the mind recognizing an external Master in the dictate of conscience, and imaging the thought of Him in the definite impressions which conscience creates, is parallel to that other law of, not only human, but of brute nature, by which the presence of unseen individual beings is discerned under the shifting shapes and colours of the visible world. Is it by sense, or by reason, that brutes understand the real unities, material and spiritual, which are signified by the lights and shadows, the brilliant ever-changing caleidoscope, as it may be called, which plays upon their *retina*? Not by reason, for they have not reason; not by sense, because they are transcending sense; therefore it is an instinct.[68]

Newman's attempt to illustrate mind process which human beings entertain in order to arrive at the doctrine for the belief in God rested upon the real assent which Newman also called imaginative assent.

> I have wished to trace the process by which the mind arrives, not only at a notional, but at an imaginative or real assent to the doctrine that there is One God, that is, an assent made with an apprehension, not only of what the words of the proposition mean, but of the object denoted by them. Without a proposition or thesis there can be no assent, no belief, at all; any more than there can be an inference without a conclusion. The proposition that there is One Personal and Present God may be held in either way; either as a theological truth, or as a religious fact or reality. The notion and the reality assented-to are represented by one and the same proposition, but serve as distinct interpretations of it. When the

[67] T. Aquinas. *Summa Theologica*. Book 1, part 1.8. Transl. by Fathers of the English Dominican Province. 2nd ed. 1920, p. 5.
[68] J. H. Newman, *op.cit.*, 1871, p. 111.

> proposition is apprehended for the purposes of proof, analysis, comparison, and the like intellectual exercises, it is used as the expression of a notion; when for the purposes of devotion, it is the image of a reality. Theology, properly and directly, deals with notional apprehension; religion with imaginative.[69]

Coulson noted that the original distinction Newman made was between notional and imaginative assent and that he had changed it to 'real assent' in the course of preparing his manuscript, seemingly because of the danger of being misunderstood.[70] Even so, there are still many parts in his *Grammar of Assent* where he uses the term 'imaginative assent' as an interchangeable term with 'real assent' thus emphasising the importance of implicit reasoning. With the distinction between apprehension and assent and between real or imaginative and notional assent Newman wanted to show that not only in religious matters, but in matters of everyday life people assent, or agree on propositions which they don't specifically understand.

Assent, Inference and the Illative Sense

Newman's distinction between assent and inference is best understood through his critique of Locke's celebrated doctrine of degrees of assent which he explains in chapter six. He takes into consideration Locke's idea on probabilities which holds that there are associated with each proposition, degrees of probability which are the measure of our assent, or confidence towards a proposition. On the basis of this principle, Locke formulates his simple rule about the ethics of belief: the degree of our assent to a proposition ought to be proportioned to the strength of the evidence for that proposition. Newman challenges both of Locke's views - that that assent has degrees, and that it should be proportionate to the strength of our evidence. Against these he remarks that we may continue to assent to a proposition when we have forgotten the evidence for it, and that sometimes we have excellent grounds for a proposition, based

[69] *Ibid.*, p. 120.
[70] J. Coulson, *op.cit.*, 1981, p. 60.

on good arguments, although we do not assent to it. Newman is concerned to show that reasoning in concrete matters never rises above probability, and consequently conditional assent varies in degree according to the strength of probability. On the contrary, unconditional assent merely satisfies logically necessary conclusions. What this means in practice is that there are many truths in concrete matters which no one can demonstrate, but all unconditionally accept, which is something even Locke admits despite his view of mind:

> The authors to whom I refer wish to maintain that there are degrees of assent, and that, as the reasons for a proposition are strong or weak, so is the assent. It follows from this that absolute assent has no legitimate exercise, except as ratifying acts of intuition or demonstration. What is thus brought home to us is indeed to be accepted unconditionally; but, as to reasonings in concrete matters, they are never more than probabilities, and the probability in each conclusion which we draw is the measure of our assent to that conclusion. Thus assent becomes a sort of necessary shadow, following upon inference, which is the substance; and is never without some alloy of doubt, because inference in the concrete never reaches more than probability.[71]

Newman distinguishes between two types of assent, a simple one which is unconscious, and a complex or reflex one, which is conscious and deliberate. He also distinguishes between inquiry and investigation by stating that inquiry is inconsistent with assent, since an inquiry presupposes a doubt and we cannot doubt something we hold as true. Those who assent to a doctrine, Newman holds, may investigate its consistency, but they could never inquire about its truth:

> I have been speaking of investigation, not of inquiry; it is quite true that inquiry is inconsistent with assent, but inquiry is something more than the mere exercise of inference. He who inquires has not found; he is in doubt where the truth lies, and wishes his present profession either proved or disproved. We cannot without absurdity call ourselves at once believers and inquirers also. [...] Inquiry implies doubt, and that investigation does not imply it, and that those who assent to a doctrine or fact may without inconsistency investigate its credibility, though they cannot literally inquire about its truth.[72]

[71] J. H. Newman, *op.cit*., 1871, p. 159.
[72] *Ibid.*, p. 192.

As Newman stated many times, we can hold things as being true without having any explicit proof of their truthfulness. Such convictions, as in the case of Christian belief, may be seen as irrational, although the arguments supporting them are implicit and unstated. The question here arises how we can find certitude. Newman believes that certitude is only a 'relation of the mind to the given propositions'[73] and that mind may find certitude in conclusions from probable arguments which accumulate to reinforce one another. Newman shows that in obvious instances the minds of all men do reason and conclude with invincible confidence, even coming to a common conclusion and yet they cannot tell why they hold such certitude which is a case in point to show that they rely on their subconscious reasons, quite apart from all explicit logical justification of them. So, he concludes, certitude is based on imagination or illative sense as a power of instinctive and spontaneous reasoning and is the basis for unconditional assent. How about inference then? As noted before, Newman held that inference is the conditional acceptance of a proposition, where its object is truth-like or verisimilitude as opposed to assent's object which is truth. He distinguishes between formal, informal and natural inference as three types of reasoning. He defines reasoning as an instinctive and spontaneous act of apprehending the antecedent and then the consequent without any explicit recognition of the connecting medium. In such cases, reasoning presents itself as a process; however, men are usually ignorant of such process and they concentrate only on the act of reasoning which is expressed through formal inference, that is, logic. Newman states that the first step in inferential method is

> to throw the question to be decided into the form of a proposition; then to throw the proof itself into propositions, the force of the proof lying in the comparison of these propositions with each other. When the analysis

[73] *Ibid.*, p. 228.

> is carried out fully and put into form, it becomes the Aristotelic syllogism.[74]

Newman finds that formal inference is concerned with the comparison of propositions, rather than proposition itself, as well as with the relation between their premises and conclusion. The perfection of logical reasoning consists in the fact that it relies on language, or rather words which have been stripped of their concrete meanings in order to make them comply with the notional and abstract.

> Logic then does not really prove; it enables us to join issue with others; it suggests ideas; it opens views; it maps out for us the lines of thought; it verifies negatively; it determines when differences of opinion are hopeless; and when and how far conclusions are probable; but for genuine proof in concrete matter we require an *organon* more delicate, versatile, and elastic than verbal argumentation. [75]

Yet, as we have seen, notional propositions cannot produce proof in concrete matters as they are reliant on first principles. Since logic cannot prove the first principles it assumes, it becomes for Newman loose at both ends: 'both the point from which the proof should start, and the points at which it should arrive, are beyond its reach; it comes short both of first principles and of concrete issues.'[76] Newman concedes that the language of logic has its advantages in the pursuit of knowledge, but human thought is too personal to 'admit the trammels of any language.'[77]

If formal logic is inadequate to account for belief, so he finds, is informal logic which is akin to calculus and is based on the sum of multiple probabilities. He proposes natural reasoning which does not proceed from 'propositions to propositions, but from things to things, from concrete to concrete, from wholes to wholes.'[78] What natural reasoning does is to allow for a holistic perspective on life, it gives rise to what Bateson conceived as the pattern that connects nature and culture and what Peirce identified as

[74] *Ibid.*, p. 264.
[75] *Ibid.*, p. 271.
[76] *Ibid.*, p. 284.
[77] *Ibid.*, p. 288.
[78] *Ibid.*, p. 332.

semiosis or Coulson identified as imagination understood in Coleridgean terms. It is worth recalling here that Newman compares natural reasoning to true poetry and although in some people it may be biased, Newman insists that there is a method in it, even though implicit. And this implicit method which gives us certitude is what he calls illative sense.

> It is the mind that reasons, and that controls its own reasonings, not any technical apparatus of words and propositions. This power of judging and concluding, when in its perfection, I call the Illative Sense.[79]

For Newman it is through the cultivation of the illative sense that we determine any investigation, without any words or any analysis. He applies this thinking to the realms of natural and revealed religion and demonstrates that faith is in fact reasoning faith.

Conclusion

In this chapter I argued that Newman's postulation of the illative sense as the grounding principle on which both faith and science are based set him aside from his contemporaries. His argument that illative sense, or what I argued is biosemiotic imagination, is a kind of inferential process based on natural forms of reasoning which are non-conscious prefigures important developments in biosemiotics. In particular, his argument shares important similarities with Bateson's view that intimations of the sacred, expressed in abductive inference that is syllogism in grass, in our religion are also found in forms of abduction in nature. Although, as I showed, Newman didn't explicitly state that these forms of abductive logic are shared by humans and other organisms, he implicitly acknowledged this through his equation of the instinct of the mind necessary for the recognition of God with the instinct other organisms possess.

[79] *Ibid.*, p. 354.

This instinct, I argued, is to be understood in relation to his broader view of natural forms of reasoning, or logic.

CHAPTER 4

George Eliot and the 'Semiotic' Web: the Role of Imagination and Sympathy as the Underlying Aspects of Biosemiotic Realism

Signs are small measurable things, but interpretations are illimitable. (*Middlemarch*, p.25)

Nature has her language, and she is not unveracious; but we don't know all the intricacies of her syntax just yet, and in a hasty reading we may happen to extract the very opposite of her real meaning. (*Adam Bede*, p.178)

Surely, surely the only one true knowledge of our fellow man is that which enables us to feel with him. (*Scenes from Clerical Life*, p.322)

This chapter explores George Eliot's philosophical reflections on epistemology. It focuses on discussing how her belief in the correspondence between nature's creativity and human creativity in art and science is based on aesthetic imagination understood as a kind of inferential logic akin to abduction. This view, which stemmed from her adherence to the organicist understanding of nature proposed by *Naturphilosophie*, led her to see and understand human experience of reality as relational, or rather as a web of organic and social relations. Contrary to the great emphasis given in most critical studies to Eliot's attachment to an empirical and positivist[1] model of science which

[1]Although Eliot's partial reading of Comte's *Cours de Philosophie Positive* (1840) and the subsequent many references to his work in her early critical essays such as 'The Progress of Intellect' (1851) or in 'The Natural History of German Life' (1856) have been highly documented, the extent to which she adhered to his Positivist philosophy or how much she was indebted to his thought is still under much scholarly debate. David Carroll, with whom I find myself in agreement, highlights the fact that although Eliot identified herself with a group of closely-linked thinkers who were all trying to create synthetic philosophies based on methods of physical science, she ultimately dissociates from such philosophies which turn theories into orthodoxies because she believes in the natural provision of any system. Avrom Fleishmann also points out that Eliot's views diverged significantly from those of Comte and he argues that it would be forceful to claim she was a positivist. For the various debates and positions on Eliot's adherence to Positivism see, David Carroll, *George Eliot and the Conflict of Interpretations: A Reading of the Novels*. Cambridge: Cambridge University Press, 2006, pp. 15-21; Avrom Fleishman. *George Eliot's Intellectual Life.* Cambridge: Cambridge University Press, 2010; George Levine: "In Defence of Positivism." *Realism, Ethics and Secularisation*. *Essays on Victorian Literature and Science*. Cambridge: Cambridge University Press, 2008, pp. 136-164; T. R. Wright. "George Eliot and Positivism: a Reassessment." *Modern Language Review.* Vol. 76 (1981): 257-27 and Martha S. Vogeler.

followed an ideal of objectivity and where the novelist and scientist alike were believed to record a pre-given world,[2] Eliot was aware, as a post-Kantian, that knowledge was not an unmediated perception of things. Instead it stemmed, at least in her view, from the relational structures between the self/ mind and its surroundings, or, as she and Lewes both stated, between the 'organism' and its 'medium'. This, I shall argue, is a proto-biosemiotic conception. Eliot's view of human knowing is essentially semiotic and the relational structures she describes are, in biosemiotic terms, very close to those described by crypto-biosemiotician Jakob von Uexküll in terms of the relation between *Umwelt* and *Innenwelt.* Thus, I suggest Eliot's realism is a biosemiotic realism. In other words, and to distinguish it from other materialist and nominalist conceptions, biosemiotic realism is based on the notion that reality as apprehended through the evolutionary sign relations, is supra-subjective, and as such is not dependent on the materiality or immateriality of its object.[3]

George Eliot was deeply immersed in the scientific, religious and philosophical debates of her time. She was particularly concerned with epistemological questions about the relationship between human knowledge and mind and consequently between language and the act of interpretation. She was acutely aware, as David Carroll puts it, 'of the crisis of interpretation which the Victorians were experiencing.'[4] This was not only attributable, as discussed in chapter two, to the evolving nature of scientific thought with its discovery, through the systematic examination of nature, of ever more complex organic structures, but also to the historical criticism of the Bible which cast doubts on the reality of God and the interpretation of the Bible as a source of moral

"George Eliot and the Positivists." *Nineteenth-Century Fiction* Vol. 35 n. 3. Spec. issue on George Eliot (1980): 406-431.

[2] S. Shuttleworth. *George Eliot and Nineteenth Century Science*. Cambridge: Cambridge University Press, 1984.

[3] J. Deely, *op. cit*, 2009.

[4] D. Carroll. *op. cit.*, 2006, p.3.

authority.[5] Both these developments contributed to the weakening of traditional forms of interpretation, and to the urgent need to re-create meaning and coherence on a firmer basis. This prompted Eliot, as Carroll suggests, to seek to 'widen the terms of reference'[6] in order to accommodate the whole spectrum of human existence and human faculties such as mind, emotion, faith, and moral awareness, and also to propose her own model of the way we make sense of the world we inhabit. This in turn led, as Suzy Anger comments, 'to the establishment of her broader views on knowledge, language and morals.'[7] These views were embedded in her philosophical reflections on epistemology and ethics where one of Eliot's central questions was the persistent problem of knowing the world and other minds which found expression in her novels, letters, poems and essays.

Attending closely to the various threads that come together in Eliot's views on knowledge, mind and language, this chapter will firstly look at her poem 'I grant you Ample Leave' where the complexity and range of Eliot's thought and reflections on epistemology are well expressed and where her proto-biosemiotic view on realism is evident. Looking at the way in which human knowing could be understood as a semiotic relation, the chapter will consider the role aesthetic imagination, understood as an inferential tool that subtends growth and learning, plays in any act of creative discovery, be it in science or art. In this respect I will argue that the aesthetic imagination envisaged by Eliot is akin to Peirce's logical category of abduction and, by inference, to the evolutionary biosemiotic view of semiotic scaffolding, whereby evolutionary development lays down the organic layers of meaning.[8] Emphasising

[5] It is significant to note that Eliot's first major non fictional writings were translations of German works, for instance David Strauss' *Life of Jesus* (1846) and Ludwig Feuerbach's *Essence of Christianity* (1854) which explored radically new ways of interpreting theological texts.
[6] D. Carroll, *op. cit.*, 2006, p. 5.
[7] S. Anger, *op. cit*., 2005, p. 104.
[8] J. Hoffmeyer, *op. cit.*, 2014.

metaphor, as a source of creativity and world disclosure, I will go on to explain how this is active in *Middlemarch*. I will argue that, as semiotic relations, metaphors are at the basis of *Middlemarch*'s characters interpretation and understanding of their own reality or *Umwelt* which is nested through recursive feedback loops into a wider web of semiotic relations which form *Middlemarch*. Finally, I will consider the role that sympathy, which is equally grounded in abductive logic, plays in Eliot's postulation of an ethical life.

Ways of knowing: towards biosemiotic realism

One of the clearest reflections upon the issues that most preoccupied Eliot and that also reflects wider Victorian concerns in relation to what counts as a foundation of knowledge, perception and language is to be found in a considerably short, only 21-lines long and, until 2005, unpublished poem Eliot wrote probably before or during April 1874 entitled 'I Grant you Ample Leave.'[9] The poem, which I here quote in its entirety, and which is going to function in this chapter as a sort of 'Ariadne's thread', ponders on those issues which were to become the kernel of Eliot's endeavour as a novelist and critic, namely the unravelling of the relation between mind, perception, language and observed reality, and consequently between self and other:

I grant you ample leave
To use the hoary formula 'I am'
Naming the emptiness where thought is not;
But fill the void with definition, 'I'
Will be no more a datum than the words
You link false inference with, the 'Since' & 'so'
That, true or not, make up the atom-whirl.

[9] This poem first appeared in Bernard J. Paris. "George Eliot's Unpublished Poetry." *Studies in Philology*. n. 56 (1959): 539-58. However, the copy I present and discuss here is from G. Eliot. *The Complete Shorter Poetry of George Eliot*. Ed. Antoine Gerard van Den Broek. Vol.2, London: Pickering & Chatto, 2005, p. 119.

Resolve your 'Ego', it is all one web
With vibrant ether clotted into worlds:
Your subject, self, or self-assertive 'I'
Turns nought but object, melts to molecules,
Is stripped from naked Being with the rest
Of those rag-garments named the Universe.
Or if, in strife to keep your 'Ego' strong
You make it weaver of the etherial light,
Space, motion, solids & the dream of Time —
Why, still 'tis Being looking from the dark,
The core, the centre of your consciousness,
That notes your bubble-world: sense, pleasure, pain,
What are they but a shifting otherness,
Phantasmal flux of moments? —

Right from the outset Eliot ironically concedes that there may be different ways of understanding the nature of consciousness or as she defines it, 'the emptiness where thought is not.' However, she believes that to try and define it by using what she terms 'the hoary formula' (line 2) or rather, scientific language, would only mean to equate consciousness with a datum. As noted in Chapters One and Two Eliot, in line with the German Romantic conception, thought of language in evolutionary terms as an evolving organism or rather a process that constantly changes. She therefore found the concept of a mathematical precision in language untenable and consequently inadequate to describe consciousness, which she saw as a process as well. She points out that where words such as 'Since' & 'so' refer to logical inferences are traditionally used in scientific methodology in order to apprehend the physical world, they are, according to Eliot, 'false inferences'. This is because she believed that the ideal of science as detached and impersonal knowledge was unattainable due to the selective character of the inquirer. What she meant is that inquiry can never eliminate the

personal or subjective element of knowledge and she felt that the logic of science is derivative, being a consequence rather than a starting point. As will be discussed in the next section, Eliot believed that true knowledge doesn't stem from inductive or deductive logic, which encourage linear hypothesis building, rather, and anticipating both Peirce and Bateson, she found that imagination (Peirce's abduction) is at the basis of any inquiry that leads to a more encompassing understanding of the world and consequently of the self.

She therefore urges her listener in line 8 to 'resolve your Ego' or rather, to change the conscious-thinking subject in order to understand the 'one web' of relations which are bathed into the ether (the substance believed to be the medium through which light moved) and that produce a plurality of worlds. As Hannah Brooks Motl points out, it is significant to note here that Eliot uses the plural noun 'worlds' rather than singular noun 'world'. This highlights her awareness that subjectivity depends on a limited set of sense perceptions – one and the same occurring in the environment gives rise to different interpretations, as we shall see in *Middlemarch* – hence the plurality of worlds, which are all part of a wider web of semiotic and social relations.[10]

Eliot developed this view in relation to the thought of G. H. Lewes. As Peter Garratt argues, Eliot and Lewes were among those Victorian intellectuals who were aware that knowledge of the external world was not apprehended through senses understood as an objective reflection of what was 'out there', to use George Levine's term.[11] On the contrary, Garratt suggests that their view was based on the sort of empiricism, understood as a theory of mind, which put the notion of subjectivity as its

[10] H. Brooks-Motl. *I Grant you Ample Leave: A poet's poem from a novelist-poet*. March 2012. Web. February 2013.
[11] G. Levine. "George Eliot's Hypothesis of Reality." *Nineteenth-Century Fiction*. Vol. 35 n. 1 June (1980): 1-28.

main tenet.[12] He insists that because the central issue in the tradition of British empiricism, understood as a theory of mind, was placed on the perceiving self, the outlook that followed was that truth about the world was relative. In other words, he argues that the inescapability of the perceiving subject in constructing reality meant that the relation between the knower and the known, or between the observer and observed, was unstable. Rather than envisioning a way of knowing that could 'neutralize the contingencies of spectatorship'[13] by adjusting perception using scientific tools such as microscopes, an image both Eliot and Lewes used in their writings, they realised that knowledge sprang from the relation between perceiving self and sense experience. Eliot, as much as Lewes, believed in the self as a product of a set of relations based on the interaction between self and its surroundings, or as they put it in biological terms, between 'organism' and its 'medium' or in biosemiotic terms, between *Innenwelt* and *Umwelt* where each is shaped by the other and where they are part of a more intricate web of experiences and relations which constitute reality. In fact, in the poem Eliot observes that to gain an accurate understanding of the observed world, one needs to turn the 'subject, self or self-assertive I' into an 'object' and to let it 'melt to molecules'. So, she implicitly argues for a unity between the subject and object, self and other, and she recognizes that much of what we think of as the 'Universe' is simply named, or as she says, reality is covered in 'the rag-garments' possibly of language where language becomes, in biosemiotic terms, a way of modelling the world in human cognition.

[12] It is important to highlight that Garratt's argument is based on empiricism as a theory of mind, rather than scientific methodology, and he suggests that Victorians were not dominated by an unshakeable faith in the knowing mind's capacity to dominate the material world, but rather that they had to think through the consequence of an empirical philosophy which put problems of perception at the heart of its debates. In P. Garratt. *Victorian Empiricism: Self, Knowledge and Reality in Ruskin, Bain, Lewes, Spencer and George Eliot.* Madison: Farleigh Dickinson University Press, 2010.
[13] *Ibid.*, p. 18.

In Chapter One I discussed the biosemiotic modelling of reality described by von Uexküll, Deely and Sebeok and I argued that the experiential worlds of all living organisms, human animals included, is based on their ability to receive and interpret signs and thus create semiotically and evolutionarily successful models of reality. Signs, as I argued, are not material things, or rather, are not anything that we may either point or see as such, but are suprasubjective relations which are meaningful regardless of whether what is signified is material or imagined. By positing sign relations, rather than physical objects and ideas as the means of apprehending the world and by recognizing that human embeddedness in nature does not amount to a one to one relation of human perception and the world, biosemiotics realism breaks with both a materialist and nominalist conception of reality.

This type of realism is seen, for instance, in *Middlemarch* where characters not only 'conjure up internal models of outer reality'[14] via their ability to receive and interpret signs according to their specific *Innenwelts*, which form the foundation for a relation to the semiotic objective world that is their *Umwelt*, but characters are also seen as 'a cluster of signs' (*Middlemarch*, p.142)[15] to be interpreted or misinterpreted by others in a ceaseless semiotic loop which is at the basis of the novel's structure. In this way characters are represented as both: an active centre of the semiotic web and at the same time they are part of their environment as semiotic subjects. We see an indication of this, for instance, in the way the narrator describes the characters' different opinions about the medical profession. Seen as a semiotic object, the medical profession represents for Tertius Lydgate, the young and progressive doctor, 'the grandest profession in the world' (*Middlemarch*, p.144) and 'the most perfect interchange between science and art, offering the most direct alliance between

[14] J. Hoffmeyer, *op. cit.*, 2008, p. 174.
[15] G. Eliot. *Middlemarch.* Ed. and introduction notes by Rosemary Ashton. London: Penguin Books, 1994. Quotations from this edition will be given in brackets directly in the text.

intellectual conquest and the social good' (*Middlemarch,* p.145), whereas for Rosamond, his young spouse, it represents rather the opposite as she finds it 'not a nice profession' (*Middlemarch,* p.458). The juxtaposition of these views points to the difference in Lydgate's and Rosamond's inherent nature or *Innenwelts.* Where, for instance, he is a mixture of the characteristics needed for his profession, as he is moved by intellect (science) and imagination (art) and is an altruist, Rosamond is quite the opposite. She is self-centered and an egotist who has little inner vision and is therefore less concerned with the moral and intellectual aspect of life in general, and the profession in particular, and more with outward appearances and material aspects, in this case with the lifestyle this profession could provide. Their different *Innenwelts,* therefore, give rise to and sustain their *Umwelts* and each *Umwelt* in turn gives rise to an indefinite number of possibilities for both communication and misunderstanding. In fact, while Lydgate behaves according to his own *Innenwelt* and therefore his understanding of the profession, each of his initiatives - the New Hospital and the Chaplaincy, the non-dispensing of drugs or his advanced practices – and consequently his behavior get progressively misinterpreted by other characters who are keen to see how Lydgate 'might be wrought into their purposes, contented with very vague knowledge as to the way in which life had been shaping him for that instrumentality' (*Middlemarch,* pp.152-153).

In describing the web of relations that form *Middlemarch*, Eliot was aware that it was the correlation between self (organism) and its surroundings (medium), or in biosemiotics terms *Innenwelt* and *Umwelt,* that constitutes the way in which one models one's experiential world or what she calls in the poem 'bubble world.'[16] Unlike

[16]J. Deely, *op.cit.*, 2000, p. 19. It is worth recalling here that Von Uexküll also compared each *Umwelt* to a bubble world within which each species live. Von Uexküll, however, believes that *Umwelt,* or the bubble world is invisible to an organism precisely because it consists of relations, whereas Deely argues that the bubble world is not invisible, because human beings are able to discern between relations and related thing.

Sebeok and other twentieth-century semioticians, however, she didn't distinguish between language and speech, even though she was aware that language helped in modelling and in her case also communicating the world perceived.

Eliot's view of language as a distinctive feature which separates humans from animals and her consequent belief in the correspondence between the organic and the cultural world was elaborated in relation to Lewes's theory of the psychological workings of language which, in line with the evolutionary model proposed by Darwin, was presented in volume III of *Problems of Life and Mind*. Following Comte's threefold distinction between the 'Logic of Feeling', progressing into the 'Logic of Image's' and ending with the 'Logic of Signs',[17] Lewes explains that the term logic is employed as meaning an organic psychological process, either of judgement or reasoning and as such involves:

> that which is common to Reasoning and to all other modes of combination belonging to mental states. This common process is Co-ordination, or Grouping of neural elements. (*PLM*, Vol. III, p.224)

According to Lewes, each act of judgement or reasoning goes through three stages, the first of which entails Animal Logic. This stage is based on feeling and is 'never critical, but always intuitive' (*PLM*, vol. III, p.228). Under this category he groups 'those mental processes in which the elements of the judgement of the act are of sensation, perceptions, images, appetites, instincts, or emotions' (*PLM*, vol. III, p.238). In other words, the logic of feeling is the immediate sensory experience of the world. In order for this intuitive experience, which represents primitive mental states or the organism's sensory 'perception', to become intelligible and acquire meaning thus becoming an

[17]In the final note of the section 'Sphere of Sense and Logic of Feeling' in Vol. III, p. 239, Lewes acknowledges his debt to Comte in borrowing those terms; however, he also highlights the fact that his use of them is different to that of Comte's which, he admits, he doesn't fully comprehend.

abstract conception, it needs to be refined through the intermediate state of the logic of images. He writes:

> It is in imagination that must be sought the first impulse towards Explanation; and therefore all primitive explanations are so markedly imaginative. Images being the ideal forms of Sensation, the Logic of Images is the first stage of intellectual activity...The first attempts to explain a phenomenon must be to combine the images of the past, with the sensations now felt, so as to form a series. (*PLM*, Vol. III, p.169)

The image is the first step by which the mind begins to organise (rather than passively receive) the initial raw material offered by the senses. In Lewes's view, images present the first step towards the fully conscious, rational mind. It is, however, in the last stage, the logic of signs, that the intuitive knowledge becomes 'intellectual' and as such is associated with the ability of human beings to encode or represent such experience by either language or mathematics. In a famous passage of *Problems of Life and Mind*, Lewes asserts that

> The Logic of Signs is to the Logic of Feeling very much what Algebra is to Arithmetic. Algebra is only Arithmetic under another and more generalised form, which operates on general symbols instead of particular numbers, substituting relations for values; in like manner. [...] The leading characteristic of Algebra is that of operation on relations. This also is the leading characteristic of Thought. Algebra cannot exist without values, nor Thought without Feelings. The operations are so many blank forms until the values are assigned. Words are vacant sounds, ideas are blank forms, unless they symbolise images and sensations, which are their values. (*PLM*, Vol. III, pp.468-470)

Particularly important in this respect, is Lewes's discussion concerning the similarities between human and animal thinking. He argues that both animals and humans think in sensation and images; however, the difference is that animals are unable to think in and use verbal symbols. He writes:

> That animals think, that is remember, imagine, judge, and reason, as men do, may nowadays be considered to be beyond discussion. But they are incapable of one supremely important mode of thinking—the formation of conceptions, and the combinations of series of feelings by means of verbal symbols. This, to which the name of Ideation may specially be given, is the distinguishing attribute of man, and is due to

> his possessing Speech, which we shall presently see is a social not a physiological product. Language in its widest sense cannot be denied to animals as a function of expression of feelings—the language of gestures and cries is even made by them a rudimentary function of communication. But this function never becomes a faculty, and above all never rises to the expression of ideas, the communication of knowledge. (*PLM*, Vol. III, pp.484-485)

Lewes's view on the human and animal capacity for using language and speech presents parallels to the biosemiotic view that what is distinctive about human species is the capacity for symbolic reference - speech and that we share the semiotic capacity as such (indexical and iconic) with all life forms. As discussed in Chapter One, Jesper Hoffmeyer argues that human beings operate on very complex chains or webs of signs of all kinds, most of the world's other species are predominantly guided by iconic or indexical signs (based on likeness and physical relatedness, respectively).[18] It is, however, important to highlight here that there is a difference between Hoffmeyer's and Lewes's understanding of how thought operates; Hoffmeyer takes up Peirce's view that thought operates in signs, whereas Lewes believes that thought operates in concepts and ideas which are categories of human mind. However, it is fair to say that, for Peirce, every act of reasoning consists of the interpretation of signs where signs function as mediators between the external world of objects and the internal world of ideas. Thinking and ideas belong to all living organisms, not only to human beings, and in a way this aspect shows parallels between Peirce's theory and Lewes's understanding. Although Hoffmeyer and Lewes present a different understanding of how thought operates they share the view that human life depends only marginally on processes of conscious interpretation; most of it is based on the tacit, subconscious interpretation of cues.[19] Lewes expresses this view thus:

[18] J. Hoffmeyer, *op.cit.*, 2010, p. 372.

[19] My use of the term tacit is indebted to Michael Polanyi's notion of tacit knowledge whereby it is asserted that most knowledge derives not from objects we have direct experience of, but of clues provided by things which we have subsidiary experience of. See M. Polanyi. *The Tacit Dimension*. New York: Anchor Books, 1967.

> Many of our actions, like those of the animals, are erroneously interpreted as due to the Logic of Signs (i.e., the distinct consciousness of the significance for knowledge of certain appearances) when they are really due to the Logic of Feeling. (*PLM*, Vol. III, p.237)

Both Lewes and Eliot believed in the significance of feeling as the basis of any knowledge which was attained not through conscious elaboration of sense perceptions, but through that kind of tacit elaboration of relations between sense and perception, or as Lewes puts it,

> Knowledge is simply virtual Feeling, it is a vision of the unapparent relations which will be apparent when the objects are presented to Sense. (*PLM*, Vol. II, p.23)

For Lewes and Eliot, the way into these unapparent relations, which corresponds to what Peirce calls semiosis, is through imagination, which contributes to the formation of workable hypotheses. Imagination becomes for both a medium to understand and disclose reality since it has the power, as Levine states 'to fuse together what the analytic mind has necessarily, but arbitrarily separated.'[20] As I shall argue in the following part of this chapter, for Eliot it is through imagination, understood as a creative and aesthetic act, akin to Peirce's abduction, that we come to a more inclusive understanding of reality.

Aesthetic and Scientific Imagination as Biosemiotic imagination: Form and Hypothesis

In his discussion of George Eliot, Michael Davis points out that, as a novelist,

> Eliot aims not only to represent the observed world, but also to engage imaginatively with its inhabitants, to analyse and express the thoughts, emotions and motivations of individual subjects which, in their infinitely complex actions and interactions, compose the social world.[21]

As seen from the previous discussion, Eliot's view of an intertwined natural and social reality was largely based on her understanding of the various and intermeshing web of

[20] G. Levine. *The Realistic Imagination: English Fiction from Frankenstein to Lady Chatterley*. Chicago: Chicago University Press, 1981, p. 265.
[21] P. Davis, *op.cit.*, 2006, p. 1.

semiotic relations that compose it and this understanding is reflected in her views of realism in art. In her critical writings she expressed her belief in the duty of literature to engage directly and consistently with the complexities of human experience which result in a commitment to literary realism. In her essay 'The Natural History of German Life' (1856), she writes that 'art is the nearest thing to life,'[22] meaning that forms of European art, developed up until her own time, were bound to strict rules of representation and that these are insufficient to represent the complexities of human experience and thought adequately. These complexities can only be explored through an organic understanding of a work of art and its development. By acknowledging that there is not a simple representative relation between life and fiction, Eliot's realism departs from a merely 'mimetic' method. Her narrator in *Adam Bede,* for instance, aims at such representation of life although she acknowledges that this can never be so, because it is mediated through the narrator's mind, or rather it stems from the author's imagination. Therefore she states that '*The mirror is doubtless defective* [my italics]; the outlines will sometimes be disturbed, the reflection faint or confused'.[23]

Eliot's view of art was influenced by her acquaintance with Kant's philosophy. In his *Critique of Pure Judgement* (1790), as already discussed in chapter two for instance, Kant observed that the forms assumed by living organisms were of a different order from those of mechanical entities.[24] Not least they seemed to show nature as functioning in terms of purposes. Kant explained that: 'An organised product of nature is that in which everything is an end and on the other hand also a means. Nothing in it

[22] G. Eliot."The Natural History of German Life." *Selected Critical Writings.* Ed. Rosemary Ashton. Oxford: Oxford University Press 1992, p. 264. Eliot's assertion echoes both Goethe's view that "art is the imitation of nature" and Lady Welby's view that "Art if it is worthy of the name, it must be immersed in life just as true life must be imbued with art." Quoted in *S.* Petrilli. o*p.cit.*, 2009, p. 175. See Goethe's *Maxim and Reflections of Goethe*. Transl. Bailey Saunders. London: Macmillan 1906.
[23] G. Eliot. *Adam Bede*. London: Penguin, 2004, p. 221.
[24] I. Kant [1790] *Critique of Judgement.* Transl. by James Creed Meredith. Oxford: Oxford University Press, 2007. See for instance Part II, Div. I and Div. II.

is in vain, pointless or to be attributed to a blind mechanism of nature.'[25] For Kant the perceived self-organisation, the internal unity, the inherent purposiveness[26] of individual organisms, and of nature as a whole, were the construct of human mind and as such could not be proven empirically. In other words, Kant sees subjective consciousness as having the primary role in the construction of the knowable world or of phenomena, as, it is worth recalling here, that Kant believes we have no access to *noumena* or things that exist independently of our thinking of them.

Kant's thought then is that we need to understand how the capacity of the mind of organising phenomena into coherent systematic forms is linked to the fact that nature is capable of organising itself in ways which are not merely the results of particular laws.[27] He turns to aesthetics to answer this question and he claims that the self-organisation and coherence we see in organisms resembles that of the creation of a form of art. He states that one cannot produce art by simply making something in terms of the rules of a particular form since art involves moving beyond existing rules. The source of new rules must be another kind of spontaneity which seems to come from nature itself. As Goodwin comments, 'Kant saw that the creation of a form of art which has its inner coherence expressed in the dynamic unity of its emergent parts is similar to the creation, through its developmental processes of an organism.'[28]

[25] Quoted in A. Bowie, *op.cit.* 2003, p. 36.
[26] As Goodwin points out, the term purposiveness, needs to be understood in its eighteenth century use, as individual creation which displays a unified form in itself and its structure. A purposive creation, he explains, has its centre of gravity in itself; on that is goal-oriented has its centre of gravity external to itself; the worth of one resides in its being, whereas the other in its results. See B. Goodwin. *Nature's due: Healing our Fragmented Nature*. Edinburgh: Floris Books, 2007.
[27] Bowie notes that in the 'Transcendental Aesthetics', the first part of *Critique of Pure Reason*, Kant is concerned with the conditions under which perception takes place and he claims that the conditions of perception are functions of the human mind and that our thinking is the very principle of the universe's intelligibility. By stating this he merges the empirical tradition which believes that everything we know has contingency in it and the rationalist tradition which believes in the pre-existing structure of things. See A. Bowie. *op. cit*., 2003, p. 14.
[28] B. Goodwin, *op.cit*., 2007, p. 146.

The influence of Kant's *Critique of Pure Judgement* (1790) is particularly evident in Eliot's essay 'Notes on Form in Art' (1868) where she defines literary form as 'wholes composed of parts more and more multiplied and highly differenced, yet more and more absolutely bound together by various conditions of dependence.'[29] In other words, form is not dictated by the 'boundary and outline' which is in Eliot's terms only 'a metaphorical presence',[30] but it is constituted by the relations among the different parts that constitute the whole. For instance, Eliot believed that if she were to describe a flower, she could not only provide a visual description of what it looks like, as that would not constitute its form. Instead, she felt she would be bound to describe the flower in relation to the soil and the soil in relation to the grass and so on.[31] In this respect, the literary form does not depend simply on the outward appearance or the description of things, but it depends on its inward relations. It is through these relationships that artworks can grow in complexity, thus producing a more satisfying form of art. The highest example of form would thus be 'the highest organism, that is to say, the most varied group of relations bound together in a wholeness, which has the most varied *relations* (my italics) with all other phenomena.'[32] Thus, for Eliot, the novel as a form of art is organic; its complexity does not lie in the number of characters present, but in the complexity and variety of their relations. And as will become evident in *Middlemarch*, these relations which are at the basis of her art form, evolve or rather, grow in complexity through semiotic scaffolding of meaning or through what Eliot identifies as the 'alternating processes of distinction and combination, seeing smaller and smaller unlikeness and grouping or associating these under a common likeness.'[33]

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[29] G. Eliot. "Notes on Form in Art." Ed. Rosemary Ashton. *op. cit.*, 1992, p. 356. It is worth pointing out here, that Herbert Spencer held a similar aesthetic view when he stated that 'the highest form of art will be not a series of like part simply placed in juxtaposition, but one whole made of unlike parts that are mutually dependent.' Quoted in S. Shuttleworth, *op.cit.*,1984, p. 149.
[30] G. Eliot. [1868] *op.cit.*, 1992, p. 356.
[31] A similar example has been used by Darrel Mansell Jr. in his "George Eliot's conception of Form." *Studies in English Literature 1500-1900. Nineteenth Century.* Vol. 5 n. 4 (1965): 651-662.
[32] *Ibid*., p. 356.
[33] G. Eliot. [1868] *op.cit.*, 1992, p. 356.

This form of interpretation, Eliot stresses in her essay, is the only way knowledge and understanding can be achieved.

Although Kant's philosophy was and remains a powerful reflection on scientific knowledge and its relation to aesthetic judgement, there is a fundamental difference between Kant's and Eliot's understandings of our relation to nature (of which we are, of course, part). As stated earlier, Kant's position rested on the notion that we can never know nature directly through our experience, by means of non-inferential or intuitive knowledge, and that all we can know about nature rests in the form of our ideas about it. His idealism took the form of believing that we do not have such a capacity to directly know the world and that this is mediated by rational or logical inference. For Eliot, however, it is precisely by means of a non-conscious inferential logic, or imagination akin to that employed in art, that we come to know the world. This idea is much closer to Goethe's and Schelling's understanding of organic nature and art than it is to Kant's. Both Goethe and Schelling read Kant's *Critique of Judgement*. However, in Goethe's case it was after reading Baruch Spinoza, whom Eliot read and translated, that he came to share Spinoza's belief in a '*scientia intuitiva'*, which implied the idea that a disciplined imagination is a route to the direct knowledge of the essence of things through a cultivated intuition.[34] Following Spinoza, Goethe came to believe that the hidden aspects of nature could be discovered through imagination and he reasoned that art is the imitation of nature. This idea is also seen in Schelling who postulated imagination or what he called 'intellectual intuition' as a means of overcoming Kant's idealism.

Schelling, much as Kant, held in *Ideas for a Philosophy of Nature* (1797) that the whole of nature is to be seen as an organism. However, he refused to see the

[34] R. Richards, *op.cit*., 2002.

thinking subject as opposed to nature as a world of objects, because the subject is in itself part of nature. By stating that mind and nature are one, mind being the product of nature, Schelling implies that nature and human mind are built upon the same principles, which is what gives us assurance that our ideas coincide with reality and which is what makes science ultimately possible. He subsumes this view in his famous phrase 'nature should be mind made visible; mind the invisible nature.'[35] Schelling's view on the continuity between mind and nature echoes Peirce's evolutionary view of mind as semiosis. Both see that mind cannot be narrowly identified with human mind, but is part of nature, and as such evolves and grows. In fact, as Andrew Bowie observes, Schelling sees that in the same way that thoughts spontaneously organise themselves in our mind from past thoughts, so does nature continually reform itself from its elements.[36] In biosemiotic terms, this parallel development is understood as semiotic scaffolding whereby evolutionary layers of meaning in nature are antecedent and repeated with greater degree of complexity in culture.

On the basis of his arguments on continuity, Schelling moved towards a hermeneutic conception of nature - his *Naturphilosophie* - which, as Andrew Bowie explains, 'doesn't rely on an objectifying pre-understanding of what nature and science is, but it keeps open our relationship to the nature of which we are a part and which we therefore understand.'[37] However, the question he asks and that he tries to resolve in his most influential writing *System of Transcendental Idealism* (1800) is how do we understand our status as self-conscious natural beings without falling into the materialist or idealist trap? He postulates imagination as the key to grasp what he calls the Absolute, the ultimate ground of reality. He suggests that science and art are both

[35] R. Jarvis. *The Romantic Period: The Intellectual and Cultural Context of English Literature 1789-1830*. Harlow: Pearson Education, 2004, p. 102.
[36] See A. Bowie, *op.cit.* 1993, p. 49.
[37] *Ibid.*, p. 42.

means of disclosing the Absolute. Imagination, Schelling held, receives images of the object world which we can synthesise in cognitive judgements of understanding, making imagination an unconscious faculty and it can produce images in the absence of any object which makes it also, and in part, a conscious faculty. If art can show the identity of these two sides, this means, according to Schelling, that both art and science depend on the same activity, which is both conscious *and* unconscious. The imagination is geared towards a hermeneutic understanding of science and art as forms of world disclosure.[38] This is how Schelling comes to declare that 'aesthetic intuition is intellectual intuition which has become objective.'[39]

The influence of Schelling's thought on art and science is seen particularly in Eliot's last novels *Middlemarch* (1870) and *Daniel Deronda* (1876), where the analogy between science and art, or scientist and novelist, rests on their shared need for imaginative construction and not on their common commitment to the objective record of an external fact. In the opening pages of *Daniel Deronda*, Eliot writes:

> Men can do nothing without the make-believe of a beginning. Even Science, the strict measurer, is obliged to start with a make-believe unit, and must fix on a point in the stars' unceasing journey when his sidereal clock shall pretend that time is Nought. *His* less accurate *grandmother Poetry* [my italics] has always been understood to start in the middle; but on reflection it appears that her proceeding is not very different from his; since Science, too, reckons backward as well as forward, divides his unit into billions, and with his clock-finger at Nought really sets off in medias res.[40]

In Eliot's view, the way science and poetry - understood as including all literary production – proceed follows the same creative pattern. This is not based on the inductive and deductive logic of science, but on what she calls 'the make believe unit', or imagination and is based, as we shall see in the section on language, on the continual

[38] *Ibid.*, pp. 50-53.
[39] F. Schelling. *System of Transcendental Idealism.* Transl. Peter Heath, Charlottesville: University Press of Virginia, 1978, p. 625.
[40] G. Eliot [1876] *Daniel Deronda*. London: Penguin Books, 1995, p. 3.

emergence of new metaphors. In this respect Eliot's view on imagination echoes Peirce's concept of abduction and Bateson's natural metaphor, where recursive forms of natural and cultural scaffolding are interlinked through the recognition of patterns of similarity and difference in metaphor which allow a system to learn and grow. The importance of abduction/imagination as a recursive process is seen, for instance, in the way Ladislaw defines a poet's activity as being based on feeling which provides the poet with new insights and knowledge each time it 'flashes back as a new organ of knowledge':

> To be a poet is to have a soul so quick to discern, that no shade of quality escapes it, so quick to feel that discernment is but a hand playing with finely ordered variety on the chords of emotion – a soul in which knowledge passes instantaneously into feeling and feeling flashes back as a new organ of knowledge. (*Middlemarch*, p.223)

Eliot's view on the centrality of imagination as a creative process in science and poetry is also found in Lewes's *The Principles of Success in Literature* (1865) where he maintains that both the scientist and poet are 'inventors.' Although there are differences in their forms of selection and abstraction from experience, 'imagination is active in both', or, as he puts it:

> From known facts the philosopher infers the facts that are unapparent. He does so by effort of imagination (hypothesis) which has to be subjected to verification: he makes a mental picture of the unapparent fact, and then sets about to prove that his picture does in some way correspond with reality. The correctness of his hypothesis and verification must depend on the clearness of vision.[41]

Ken Newton comments that Lewes's conception of the scientist's practice here explained corresponds closely to Lydgate's scientific practice whereby he imaginatively devises his ideal construction or hypothesis and proceeds to test it.[42] Lydgate's scientific practice reflects Peirce's view that scientific discovery rests on the

[41] G. Lewes. *The Principles of Success in Literature*. Boston: Allyn and Bacon, 1891, p. 169.
[42] K. M. Newton. *George Eliot: Romantic Humanist. A Study of the Philosophical Structure of her Novels*. London: MacMillan Press, 1981.

inferential logic of abduction, which is the only one that introduces newness, since induction, as previously stated, only confirms a hypothesis whereas deduction draws out further logical implications. In chapter XVII of *Middlemarch* for instance, we are presented with Lydgate who is described as

> combining and constructing with the clearest eye for probabilities and the fullest obedience to knowledge; and then, in yet more energetic alliance with impartial Nature, standing aloof to invent tests by which to try its own work. (p.169)

It is significant to note that Eliot's and Lewes' views on imagination outlined as Peirce's abduction or what I identify as biosemiotic imagination was celebrated in Victorian England by what George Levine described as 'every interesting writer about science.'[43] John Tyndall, for instance, discussed the importance of imagination in his essay 'Scientific use of the Imagination' (1872)[44] where he acknowledges the limits of human knowledge and intellect and where he wonders whether humans will 'ever possess the intellectual elements which will enable us to grapple with the ultimate structural energies of nature.'[45] Importantly, Tyndall was among those scientists - others included T. H. Huxley and William K. Clifford - who at the time when Eliot was writing *Middlemarch* and her poem 'I grant you Ample Leave', had been describing the atomic structure of the universe although no one had ever seen it. What their discovery implied was that the 'invisible world' constituted far more of reality than the visible one. What Tyndall and Clifford argued in various ways was that to be able to verify such reality required a sort of scientific imagination. At the end of his Rede lecture, Tyndall observed that:

> It is thought by some that natural science has a deadening influence on the imagination...But the experience of the last hour must, I think, have convinced you that the study of natural sciences goes hand in hand with the culture of imagination. Throughout the greater part of this discourse

[43] G. Levine. "George Eliot's Hypothesis of Reality." *Nineteenth-Century Fiction.* Vol. 35, N. 1 Jun. (1980): 1-28.
[44] J. Tyndall. *On the Scientific Use of Imagination*. London: Longmans, Green and Comapny, 1872.
[45] Quoted in G. Levine, *op.cit.*, 1980, p. 12.

> we have been sustained by this faculty. We have been picturing atoms and molecules and vibrations and waves which eye has never seen nor ear heard, and which can only be discerned by the exercise of imagination.[46]

Tyndall and Eliot both recognized that observational science can only provide a limited understanding of the physical reality, since the 'invisible world' constituted far more of the reality than previously thought. They saw in the various processes of imagination as the medium to explore the significance of all those underlying organic processes and the plurality of worlds and existences which cannot be registered solely by scientific instruments and senses. In *Middlemarch,* this view is seen in the young doctor Tertius Lydgate and his quest to find the 'primitive tissue' or what Tyndall terms the 'structural energies of nature', where he turns to that kind of inspiration or imagination which Schelling and Peirce recommended

> [imagination] reveals subtle actions inaccessible by any sort of lens, but tracked in that outer darkness through long pathways of necessary sequence by the *inward light* [my italics] which is the last refinement of Energy, capable of bathing even the ethereal atoms of its ideally illuminated space. He for his part tossed away all cheap inventions where ignorance finds itself able and at ease: he was enamoured of that arduous invention which is the very eye of research, provisionally framing its object and correcting it to more and more exactness of relation; he wanted to pierce the obscurity of those minute processes which prepare human misery and joy, those invisible thoroughfares which are the first lurking-places of anguish, mania and crime, that dedicate poise and transition which determine the growth of happy or unhappy consciousness. (*Middlemarch,* pp.164-165)

The inward light, by which Lydgate studies the universe makes the 'invisible', the extra sensuous, present to him as though it was a direct sensation. The way Lydgate practises science, however, is not the way he practices love. In fact, Eliot comments that 'that distinction of mind which belonged to his intellectual ardour did not penetrate his feeling and judgement about furniture, or women' (*Middlemarch,* p.150). While commenting on Lydgate's relationship with Rosamond, she further notes how he

[46] Quoted in G. Beer, *op.cit.,* 2009, p. 141.

persists in 'bringing a much more testing vision of details and relations into [his] pathological study than he had ever thought it necessary to apply to the complexities of love and marriage' (*Middlemarch*, p. 164). This difference is evidenced by his utter misunderstanding of Rosamond's physical appearance as being the expression of her virtue and by his consequent view of her as a perfect wife whom he sees as a decorative figure that can play the piano, sing and provide companionship. His inability to access those deeper layers of meaning through imagination, or abduction, prevents him from seeing or interpreting for instance that Rosamond's blue eyes, which initially seduced him, are accompanied by selfishness and obstinacy. This leads to his turning from an ardent researcher to a fashionable doctor in London who dies at the age of 50 from the financial pressures exerted by his wife's social ambitions.

The importance of imagination as an inferential tool is reiterated by Eliot in the *Impressions of Theophrastus Such* (1878) where she writes that:

> Fine imagination is always based on a keen vision, a keen consciousness of what is, and carries the store of definite knowledge as material for the construction of its inward visions.[47]

What all these passages suggest is the centrality of imagination in any act of creative discovery, be that in science or art, and point to Eliot's advanced thinking on scientific study and epistemology. Her insights into the close relationship between the logics of aesthetics and the logic of scientific discovery as being based on imagination, as well as her awareness of the dialogic relationship between the internal/external modes of apprehension, or rather the correlation between organism and its medium as a way to understand reality clearly point to her proto-biosemiotic thinking. In a way, these insights also constitute her most evident departure from that form of positivism which refused to acknowledge possibilities beyond the present and apparent world. In fact,

[47] G. Eliot. *The Impressions of Theophrastus Such*. Edinburgh: Blackwood, 1879, p. 109.

in one of her most powerful comments on her own art and in response to Frederic Harrison's proposal that she writes a novel to show Positivist relations of an ideal community, Eliot explained that she 'has gone through again and again the severe effort of trying to make certain ideas thoroughly incarnate, as if they had revealed themselves to me first in spirit and then in flesh.'[48]As David Carroll observes, the two realms - flesh and spirit – are seen as separate, but the imaginative act brings them together in that aesthetic teaching which is for Eliot 'the highest of all teaching because it deals with life in its highest complexity. But if it ceases to be purely aesthetic – if it lapses anywhere from the picture to the diagram – it becomes the most offensive of all teaching'.[49] It is the imagination as hypothesis, or in Peirce's terms abduction and in my terms biosemiotic imagination that brings about the aesthetic incarnation. Eliot sees in the defining powers of the mind, as not only sensory, but also emotional and imaginative, a living and acting force which shapes reality and which enables human beings to go beyond what is merely observable. A way into understanding Eliot's views on mind is through the sustained account Lewes offers in his lifelong work, *Problems of Life and Mind* which I now turn to.[50]

On mind: semiotic scaffolding and the evolutionary layers of meaning

At the centre of Lewes's psychology there were two fundamental and interrelated ideas: the first was the conviction that human beings exist both as physical organisms, part of whose anatomy is the brain, and as thinking subjects. Lewes argued that neither the mind nor the external world on their own can be the sole arbiter of knowledge; instead we can only know the world through continuity between mind and

[48] *The George Eliot Letters*. Ed. Gordon Haight vol. IV. London: OUP, 1956, p. 300. Hereafter, this volume will be shortened as GEL, followed by volume and page.
[49] *Ibid*., p. 300.
[50] Eliot edited the last two volumes and, together they self-mockingly called it the 'Key to all Psychologies' D. Postlethwaite. "George Eliot and Science." *The Cambridge Companion to George Eliot*. Ed. George Levine. Cambridge: Cambridge University Press, (2001): 98-118, p. 113.

body which is what grants knowledge. This idea, based on Lewes's reading of Benedict Spinoza, was further sustained by Lewes's application of Darwin's evolutionary model to the study of mind. This implied, as discussed before, that human behaviour rests on biological substrata or layers. In the biosemiotic insight offered by Jesper Hoffmeyer, these layers allowing further growth are identified not simply as a material scaffolding allowing development, but as semiotic scaffolding. In *Foundations of a Creed* (1874), Lewes further discusses this matter of evolutionary layers and observes, with more than a hint of the much later semiotic insight, that

> The psychologist, accustomed to consider the Mind as something apart from the Organism, individual and collective, is peculiarly liable to this error of overlooking the fact that all mental life manifestations are simply the resultants of the conditions external and internal. ... [these external conditions] are the collective accumulations of centuries, condensed in knowledge, beliefs, prejudices, institutions and tendencies.[51]

Lewes's observation that all mental life manifestations are the resultant of the dialogic relationship between internal and external modes, present strong parallels with the biosemiotic view of interaction or correlation between the 'internal and the external' or between the *Umwelt* and *Innenwelt* through semiotic loops. These semiotic loops, whereby an organism or human animal perceives signs, acts upon them and communicates something to others in the environment, give rise to evolutionary layers of meaning or semiotic scaffolding. On a cultural level these semiotic interactions are seen in what Lewes here identifies as 'the collective accumulations of centuries condensed in knowledge, beliefs, prejudices, institutions and tendencies' as antecedent forms of knowledge which have been formed through the same semiotic processes whereby meaning or expression is changed by emergent or different contexts. Culture

[51] G.H. Lewes. Quoted in S. Shuttleworth. "Middlemarch: An Experiment in Time." *The Nineteenth-Century Novel: A Critical Reader*. Ed. Stephen Regan, London: Open University, (2001): 290-300, p. 293.

can thus be understood as a recursive semiotic system where new insights (beliefs, institutions and even prejudices) are built upon antecedent articulations or on history.

This mode of learning and growth doesn't pertain to cultural evolution alone, but is seen in individuals as well. This is particularly true, or rather visible, in the way characters are presented in *Middlemarch*. One of the central preoccupations in the novel is to show how 'individuals adapt to or resist change in their marriages, in their professions, in their family life and social intercourse'[52] which Eliot explores through the characters' ability to respond to and interpret signs in their *Lebenswelts.* Adhering to an organic and evolutionary view, Eliot's describes her characters as a 'process and an unfolding'[53] and shows how a character's process of learning and therefore growth could be hindered or facilitated by the way he or she is able to access those deeper layers of meaning which is only possible to reach through abductive processes. Characters can thus be seen, in biosemiotics terms, as recursive or learning systems, which are self-reflective and as such aware of their process of learning. It is worth recalling here that self-recursive knowledge, in terms of bio-cybernetics, flows between the organism and the environment in which both change through semiotic loops, or through the active exchange and interpretation of signs or sign relations.

A fine example of this is, for instance, Dorothea Brooke who in her quest for knowledge mistakenly interprets Edward Casaubon and his *Key to all Mythologies* as being a sign of just that. Casaubon's search for a comprehensive worldview brings him to look into the history of myth as a way into finding the origin of all life as he believed that 'all mythical systems or erratic fragments in the world were corruptions of a tradition originally revealed' (*Middlemarch,* p.24). This is why he is certain that

[52] R. Ashton. 'Introduction.' *Middlemarch.* London: Penguin Books, 1994, p. ix.
[53] Introducing Tertius Lydgate in chapter 15 in *Middlemarch*, Eliot writes that 'character too is a process and an unfolding'. *Middlemarch,* p. 149.

‘having once mastered the true position and taken a firm footing there, the vast field of mythical constructions [would] become intelligible, nay luminous with the reflected light of correspondences’ (*Middlemarch*, p.24). Casaubon’s interpretive enterprise, which is largely based on the constructions of the mind, is taken by Dorothea as a sign of objective knowledge which she initially longs for. Disillusioned by her religious faith, Dorothea feels that the marriage with Casaubon promises to open vast new areas of knowledge, which are different to ‘that toy-box history of the world adapted to young ladies which had made the chief part of her education’. (*Middlemarch*, p.86) Dorothea’s desire for knowledge doesn’t rise from her feeling for ‘mere accomplishment’, but rather:

> All her eagerness for acquirement lay within that full current of sympathetic motive in which her ideas and impulses were habitually swept along. She did not want to deck herself with knowledge—to wear it loose from the nerves and blood that fed her action. [...] But something she yearned for by which her life might be filled with action at once rational and ardent; and since the time was gone by for guiding visions and spiritual directors, since prayer heightened yearning but not instruction, what lamp was there but knowledge? Surely learned men kept the only oil; and who more learned than Mr Casaubon? (*Middlemarch*, pp.86-87)

While Casaubon was in search of his binding theory, Dorothea was ‘looking forward to higher initiation of ideas, as she was looking forward to marriage, and blending her dim conceptions of both’ (*Middlemarch*, p.86). Dorothea’s faith in Casaubon is the reflection of her own need to find a binding theory and this is why ‘she filled up all the imperfections, interpreting him as she interpreted the works of Providence, and accounting for seeming discords by her own deafness to the higher harmonies’ (*Middlemarch*, p.75). It is only shortly after the marriage, when on the honeymoon in Rome, that Dorothea starts to realise her mistake and she sees that the gaps and discords which she so aptly filled up herself, do not point beyond themselves to higher harmonies, on the contrary, they find expression in the fragments and ruins

that she finds in Rome the 'city of visible history.' (*Middlemarch,* p.192) Despite Dorothea's inability to see beyond the ruins, Rome could still be 'the spiritual centre and the interpreter of the world' only to those who have looked at the city with 'a quickening power of knowledge which breathes a growing soul into all historic shapes, and traces out suppressed transitions which unite all contrasts' (*Middlemarch,* p.193). What the narrator points to here is that it is only with that kind of imaginative knowledge that true understanding and learning is possible. Rome, a metaphor for imagination, becomes alive for Dorothea thanks to her acquaintance with Ladislaw, Casaubon's cousin. In contrast to Casaubon's 'small taper of learned theory exploring the tossed ruins of the world', Ladislaw to whom Rome 'had given […] quite a new sense of history as a whole: the fragments stimulated his imagination and made him constructive (*Middlemarch,* p.212) is moved by 'an attitude of receptivity to all sublime chances' (*Middlemarch,* p.83).

It is through the juxtaposition of these two characters and Dorothea's interpretation of them as signs, that she comes to 'conceive with that distinctiveness which is no longer reflection but feeling – an idea wrought back to the directness of sense, like the solidity of objects – that he [Casaubon] had an equivalent centre of self, whence the light and shadows must always fall with certain difference' (*Middlemarch*, p.211). The narrator's description of Dorothea's change or ability to adapt to a new vision through semiotic feedback loops (an idea wrought back to the directness of sense through feeling is in a way a semiotic loop) where information or signs constantly loop between her *Innenwelt* (where imagination is) and her *Umwelt* give rise to new layers of meaning, all points to a biosemiotic understanding of character as a self-recursive semiotic system. Dorothea's ability to interpret and respond to signs (Casaubon, Ladislaw and Rome being the semiotic objects of Dorothea's sign relations) and act upon them via abductive processes which are recursive (her initial view of Casaubon

changes in relation to her discoveries while in Rome), means that she is able to learn and grow through the reading of her own unfolding. In contrast to Dorothea, Casaubon is unable of such growth as he is not able to access those deeper layers of meaning via abductive process since, as the narrator points out 'such capacity of thought and feeling as had ever been stimulated in him by general life of mankind had long shrunk to a sort of dried preparation, a lifeless embalmment of knowledge' (*Middlemarch,* p.196). In other words, Casaubon's learning is based on a fixed premise, so that no dialogue between the present and the past can take place.

Eliot' view on the importance of imagination as an inferential tool, and her pointing to the disastrous consequences when this is not so, (for instance the marriages of Lydgate and Rosamond and Casaubon and Dorothea, or the ill fate of Bulstrode) is consistent with the holistic model of mind that Lewes proposes. Mind is for Lewes is 'an active co-operant' (*PLM*, Vol. I, p.162) in perceiving the world and, as he states:

> [It] has not only its own laws of action, but brings with it that very elementary of Consciousness which most theorists attempt to derive *ab extra*. I mean that the sensitive mechanism is not a simple mechanism, and as such constant, but a variable mechanism, which has *history*...the sensitive subject is no *tabula rasa*: it is not a blank sheet of paper, but a palimpsest. (*PLM*, Vol. I, p.162)

As a 'sensitive mechanism' mind does not only respond to present sensations, but changes through lived experiences. This extract is particularly significant, because it points to an understanding of self and consciousness based on past history which is constructed through the evolutionary layers of meaning. This idea is reiterated by Eliot in *Middlemarch*, where she comments on Bulstrode's mental processes in relation to his shame about his past life. She tells us that of Bulstrode:

> The terror of being judged sharpens the memory: it sends an inevitable glare over that long-unvisited past which has been habitually recalled only in general phrases. Even without memory, the life is bound into one by a zone of dependence in growth and decay; but intense memory forces a man to own his blameworthy past. With memory set smarting

> like a reopened wound, a man's past is not simply a dead history, an outworn preparation for the present: it is not a repented error shaken loose from the life: it is a still quivering part of himself, bringing shudders and bitter flavours and the tingling of a merited shame. (*Middlemarch*, p.651)

Eliot here suggests that there is a vital interdependence in history between the individual and culture as well as the organic response. Memory here plays a double role; on the one hand it is individual memory of the past events, and on the other, it is the organic response of the body which she captures with such terms as tingling and shudders. Sally Shuttleworth comments that Eliot's view on the decay and growth of life captures Lewes's view of mind as 'an organic process of composition and decomposition in interaction with the environment.'[54] For Lewes, however mind is also an expression of the organic and social conditions, and he emphasizes the importance of the social medium that is language in shaping it.

The second important interrelated aspect of Lewes' psychology, which I previously discussed, regards his view of language, or what he terms the 'Logic of Signs' as the primary connecting medium between sensation and knowledge .For Lewes, as Sally Shuttleworth observes, a 'redistribution of matter and motion could not give full insight into mental evolution since human development and interaction are primarily determined by the linguistic social medium.'[55] Thus, language determines both individual and cultural development and offers a symbolic system which functions, much like scientific construction, as a way to reveal connections and relations not evident to sense.[56] It is important to remember here, that what usually starts as a biosemiotic scaffolding of the cellular level and subsequent biological level, is similarly responsible for the evolution of semiotic phenomena in language, knowledge and belief. However, where, for Lewes, language is one of the actors that

[54] S. Shuttleworth, *op.cit*, 2001, p. 299.
[55] S. Shuttleworth. *op.cit*.,1984, p. 163.
[56] *Ibid*., p. 164.

shapes consciousness, for Eliot, it is the interplay of verbal and non-verbal language that plays a fundamental expressive and formative role in the subject. I now turn to a discussion of this.

Language, Metaphor and Interpretation

Long before Lewes gave his explanation of the psychological workings in the 'Logic of Signs', Eliot began her essay 'The Natural History of German Life' (1856) thus:

> It is an interesting branch of psychological observation to note that images that are habitually associated with abstract or collective terms – what may be called the picture-writing of the mind, which it carries on concurrently with the more subtle symbolism of language. Perhaps the fixity or variety of these associated images would furnish a tolerably fair test of the amount of concrete knowledge and experience which a given word represents, in the minds of two persons who use it with equal familiarity.[57]

Here Eliot approached a psychologically-based philosophy by describing the Logic of Images - the picture writing of the mind - and the Logic of Signs, the subtle symbolism of mind. In true evolutionary fashion, Eliot reasoned that if knowledge is tied to language, and language is tied to our specific organic being and to its means of articulation, than language cannot be fixed. She recognized that language is not a scientific instrument and saw that for that reason, understanding is always a potential problem. She critiqued, much like Newman and Welby, the fixity of meaning, and consequently the idea of the possibility of language coinciding with a static and pre-constituted order of external facts, by arguing that 'language can be a perfect medium of expression to science, but it could never express life, which is a great deal more than science'.[58] In her essay 'Notes on the Form in Art' she characterises language as 'the least imitative, and...in the most complex relation with what it expresses.[59] She saw,

[57] G. Eliot [1868] *op. cit.,* 1994, p. 260.
[58] *Ibid.*, p. 282.
[59] G. Eliot. "Notes on the form of Art." *George Eliot: Selected Essays, Poems and other Writings.* A. S. Byatt and Nicholas Warren Eds. London: Penguin Classics, 2005, p. 435.

like Lady Victoria Welby, in the figurative dimension of meaning, that is, in the capacity for establishing associations, comparisons, and parallels between different fields of experience an important aid to interpretation and understanding.[60] For Eliot this was also the possibility of both world disclosure, in the way Schelling advocated in the *System of Transcendental Idealism*, and of misunderstanding. In the *Mill on the Floss* she comments on figurative language thus:

> 'O Aristotle! If you had the advantage of being the 'freshest modern' instead of the greatest ancient, would you not have mingled your praise of metaphorical speech, as sign of high intelligence, with a lamentation that intelligence so rarely shows itself in speech without metaphor, that we can so seldom declare what a thing is, except saying it is something else?[61]

The perception of analogies, connections, affinities and the relation of two separate objects or ideas, which is the definition of a metaphor, is at the centre of Eliot's art and is the underlying structural principle of *Middlemarch*. The novel is a web of interlinked metaphors which are constantly developing and modifying each other. The novel is about discovering the underneath relations, the non-visible, which as Eliot advocated, is only possible through imagination or through Peirce's abductive processes; and metaphors, on which characters act upon rather unknowingly or mistakenly, do just that. Thus Eliot comments that 'we all of us, grave or light, get our thoughts entangled in metaphors, and act fatally on the strength of them' (*Middlemarch,* p.85). Casaubon's *Key to all Mythologies* and Lydgate's search for the 'primitive tissue' are metaphors of finding or disclosing the underlying relation, the non-visible. While Casaubon hopes to reveal the underlying order of history through the external correspondence of myths, Lydgate, following the scientific theory of the French physiologist Bichat, is engaged in a quest to find the 'primitive tissue from which all others derived' (*Middlemarch*, p.148). Bichat held that living organisms had

[60] S. Petrilli, *op.cit.*, 2009, p. 321.
[61] G. Eliot. *The Mill on the Floss*. London: Penguin, 1996, p. 40.

to be regarded 'as consisting of certain primary webs or tissues' (*Middlemarch*, p.148) which, translated into the realm of human living, means that humans, and in this case the characters, who stand in as signs of them, cannot be viewed in isolation; individuals are caught up in semiotic webs of relationships, which both determine them and open new possibilities of interpretation.

This view is not unlike Lewes's description between the organism and its medium which he wrote in 1871 'out of the general web of Existence certain threads may be detached and rewoven into a special group – the Subject – and this sentient group will in so far be different from the larger group – the Object; but whatever different arrangement the threads take on, they are not different threads.'[62] From a biosemiotics perspective, these different threads are in fact semiotic relations which, as Vincent Colapietro argues, points to the realisation that 'we are always already in the midst of others as well as meanings: indeed otherness and meaning are given together in our experience of ourselves as being embedded in the "semiotic web."'[63] An example of such semiotic web of relations is evidenced in the in the pier glass metaphor in chapter 27 of *Middlemarch*:

> An eminent philosopher among my friends, who can dignify even your ugly furniture by lifting it into the serene light of science, has shown me this pregnant little fact. Your pier-glass or extensive surface of polished steel made to be rubbed by a housemaid, will be minutely and multitudinously scratched in all directions; but place now against it a lighted candle as a centre of illumination, and lo! the scratches will seem to arrange themselves in a fine series of concentric circles round that little sun. It is demonstrable that the scratches are going everywhere impartially and it is only your candle which produces the flattering illusion of a concentric arrangement, its light falling with an exclusive optical selection. These things are a parable. The scratches are events, and the candle is the egoism of any person now absent— of Miss Vincy, for example. Rosamond had a Providence of her own who had kindly made her more charming than other girls, and who seemed to have

[62] G.H. Lewes. Quoted in D. Carroll, *op. cit*., 1992, p .238.
[63] V. Colapietro. *Peirce's Approach to the Self: A Semiotic perspective on Human Subjectivity.* New York: State of NYUP, 1989, pp. 27-28.

> arranged Fred's illness and Mr. Wrench's mistake in order to bring her and Lydgate within effective proximity. (p. 264)

We are told of a scientific experiment where a lighted candle will make the random scratches on the pier glass appear to be regular concentric circles or patterns. Yet this effect is an illusion, created by the 'exclusive optical selection.'[64] Seeing, however, is for Eliot never merely optical, rather it presupposes interpretation or semiosis, since what is seen, as Hillis Miller highlights, is always taken as a sign, as standing for something else and in fact this experiment is then translated into terms of human understanding and applied to Rosamond's own interpretation of Lydgate's behaviour which she takes as a sign of his gallantry.[65] The candle is here understood as Rosamond's self or egotism, which is the lens through which she interprets life and which prevents her from learning and growing since egotism, as a semiotic system, is antithetical to change and development due to its inability to recognise self-recursive knowledge.

On a different level this metaphor alerts the reader that each character has his/her own centre through which he/she interprets other characters while at the same time he becomes a sign for others to interpret. It is this semiotic activity that forms the web of relations which Jakob von Uexküll's compared in *A Stroll through the Worlds of Animal and Men* to a spider and his web and explained that 'as a spider spins its threads, every subject spins his relations to certain characters of the things around him, and weaves them into a firm web which carries his existence.'[66] Each character spins his web of relations according to his own *Innenwelt* which links the character with

[64]It is interesting to note here that Eliot's discussion on light and perception resembles Goethe's discoveries on colour. In his *Zür Farbenlehre (1810) (Theory of Colours) he* argued that the sensations of colour reaching our brain are also shaped by our perception thus opposing Newton's view of colour as a physical problem, involving light striking objects and entering our eye.

[65] J. Hillis Miller. "Optic and Semiotic in Middlemarch." *Middlemarch*. Ed. John Peck. London: Macmillan, 1992.

[66] J. von Uexküll. "A Stroll through the Worlds of Animal and Men*." Instinctive Behavior: The Development of a Modern Concept*. Ed. Claire H Schiller and D. J. Kuenen. New York: International Universities, (1957): 5-80.

what is other than himself, that is, to the signs in his surroundings which will be interpreted in a particular way. This is seen for instance in the way Rosamond imagines her future with Tertius Lydgate and is certain about their impending marriage based on her registration and interpretation of his behaviour. In fact she has scrutinized

> every look and word, and estimate[d] them as the opening incidents of a preconceived romance—incidents which gather value from the foreseen development and climax. In Rosamond's romance it was not necessary to imagine much about the inward life of the hero, or of his serious business in the world: of course, he had a profession and was clever, as well as sufficiently handsome; but the piquant fact about Lydgate was his good birth. (*Middlemarch,* p.166)

Rosamond's inability to see Lydgate's 'inward life' as much as Lydgate's belief that Rosamond's beauty expresses her virtue leads Eliot to comment thus on their different interpretations: 'between him and her indeed there was the total missing of each other's mental track, which is too evidently possible even between persons who are continually thinking of each other' (*Middlemarch*, p. 450). In an earlier passage she comments: 'Poor Lydgate! Or shall I say poor Rosamond! Each lived in a world of which the other knew nothing' (*Middlemarch*, p.165). Yet both engage in weaving their lovemaking web:

> Young love-making—that gossamer web! Even the points it clings to—the things whence its subtle interlacings are swung— are scarcely perceptible: momentary touches of fingertips, meetings of rays from blue and dark orbs, unfinished phrases, lightest changes of cheek and lip, faintest tremors. The web itself is made of spontaneous beliefs and indefinable joys, yearnings of one life towards another, visions of completeness, indefinite trust. And Lydgate fell to spinning that web from his inward self with wonderful rapidity [...] As for Rosamond, she was in the water-lily's expanding wonderment at its own fuller life, and she too was spinning industriously at the mutual web. (*Middlemarch*, p.346)

Rosamond's self-centredness and inability to see Lydgate's inward life are similar to Casaubon's perception of being the centre of his own world which prompts him to believe that 'others were providentially made for him, and especially to consider them in the light of their fitness for the author of *Key to all Mythologies* (*Middlemarch,*

p.84), which is how he perceives and considers Dorothea. He looks at her 'in relation to his authorship' and so 'he leaned on her young trust and veneration, he liked to draw forth her fresh interest in listening, as a means of encouragement to himself' (*Middlemarch*, p.85), making him completely oblivious as to why Dorothea is so eager to listen to him.

While metaphors are at the basis of characters' interpretations, they also represent the semiotic link between the narrator, the character and reader. This is so, because interpretation allows the reader to position himself in relation to the characters as signs and make telling connections. Through the reader's participation in a common process of interpretation while reading the text, meaning grows since it is built in a recursive process, 'whereby not only are the meanings of subsequent sign relations a development on the basis of what has gone before, but antecedent formulations may be reflexively altered by subsequent ones.'[67] This is seen, for instance, in another prominent metaphor that recurs in the book, that of the labyrinth. This metaphor suggests the maze of confusing and conflicting impressions and expectations that form a larger part of human experience and knowledge. Characters such as Casaubon and Lydgate, engaged with issues of knowledge hope to find a thread that lead them through the labyrinth, which they subsequently find out would lead them nowhere. In chapter 3, the narrator remarks of Dorothea, that after having looked 'into the ungauged reservoir of Mr Casaubon's mind, seeing reflected there in vague labyrinthine extension every quality she herself brought' (*Middlemarch*, p.24) thinks that because Casaubon reminds her of Milton, Bousset and Pascal he must be the equivalent of those geniuses. Although the property of a labyrinth, as A.S. Byatt comments, 'is to be extensive, promising and capable of opening up possibilities, it

[67] W. Wheeler, *op.cit.*, 2015, p. 56.

can also be confining and full of dead ends'.[68] In fact, rather than finding 'large vistas and wide fresh air which she had dreamed of finding in her husband's mind', Dorothea realises that those were 'replaced by the anterooms and winding passages which seemed to lead nowither' (*Middlemarch,* p.195). So Dorothea, as much as Casaubon, Lydgate and the reader, are linked in their common interpretation of the metaphor and are led to believe that the metaphor would help bring new meaning and possibilities. However, while the narration unfolds the initial expectations are changed in relation to new information.

Levine also observes that metaphors show the complexity of the reality present in *Middlemarch* and comments that reality is so 'tenuous that common sense can reveal only fragments.'[69] To see reality, to perceive it or to interpret it, Levine argues, 'depends on the patient attentiveness to the promptings of experience, to the voices of others and to the movements of nature.'[70] It is in this way that Eliot understands sympathy: as a necessary semiotic process grounded in 'Feeling' which enables human beings to enter imaginatively and morally into the perspective of others by reading and interpreting signs.

Sympathy, Ethics and Semiotic Freedom

At the heart of Eliot's view of sympathy, as she wrote in a letter to Sara Sophia Hennell in 1843, was the belief in 'the truth of feeling as the only universal bond of union.'[71] The capacity for sympathy which she defined in the essay 'The Natural History of German Life' as 'a mode of amplifying experience and extending our contact with our fellow men beyond the bounds of our personal lot',[72] is also

[68] A.S. Byatt from the Introduction in George Eliot. *Middlemarch*. Oxford: Oxford University Press, 1999, p. xxi.
[69] G. Levine, *op. cit.*, 1980, p. 7.
[70] *Ibid*., p. 7
[71] *GEL*, I, p. 162.
[72] G. Eliot. [1856] *op.cit.*, 1992, p. 264.

inextricably connected with morality which, Eliot believes, grows from the ability to imagine another's state of mind.

> My own experience and development deepen every day my conviction that our moral progress may be measured by the degree in which we sympathize with the individual suffering and individual joy.[73]

The concept of sympathy, that is, the ability to enter imaginatively or abductively into other people's minds, implies the ability of real feeling towards another individual which enables an assessment of their actions and aspirations. Yet she is aware that human beings are 'wadded in stupidity' and therefore sympathy must be used carefully;

> If we had a keen vision and feeling of all ordinary human life, it would be like hearing the grass grow and the squirrel's heart beat, and we should die of that roar which lies on the other side of silence. As it is, the quickest of us walk about well wadded with stupidity. (*Middlemarch*, p.194)

As we have seen, in *Middlemarch* most characters are initially unable to acknowledge other ways of seeing, because they hold onto a self-centred perspective and therefore operate without the proper sympathy, which Eliot demonstrates is the main cause for their moral failings. It is only through sympathetic understanding that the individual is able to access other ways of seeing and is therefore able to make moral judgements. For instance Dorothea is led from her initial 'moral stupidity' (*Middlemarch*, p.198) to a position where 'she was no longer struggling against the perceptions of fact, but adjusting herself to the clearest perception' (*Middlemarch*, p.343). In other words, it is by opening up to the other, by reading signs and leaving her self-centred understanding of the world and having the courage to face something like facts that she can finally see more clearly.

Eliot's insight into the importance of being receptive to the 'other' through sympathy bears significant parallels with Peirce's reflections on subjectivity and

[73] *GEL*, II, p. 403.

sympathy.[74] Peirce's idea of subjectivity is based on his understanding that a subject is an extremely complex sign, made of verbal and non-verbal material or semiosis.

> There is no element whatever of man's consciousness which has not something corresponding to it in the word ... It is that the word or sign which man uses is the man himself. For, as the fact that every thought is a sign, taken in conjunction with the fact that life is a train of thought, proves that man is a sign; so, that every thought is an external sign, proves that man is an external sign. That is to say, the man and the external sign are identical, in the same sense in which the words homo and man are identical. Thus my language is the sum total of myself; for the man is the thought. (CP 5.314)

As a sign, Susan Petrilli comments, the subject emerges as a relational being thus open and in relation to other signs or subjects.[75] As previously pointed out, for Peirce every thought is a sign, meaning that every thought connects the three elements in the sign relation: a representamen, an object, and an interpretant. The implication of seeing thought as sign action is that it is no longer possible to understand it as private, residing in individual minds, but it should be understood as residing in the public sign structure by which we communicate.[76] Peirce also adds:

> When I communicate my thought and my sentiments to a friend with whom I am in full sympathy, so that my feelings pass into him and I am conscious of what he feels, do I not live in his brain as well as in my own – most literally? True, my animal life is not there but my soul, my feeling thought attention are. [...] Each man has an identity which far transcends the mere animal; – an essence, a meaning subtle as it may be. He cannot know his own essential significance; of his eye it is eyebeam. But that he truly has this outreaching identity – such as a word has – is the true and exact expression of the fact of sympathy, fellow feeling – together with all unselfish interests – and all that makes us feel that he has an absolute worth. (CP 7.591)

[74] For an insightful comment on Peirce's subjectivity see Vincent Colapietro. *Peirce's Approach to the Self: A Semiotic perspective on Human Subjectivity.* New York: State of NYUP, 1989 as well as Peirce's paper "Questions Concerning Certain Faculties for Man and Some Consequences for our Incapacities." The *Essential Peirce. Selected Philosophical Writings.* Vol.2. Bloomington: Indiana University Press, 1992-98.

[75] See S. Petrilli and A. Ponzio. *Semiotics Unbounded. Interpretive Routes through the Open Network of Signs*. Duxford: Icon Books, 2001.

[76] C. de Wall, *op.cit.,* 2001, pp. 81-85.

Peirce's idea of the outreaching identity and fellow feeling and unselfish interests are embodied, for example, in the letter Philip Wakem writes to Maggie Tulliver in *The Mill on the Floss.* There, Eliot's writing of Philip explains that it is through his love for Maggie that he was able to transcend his own self and feel sympathy:

> The new life I have found in caring for your joy and sorrow more than for what is directly my own, has transformed the spirit of rebellious murmuring into that willing endurance which is the birth of strong sympathy. I think nothing but such complete and intense love could have initiated me into that enlarged life which grows and grows by appropriating the life of others; for before, I was always dragged back from it by ever-present painful self-consciousness.[77]

The similarity of Peirce's and Eliot's conceptions of sympathy as embodied feeling are here evident and they are important as they point towards an understanding of the relatedness between the organic and the social or cultural world through sign relations. Sympathy is seen by Eliot as a method for the adequate interpretation of the varied relations and psychological complexities of human beings.

Much contemporary criticism, however, tends to see Eliot's concept of sympathy and its link to morality as either imaginary, a mere form of representation, based on Adam Smith's model which replaces persons with mental pictures thus implying that sympathy is fictional, or as a hidden manifestation of self-interest.[78] Indeed, some critics have even identified such sympathy with sadism as for instance, Ann Cvetkovich or Marc Redfield do.[79] It is fair to say that all these different readings shed, in various ways, some light on Eliot's thought. However in their process of isolating the concept for their analysis, they seem to miss, or rather, to fall short of grasping the sheer complexity of Eliot's thought in relation to sympathy, morality and

[77] G. Eliot, *op. cit.*, 1996, p. 634.
[78] See for instance Jeffrey J. Franklin. *Serious Play*. Philadelphia: University of Pennsylvania Press, 1999, p. 123 or Audre Jaffe. *Scenes of Sympathy*. Ithaca: Cornell University Press, 2000, pp. 7-11.
[79] See for instance A. Cvetkovich. *Mixed Feelings, Feminism, Mass Culture and Victorian Sensationalism*. New Brunswick: NJ: Rutgers University Press, 1994 and M. Redfield. *Phantom Formations: Aesthetic Ideology and Bildungsroman.* Ithaca: Cornell University Press, 1996.

knowledge. Cvetkovich's and Redfield's readings of Eliot's sympathy, for instance, are based on the psychology of motivational response. As Lauren Wispé argues in *The Psychology of Sympathy* the structure of the motivation of sympathy is different because 'the orientation of sympathetic behaviour is not the welfare of the person who is sympathetically motivated, but that of the person who is the object of that sympathy.'[80] So any readings which see sympathy as a hidden self-interest, it may be argued, misunderstand the psychological principle on which sympathy rests.

In more recent criticism, Rosemary Ashton, Suzy Anger and George Levine[81] have all argued in various ways that Eliot's concept of sympathy is an innate quality and that is based either on the philosophy of Ludwig Feuerbach or on the concept of altruism proposed by Auguste Comte. Although Feuerbach was certainly a key influence on Eliot's thinking about religious faith, and he and Eliot, in common with Comte, attempted to reconcile the divine with the human, it is also true that her organic understanding of sympathy and its importance as a model for interpreting the complexity of various visible and non-visible semiotic relations is in large measure attributable to her re-conceptualisation of Lewes's work in psychology. Eliot's view on sympathy was also influenced by Darwin's study of relations between animal and human thinking.

In *The Descent of Man* (1871), for instance, Darwin defined sympathy as social instinct directed towards others and as such presented a way to explain moral behaviour. Or to put it in another way, sympathy, for Darwin, is the appropriate capacity to respond to the emotional and communicative expressions of co-species and as such carries a moral agency. He argues that although sympathy as social instinct

[80] L. Wispé. *The Psychology of Sympathy.* New York and London: Plenum Press, 1991, p. 57.
[81] See Rosemary Ashton. *The German Idea: Four English Writers and Reception of German Thought 1800-1860.* Cambridge: Cambridge University Press, 1994, pp.155-166, S. Anger, "George Eliot and Philosophy." *The Cambridge Companion to George Eliot.* Ed. G. Levine, 2001, pp. 76-79.

may be present in all animals, it is morality that distinguishes lower animals from higher animals, such as human beings. Eliot expresses a similar view in relation to ethics; in fact she states that 'amiable impulses without intellect, man may have in common with dogs and horses, but morality, which is specifically human, is dependent on the regulation between feeling and intellect'.[82]

For Lewes and Eliot, following Darwin, human beings represent the highest organism which is both the most complexly differentiated from its rudimentary origins and the most integrated with other organisms. Biosemiotics tells us that semiotic freedom, the complexity and depth of meaning communicated and interpreted by all living organisms,[83] is where the differentiation lies given the postulate that all living organisms, from the simplest to the most complex, are sign making and sign receptive creatures. For Darwin, sympathy is the ability to respond to the communicative expressions of co-species. Where in lower animals sympathy is instinctual, or in biosemiotic terms is based on the iconic and indexical referencing, in human beings it is the result of the conjunction between instinct, reason and conscience which is expressed in language, or in biosemiotic terms as expressed in iconic, indexical and symbolic references.

Sympathy is for Eliot the condition or mode for possible knowledge not only of the outer world, which she sees in accordance with Lewes as a complex web of relations but also of the inner, psychological worlds that human beings inhabit and which is communicated via symbolic reference. Eliot's fiction is fundamentally based on the importance of extending our sympathies, or rather, on the importance of making

[82] Quoted in R. De Sailly. "George Eliot, George Henry Lewes and the Logic of Signs." *The Sydney Society of Literature and Aesthetics.* Vo.7 (1997):115-125, p. 116.
[83] J. Hoffmeyer, *op.cit.* 2010, p. 377.

us think about extending our semiotic freedom, by reading the signs of each other more carefully, and thus ethically as a possible result.[84]

Conclusion

This chapter set out to explore Eliot's philosophical reflections on epistemology and her view of reality. I argued that her adherence to an organic and evolutionary view of culture prompted her to understand reality in a proto-biosemiotic way, that is, as a web of semiotic relations where reality is always partial since it is based on the semiotic feedback loop between an individual's *Umwelt* and *Innenwelt.* In this respect I emphasised the role imagination, which she understood through her reading of Schelling and the *Naturphilosophen*, and which |I argued is akin to Peirce's abductive logic, has in any act of creative discovery. I emphasised the role of metaphor, which is equally grounded on forms of abductive logic, as a form of world disclosure. This I showed is most clearly at work in *Middlemarch* where the interlinked web of metaphors are a source of creative discovery and at the basis of the characters' interpretation of their own reality. The latter I argued is nested through recursive feedback loops into a wider web of semiotic relations. Each character is thus seen as a sign relation and thus open to different interpretations. I suggested that this understanding provided Eliot with the possibility to explore in her novels and other writings the physical, psychological and ethical implications of nature as embodied through the human ability of sympathy.

[84] D. Neubauer. "Sympathy"*A More Developed Sign: Interpreting the Work of Jesper Hoffmeyer*. Eds. Donald Favareau, Paul Cobley and Kalevi Kull. Tartu: Tartu University Press, (2012): 283-285.

CHAPTER 5

Lady Victoria Welby's Significs: Mother-Sense, Meaning and Significance

As things are it often takes a wise writer to read his own writing; perhaps it takes a still wiser one to read his own meaning. (*Grains of Sense*, p. 6)

The flowering moments of the mind,
Drop half their petals in our speech. (*What is Meaning*, p. 9)

This chapter has two interrelated aims. The first is to discuss Lady Victoria Welby's theory of signs and meaning, that is, Significs, in order to show how Significs proposes to transcend the old dichotomies of mind and matter (by showing how the world and our ideas about it are inextricably linked). Another aim is to illustrate how Significs anticipates important developments in biosemiotics, in particular, in the way in which Welby, postulated continuity between the natural, organic world and the cultural, human world on the basis of signifying processes or semiosis.

In the foreword to Susan Petrilli's *Victoria Welby and the Science of Signs: Significs, Semiotics, Philosophy of Language*, Frank Nuessel defines Lady Welby 'as remarkable, a truly extraordinary intellectual of Victorian England.'[1] What certainly contributed to her being an extraordinary intellectual was, on the one hand, her interesting background (Her Royal Highness Princess Victoria, later Queen Victoria, acted as her god-mother together with the Duchess of Kent, the Queen Mother), and,

[1] F. Nuessel. 'Foreword.' S. Petrilli. *Victoria Welby and the Science of Signs: Significs, Semiotics, Philosophy of Language*. New Brunswick, New Jersey: Transaction Publishers, 2015. As an intellectual and scholar, Welby became a member of the Aristotelian Society of London (founded in 1870); in 1890 she was elected as member of the Anthropological Institute of Great Britain and Ireland (founded in 1871, permission to add the word 'Royal' was granted in 1907; the Anthropological Institute was the result of a merger between two rival bodies, the Ethnological Society of London, founded in 1843, and the Anthropological Society of London, 1863–1870); she was also one of the original promoters and a founding member of the Sociological Society of Great Britain (established in 1903). In S. Petrilli, *op.cit.*, 2009, p. 12.

on the other, her unconventional upbringing which she admitted in a letter written to Charles Peirce in 1903 that 'this accounts in some degree for my seeing things in a somewhat independent way.'[2] She spent her formative years travelling with her mother across the globe and in her later years she saw the advantage of such upbringing in the fact that she was educated and never 'inducated,' a term Welby used in a letter to W. J. Greenstreet (for many years the editor of the *Mathematical Gazette*) where she explained that what in other people had been induced in school training became for her the starting point for her inquiries and questions.[3] This enabled her to preserve her open-mindedness and independence of thought which set her apart from her contemporaries. She remained conscious of the inadequacy of the education she received specifically when compared to that of other scientists, philosophers and scholars with whom she corresponded. Nevertheless, her theoretical reflections and inquiries, which encompassed disciplines as different as psychology, religion, theology, language studies, semantics, axiology, mathematics and physics, reflect a deep understanding and engagement with all these disciplines and do not show any lack of knowledge.

She corresponded with more than 450 eminent scholars of her time among whom the most important were the linguist Michel Bréal (1831-1915), the poet and psychiatrist Frederik Van Eeden (1860-1913), the biologist Thomas A. Huxley (1828-1895), the philosopher André Laland (1867-1963), the linguist and philosopher Charles K. Ogden (1889-1957), the mathematician Mary Everest Boole (1832-1916), the logician and mathematician Bertrand Russel (1872-1970), the linguist and anthropologist Max F. Müller (1823-1900), the philosopher Ferdinand C. S. Schiller

[2] L. Welby to C. S. Peirce. *Semiotics and Significs. Correspondence between Charles S. Peirce and Lady Victoria Welby*. Ed. C. S. Hardwick. Lubbock: Texas Tech. University Press, 1977, p. 165.
[3] V. Welby. Quoted in W. H. Schmitz and E. Achim. Eds. *Essays on Significs*. *Papers presented on the occasion of the 150th anniversary of the birth of Victoria Lady Welby (1837–1912)*. Amsterdam and Philadelphia: J. Benjamins Pub. Co., 1990, p. xxii.

(1864-1937), the psychologist George F. Stout (1860-1944), the sociologist Ferdinand Tönnies (1855-1936), the logician and semiotician Charles S. Peirce (1839Mi-1914) and the novelist, historian and literary critic Julia Wedgewood (1833-1913). All of them contributed in varying degrees to the formulation and discussion of Welby's theory of language, signs and meaning, even though her correspondence with van Eeden (the Dutch poet who started the Significs Movement in Netherlands), with Stout and Schiller, who were her harshest critics, was the most prolific and lasted the longest.[4]

Welby's main focus throughout her life was the problem of signifying (of meaning and communication through verbal signs) and the need for a critical interpretation of language and meaning which led her ultimately to propose a new philosophy of language. She coined the term Significs to indicate a particular focus she wished to place on her theory of signs and meaning and to distinguish it from other theories of language, as for instance, the philological-historical semantics of Michel Bréal. Instead, she focused on the generative nature of signifying processes and on their capacity for development and transformation as a condition of human experiential, cognitive, and expressive capacities.[5] Engaged with the philosophical, scientific and psychological debates of the second half of the nineteenth century, and especially with the operation of language, mind and interpretation, Welby became acutely aware of the inadequacies of language which, she found, stemmed from the misconception of language as a system of fixed meanings. As such, she explained, language tended 'to provide canons and limitations of permanent values' thus hindering communication and understanding.[6] She lamented the fact that although there has been an immense

[4] S. Petrilli, *op.cit*., 2009, p. 15.
[5] S. Petrilli. "Sign, Meaning and Understanding in Victoria Welby and Charles S. peirce." Signs and Society. Vol. 3 n. 1 (2015): 71-102, p. 72.
[6] V. Welby. Quoted in Timothy J. Reiss. "Significs: The Analysis of Meaning as Critique of Modernist Culture." *Foundations of Semiotics. Essay on Significs*. *PapersPresented on the occasion of the 150th*

advance in knowledge, thanks to scientific discoveries, 'there has been no corresponding advance and no revolution of expression of this knowledge and of its relation to and effect upon philosophical preconceptions and systems.'[7] Writing towards the end of the 1890s, she further expounds upon the problem of language and meaning by stating that: 'at present, language betrays a disastrous lack of power to adapt itself to the growing needs of experience.'[8] She understood the need to free language from obsolete theories and practices and she believed that this could be resolved only by recognising the live nature of language, which grows and changes with the development of human experience. Significs was thus conceived as a method to overcome the inadequate understanding of language as a fixed system of signs. In one of her many attempts to define Significs and its aim she says that:

> Significs is to be seen as a way out of even more stagnant, indeed retrograde culture. Knowledge had become hidebound and dormant. Both are caught in the repetition of dead metaphors imposed upon us by our language, which betrays a disastrous lack of power to adapt itself to the growing needs of experience. This difficulty is confronted by any writer who wishing to approach new ways of thinking, has to cope with the disability of having to write in those very idioms and to use those very figures of speech which needs in some cases to be superseded, in others to be vivified, to be raised to a higher power of significance. How can one avoid perpetuating the old deadlocks of thought?[9]

Unlike her contemporaries, such as Thomas Huxley for instance who believed that 'it really matters very little in what sense terms are used, so long as the same meaning is always rigidly attached to them,'[10] she was keenly aware that language is not fixed or invariable. On the contrary, language she saw as being highly context dependent and as such is 'plastic', or flexible and endowed with the capacity of 'expressive ambiguity' that renders it capable of adaptation and renewal to ever new expressive

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anniversary of the birth of Victoria Lady Welby (1837–1912). Ed. H.W. Schmitz. Philadelphia: John Benjamins Publication, 1990, p. 75.

[7] V. Welby. *What* is *Meaning? Studies in the Development of Significanc*e. London: Macmillan, 1903, p. 59.

[8] *Ibid*, p. 2.

[9] V. Welby. Quoted in H.W. Schmitz and E. Eschbach, *op.cit*., 1990, p. 63.

[10] T. Huxley. Quoted in V. Welby. *Grains of Sense*. London: J.M. Dent, 1897, p. 10.

situations.[11] Welby recognised that plasticity is an essential characteristic of thought and language, since linguistic expressions are dynamic and alive in a way similar to living organisms. This is why she established an analogy between word and context and stated that they adapt to each other in the same way as the organisms adapt to the environment.[12] As discussed in Chapter Four, a similar analogy had been proposed by George Eliot and G. H. Lewes. However, there is an important difference between these views. Where Lewes concentrated solely upon verbal language, Welby included non-verbal language in her study of signifying processes.[13] As Petrilli explains, 'part of her broader understanding of signifying processes went beyond the verbal.'[14] Indeed, by understanding plasticity as the capacity for creating connections, and as a necessary condition for successful communication in both the cultural and organic world, Welby prefigured important developments in twentieth-century semiotics and biosemiotics.[15]

Welby developed her views on the plasticity of language and consequently her evolutionary view of meaning, partly as a result of engagement with discussions on biblical exegesis, in which she, like Newman before her, realised the need to consider religious questions in relation to other spheres of research and investigation. In this respect she proposed a new interpretive-cognitive method to the study of language, which she called translation. This consisted in relating things (signs) that seem distant from one another, but in reality present a homological similarity. By contrast to the analogical method which indicates surface similarity, the homological method

[11] S. Petrilli, *op.cit.*, 2009, p. 21.
[12] V. Welby, *op.cit.*,1903, p. 60.
[13] Although there is no direct reference in Welby's work to George Eliot, there is however reference to Lewes's *Problems to Life and Mind* in her monograph *What is Meaning.* This suggests that Welby was aware of Lewes's work and thought and indirectly also of Eliot's writing since the last two volumes of Lewes' work were edited by Eliot herself. Moreover, Welby entertained a long correspondence with Herbert Spencer whom both Eliot and Lewes knew.
[14] S. Petrilli, *op.cit.*, 2009, p. 29.
[15] *Ibid*., pp .360-361.

searches for profound structural and functional relationships which are expressed through figurative language and more precisely through metaphor. Once such example of homology is presented by Welby in her last monograph *Significs and Language* (1911) where she discusses the concept of beauty and meaning in language on the basis of the similarity with the language of music. Her view was that translation from one sign system to another was instrumental to the development of meaning, since it implied the ability to look at signs with the eyes of the other, developing them further across different verbal and non-verbal sign systems. She also claimed that all signs and expressions are in themselves the open result of translation and that knowledge and experience are generated or developed through these processes whereby signs from different sign systems (verbal and non-verbal) interact. Translation understood in these terms is not to be seen as concerning the human world alone but it emerges as a constitutive modality of semiosis.[16]

Welby's evolutionary view of language also grew out of her keen interest and engagement with biological sciences, in particular Darwin's evolutionary theory. The influence of Darwin's theory on Lady Welby's thought has been largely documented. Timothy Reiss observes that 'Darwin's reference behind Welby's work is common place.'[17] Nevertheless, Darwin's theory was influential in Welby's overall understanding of language as a living organism that continually evolves, grows and develops. This is reflected in her statement that 'as life rises in scale and worth, it rises in significance.'[18] As humans develop, Welby asserts, so they adapt themselves to the environment (or fail to do so) and this type adaptation is what she calls experience. Such experience, Welby argues 'is by definition meaningful, it is a way in which

[16] S. Petrilli, *op.cit*., 2009, pp. 517-538.
[17] T. J. Reiss. "Significs: The Analysis of meaning as a Critique of Modernist Culture," *op.cit.,* 1990, pp. 63-83, p. 67.
[18] V. Welby. *What is Meaning? Studies in the Development of Significance*. London: MacMillan and Co., Ltd., 1903, p. 10.

events are provided with meaning.' If experience changes as the organism adapts itself, it follows that the symbolic orders (language) used to ascribe meaningfulness must develop and adapt along with them.[19]

Another Darwinian overtone in Welby's thought is seen in her later conceptualisation of the relatedness and continuity between the biological and cultural realm. She expressed this continuity through the meaning triad sense-meaning-significance, whereby meaning and significance are specific to the human dimension, whereas sense or what she later termed Mother-Sense, is to be understood as the immediate or interpretive intuition which she equates with the spontaneous reaction of an organism to its environment. Understood in this way, sense is common to all organisms being a pre-condition for evolutionary adaptation and therefore survival. In other words, Mother-Sense, in its organic conceptualisation, becomes for Welby a form of knowledge necessary for the survival of human race. Welby identified the concept of Mother-Sense as being the originating source of sense and meaning of all signifying processes at large which she believed are shared by all living organisms. In light of Sebeok's concept of language as modelling device, Mother-Sense could thus be seen as a condition for the acquisition of knowledge through different sign systems (verbal and non-verbal) that are constitutive of human semiosis.

In order to explore the importance of Welby's particular take on the theory of language, and her original contribution to discourses on language, communication and interpretation in the second half of the nineteenth century, the focus here is on the original concept of Mother-Sense since it plays a central role in Welby's conceptualisation of signifying and interpretive processes and in the modelling of worldviews. Since Mother-Sense is the generating source of meaning resulting from

[19] Ibid., p. 27.

the ability to associate things that seem distant from each other, and to be able to do so is the result of a seemingly spontaneous grasp of some relation of similarity, I will argue that this concept echoes Peirce's abductive logic. Second, I will explore how Welby's emphasis on the need to recover the creative capacity of human intellect, that is Mother-Sense, brought her to engage in her early writings with theories of meaning and interpretation in relation to religious matters in which she advocates the need to understand language in its dynamic and evolutionary form. Third, I will discuss Welby's understanding of inferential processes and her introduction of 'translation' as an interpretive-cognitive method necessary for understanding and creative discovery, on the one hand, and as the key capacity for understanding the interconnectedness and interdependency among signs on the other.

The discussion on inferential processes will explore Welby's insistence on the importance of figurative language and its organic evolving quality, what she termed plasticity, in relation to her meaning triad and the consequent postulation of continuity between the natural and cultural realm through the evolutionary development of signifying processes. Finally, while considering the implications of the signifying processes in the development of meaning and experience, this chapter will discuss the interrelation between organic sense and mental life in order to show how signifying processes at large are shared by all living organisms in non-verbal domains.

The concept of Mother-Sense as the generative source of Sense and Meaning

Central to Welby's thought system and her analysis of language and signifying processes is the original concept of Mother-Sense or what she subsequently called Primal-Sense. Mother-Sense is thematised by Welby as the generating matrix of the human capacity for language, for knowledge acquisition and experience, for the development of consciousness and ultimately for worldview. Mother-Sense is also

described as the originating source of sense and meaning, the capacity for interpretation and for solving problems. Although she formulated this term around the 1890s she only elaborated her concept in a series of unpublished manuscripts at the beginning of the twentieth century.[20] Encouraged by the public debate on Eugenics (founded by Sir Francis Galton 1822-1911) to which she contributed with two papers respectively in May 1904 and February 1905,[21] she wrote a later essay entitled 'Primal Sense and Significs' (1907). In this essay she insisted on the importance of Mother-Sense as a creative force that precedes mechanisms of control as enacted through the constitution of language and logic and she states that the so called rationalising intellect, the faculty for rational construction and critique, is only a subsequent development of Mother-Sense.[22] In his discussion to the central role played by Mother-Sense in Lady Welby's Significs, Luke Simmons highlights the interrelation established by her between 'intuitive knowledge' and 'rational knowledge' and points out that it was on Mother-Sense or the 'primordial method of mind' that Welby founds her Significs.[23] The relation between Mother-Sense and Significs is also discussed by Welby in the above mentioned essay in the following terms:

> Primal Sense is what takes up and supplies to us the material of immediate awareness, conscious and interpretive. It is the successor in evolution, or constitutes a further stage in value, of the animal's instinct. It is thus primordial and universal, at all stages of human development; though varying greatly in the part which it plays in the thought-life of human beings at such stages. And as Primal sense is the Mother of senses, it is still occasionally found in women. [...] It is just here that the place and work of Significs is to be found, as the necessary link – rather, the medium of interpretive communication – between the constant 'givings' of Mother-Sense and the constant 'constructions' (in all senses) of the intellect.[24]

[20] These papers and manuscripts are stored in the Welby Collection (Box 28, subject file 24) in the York University Archives and Special Collections in Toronto Canada. A selection of those are now published in S. Petrilli, *op.cit.,* 2009, pp. 650-715.
[21] S. Petrilli, *op.cit*., 2009, p. 573.
[22] *Ibid*., pp. 574-575.
[23] L. Simons. 'Regaining Victoria Welby.'Editorial. *The Semiotic Review of Book*s. Vol. 14 n. 1 (2004): 1-4, pp. 3-4.
[24] V. Welby. "Primal Sense and Significs" in S. Petrilli, *op.cit*, 2009, pp. 574-575.

In the passage quoted above Welby distinguishes between Mother-Sense, on the one hand, and intellect or what she also termed Father-Sense on the other. The intention behind this distinction was to separate two main modalities: one being the generation and the other being the interpretation of sense. These, as Welby points out, may be separated only hypothetically, since in practice they were interrelated. Welby associated Mother-Sense with the generating source of sense and the capacity for knowledge achieved through perception and intuition which are traits that are commonly found in women. Although the woman emerges as its main guardian and disseminator, Mother-Sense is 'an inheritance common to humanity.'[25] On the other hand, Father-Sense, associated with intellect, alludes to the acquisition of knowledge through assertion, generalisation, experimentation in science and logic. This type of knowledge is traditionally entrusted to man; however, Welby noted, such knowledge is common to both male and female and should not be understood as a special male propensity.

In terms of logic, according to Welby, the term intellect refers to that type of inferential process akin to deduction and induction. In contrast, Mother-Sense alludes to 'the creative and generative forces of sense resulting from and in the capacity to associate things which would seem distant from each other while in fact they are mutually attracted to each other.'[26] Therefore it alludes to the capacity of identifying homological relations among signs. Understood in these terms, Mother-Sense thus refers to that type of inferential processes associated with Peirce's abductive logic or Bateson's syllogism in grass, and is therefore not separated from intellect, but

[25] S. Petrilli, "Gift-giving, Mother-Sense and Subjectivity in Victoria Welby: A study in Semioethics." *Il Dono/The Gift A Feminist Analysis. Athanor: Semiotica, Filosofia, Arte. Letteratura*. Vol. XV n. 8 (2004): 179-198, p. 181.

[26] *Ibid.* p.182. Welby alludes here to the form of metaphoric working of Peircean iconic signs. It is worth recalling here that in terms of Peirce's best known sign triad, induction and deduction may be associated, respectively, to symbolicity and indexicality. Instead, abduction and in Welby's case mother-sense represent the side of signifying processes oriented by the iconic dimension of signs which follows the logic of similarity and difference.

antecedent to it. In this respect, the implications of Mother-Sense, Petrilli observes, emerge even more when we consider it in the light of Sebeok's understanding of language as modelling.[27] Like Mother-Sense, the primary modelling device, is necessary for the acquisition and generation of knowledge through the various verbal and non-verbal systems that constitute human behaviour. As a modelling device, Mother-Sense, is the condition that makes the generation of infinite worldviews possible in potentially unending signifying processes.

As a creative force, Mother-Sense, Petrilli observes, 'includes Father-Sense, whereas the converse is not true.'[28] For this reason Welby feels it is important to recover the original dialogic relationship between both, because true knowledge is possible only through an active cooperation of both. She sees Significs as the necessary link between the two. It is important to stress here that Welby does not establish a separation between sexes on the basis of the concept of sense. Mother-Sense should not, in fact, be confused with 'feminine' or 'female' or 'woman.' On the contrary, understood as the capacity for sense and significance, the concept should be seen as an a priori, as transcending gender differences since it indicates a condition that invests both sexes. Ferdinand C. Shiller was very critical of the term and in a letter to Lady Welby dated 2nd October 1907 he suggested to replace the term with common-sense in order to avoid oversimplified readings of her position. He felt that the term Mother-Sense could be mistakenly interpreted as excluding the male sex, or as he put it:

> But why should you not identify your Mother-sense with Common-sense and call it (mainly) that? It is what at bottom you mean – the wisdom of the 'tout le monde' which is wiser than the sages, which pervades Society and its history and is rarely formulated and never adequately expressed in set logical terms. It is truly 'common' in that it can be fathered upon no one, and in that it is at the basis of our 'common' life in society; it is also 'mother,' in that the logical acumen grows out of it. I am also willing to believe that women in

[27] See S. Petrilli, *op.cit.,* 2015, p. 12.
[28] S. Petrilli. *op.cit.,* 2015, p. 10.

> general, when one gets beneath the surface of their frivolities and follies have retained a closer contact with this force and that e.g. the 'maternal instinct' will (despite all appearance to the contrary) triumph over 'race-suicide' temptations, if only women are given a free hand in the regulation of things. So you would have ample reason for calling this 'common-sense' a 'Mother-sense,' but the more you emphasised the former phrase the more intelligible you would become to the mere male![29]

Welby chose to avoid the term common because of its negative associations. In her response to Schiller's letter she agrees that the term 'mother' could potentially be interpreted reductively, as when it is identified with a mere organic or biological sense. This is why she uses the term Primal-Sense as another option. In a text dated 30th June 1908 she explains that:

> My own transition (as a matter of precaution) from 'mother' to 'primal' (with, as variant, 'primary') Sense, is an illustration of the difficulties created by our neglect of Significs. For it ought to be understood at once, *that in such a context as mine* I cannot possibly mean by Mother-sense, mainly, still less only, the shrewd or practical insight of the typical 'mother' in the actual or organic sense.
> Naturally I mean a primordial, inceptive, inborn, need-fertilised, danger-prompted, interest stimulated, Sense. *'Mother' is indeed or ought to be, the wide and general, 'Father' the specialised, term.* The pre-sexual organism *was* the maternal, and *included* the paternal element. We already recognise this in our philosophical and scientific use of the term Matrix. We never, in this connection, use the term Patrix; and we are quite right. The 'mother' is enabled by stimulus to conceive, develop, nourish new life.[30]

Welby's insistence on the use of Primal or Mother-Sense was to indicate the necessity to recover the creative and critical capacity that was common to all human beings regardless of any gender differences. Welby does not refuse the dominant logic, of which she recognises the incalculable value, but she appeals to constructive criticism in relation to cognitive and interpretive models. Although Welby was writing at the time when women were challenging their role in society with vigorous support from

[29] F. C. Schiller to V. Welby in S. Petrilli, *op.cit*., 2009, p. 632.
[30] L. Welby in S. Petrilli, *op.cit*., 2009, p. 710.

such figures as John Stuart Mill (1806-1873) and John Ruskin (1819-1900)[31] who openly rejected gender inequalities, she never actively engaged in any form of feminist writing.[32] Having said that, in her contribution to the discussion on Eugenics at the meeting organised by the Sociological Society in 1904, she attempted to point out the possibility of women making a contribution to the Eugenics goal - that of developing innate human qualities to the greatest advantage of humankind - by emphasising the importance of a woman's responsibility in society as a consequence of her being endowed with a larger share of the so called intuition or Mother-Sense. This is why, Welby believed, women were responsible to hand it down to future generations.[33] However, in the light of evolutionary theories prevailing at the time, Welby believed that Mother-Sense is a homogeneous faculty, an organic form of knowledge, necessary for the survival of human race and as such is common to both men and women.

One of the main tasks assigned to Significs, as Welby pointed out in the essay 'Primal-Sense and Significs' was precisely that of recovering the relation between logic (intellect) and the creative part of human understanding, that is, Mother-Sense, which Welby tirelessly promoted as the generative force of all signifying processes and interpretation that would go beyond the conventions of any social, moral and religious order. Welby's emphasis on the need to recover the creative capacity of human intellect and her view on the relation between practices of signification and interpretation developed as a result of her early engagement with discussions in religious matters. These (see also below), included her quest for an updated

[31] J. S. Mill. *The Subjection of Women*. London: Longmans. 1869; J. Ruskin. *Sesame and Lilies. Three Lectures*. Chicago: Belford, Clarke, 1900.

[32] Sophia Melanson discusses the importance of Welby's Significs within a feminist context and draws analogies between her work and contemporary female writers in "Signification, Common Knowledge, and Womanhood: The Significs of Lady Victoria Welby and beyond." *Semiotica*. Spec. Issue. On and beyond Significs: Centennial Issue for Victoria Lady Welby (1837-1912). Vol. 136 n.1/4. (2013): 79-100.

[33] H. W. Schmitz. Ed. and introduction. V. Welby. *Significs and Language. The Articulate form of our Expressive and Interpretive Resources.* In Foundations of Semiotics. Vol. 5. Amsterdam and Philadelphia: John Benjamins Publishing, 1985, pp. LXVIII-LXXIII.

interpretation of the Christian doctrine and its critical reinterpretation, which were based on Welby's s organic and evolutionary view of language.

Biblical Exegesis: towards Significs as the theory of Meaning

Welby's early research, which eventually led her to propose a general theory of meaning and communication in her later monographs *What is Meaning* (1903) and *Significs and Language* (1911), was dedicated to religious, theological and exegetical questions which she re-interpreted in the light of progress in sciences. Walter Schmitz comments that it is not known why Welby felt motivated to deal with religious and theological questions.[34] However, Welby herself makes a particularly noteworthy comment on her motivations for doing so. In a letter written to C. K. Ogden on the 24th December 1910 she wrote:

> As to religion! That is where I began. I found out that none of us knew where we were and what we were battling for at the very centre of life, that which ought to focus all our interests and powers.[35]

Here Welby expresses a common preoccupation about religion and faith which, as I discussed in Chapter Two above, stemmed from discoveries in science with its consequent feeling of disinheritance due to doubts about the truth of Christianity and its morality on the one hand, and about the correct interpretation of the Bible on the other. It is worth recalling that one basis for the dispute on biblical exegesis was the changing notion of language. This was either seen as immutable and God given or as organic and therefore as developing over time. The consequence of these contrasting views was that biblical writing was either bound to a dogmatic and fixed interpretation or was perceived more as a historical document and therefore subject to intentionalist accounts of it meaning. Echoing Newman, Welby reacted against the former view in

[34] H. W. Schmitz. Ed. "Significs and Language. The Articulate Form of our Expressive and Interpretive Resources." *Foundations of Semiotics*. Vol. 5.Amsterdam and Philadelphia: John Benjamins Publishing, 1985, p. xxvi.
[35] *Ibid*., p. xxviii.

the light of her evolutionary understanding of language as being flexible and mutable, and denounced the short-sighted tendency to assert orthodoxy and dogma over interpretation and meaning.

Welby addressed these issues of dogma in a passage entitled 'Recognition' in her volume *Links and Clues* (1881), which she published under the pseudonym Vita. Asking whether the Church is the custodian of dogma she answers: 'If by dogma we mean given expression, definitions of truths, yes.'[36] Welby reiterated this view in her later monograph, *What is Meaning?:Studies in the Development of Significance* (1903) where she argued that 'orthodoxy is of course a good thing insofar as it preserves tradition and order, and makes for reverence, dignity and truth. But, when as now, it is supposed to give canons and limitations of permanent value [...] it must inevitably bring about the results upon thought which we see: the cutting off or nipping or starving of the buds of original power.'[37] Her critique was addressed against the ecclesiastic authority for its lack of critical thinking about the nature of truth and knowledge. She felt that truth can never be defined behind the fixity of canons, convention and dogmas and believed that the Holy Scriptures needed to be freed from what she saw as prejudice in interpretation reductively understood as decodification.

As she explains in a letter to the anti-Christian theist Charles Voysey, her aim in writing *Links and Clues* (1881) was to 'reverse the prevailing interpretations of the new testament and to reconcile the meaning of the whole with our reason and conscience.'[38] What is especially interesting about the way Welby intended to do so was her method of text interpretation which differed greatly from any other attempt by

[36] V. Welby. *Links and Clues*. London: Macmillan, 1881, p. 102.
[37] V. Welby, *op.cit.*,1903, p. 55.
[38] Lady Welby to Charles Voysey. *Echoes Larger than Life: A Selection of Early Correspondence of Victoria Lady Welby, 1879-1891*. Ed. Mrs Henry-Cust, London: Jonathan Cape, 1929, p. 39.

her contemporaries, as it was based on her original understanding of language and meaning. Welby asserted that

> the freer we are from the bondage of confounding sign with the thing signified, event with the essential truth manifested by it, flesh with spirit, the freer to use sign in the spirit of loving obedience, and be blessed in our deed through it.[39]

In other words, her conception of meaning transcended the pure arbitrary use of language and encompassed different fields of knowledge and research in order to generate new forms of discourse. These ideas are referred to more obliquely in the preface of *Links and Clues* in which in the quest for truth, understanding and creativity, she claimed she was not presenting a system of thought, but rather some suggestions which 'acted as links between divided souls and clues for bewildered hearts' and which were inspired uniquely by the Bible and the Book of Nature.[40] By asserting that these suggestions were inspired by both religious and scientific discourse, Welby already highlighted the need to update the religious discourse in the light of scientific innovations thus echoing Newman's earlier view (and perhaps reflecting Darwin's thinking upon her own unfolding thinking). Moreover, Welby's early views on this already point towards the elaboration, firstly, that religion was, as she viewed it, a system of signs and values that interacts with other systems and, secondly, her theorizing of an interpretive process whereby meaning is generated in terms of the capacity for responding to signs creatively and critically.

In this respect it is interesting to note how the book *Links and Clues* is organised into a series of entries on specific themes that deal with sacred scripture, its interpretation, truth, knowledge, science, art and ethics showing how all these spheres are linked through a common interpretive process which she later came to recognise

[39] *Ibid.*, p. 202.
[40] *Ibid.*, p. ix-x.

as a signifying process rooted in Mother-Sense or what Peirce calls abduction. Paul Chipchase notes that the originality of *Links and Clues* 'lies as much in the way it is organised as in the brilliance of its disintegrative criticism.'[41] Although it is true that Welby was evidently deeply critical of religious discourse, Chipchase's view that her criticism was disintegrative seems to be, however, at odds with Welby's intentions to interrogate and reread the religious discourse in another key. Also, the positive reviews *Links and Clues* received seem to suggest that her criticism was largely well accepted. For example, this short extract from the letter written by Charles Kingsley testifies the need to update religious discourse in the way Welby suggested: 'I am glad that anyone should speak as you [...] of so many things, in short, which "religious books" are for ever misleading people. Truth is one! but men see it through coloured glasses'.[42] Also the Reverend F.G.M. Powell expressed his positive view about the book by saying that he lent it to a friend who was deeply impressed by her work and indebted to her 'for having given him food for thought enough to last a lifetime.'[43] Thus Welby's conceptualisation of a familiar critique of biblical writings can be seen as both disruptive and an important contribution at the time.

At the centre of *Links and Clues* is the preoccupation with meaning and the ambiguity of language. She considers how a single text or a simple word can be given different meanings and may therefore generate different interpretations. In the opening pages of *Links and Clues*, Welby reflects on the limits of human language, which leads, inevitably, to misunderstanding not only of texts but most importantly of the Holy

[41] P. Chipchase. "Some account of the Literary Production of Lady Welby and Her Family." *Essays on Significs. Papers presented on the Occasion of the 150th Anniversary of the birth of Victoria Lady Welby (1837-1912).* Ed. H. W. Schmitz. Amsterdam and Philadelphia: John Benjamins Publishing Company, 1990, p. 19.
[42] V. Welby to Kingsley, in N. Cust, *op.cit.*, 1929, p.69.
[43] *Ibid.*, p.69.

Scripture as a whole. She criticises a mechanical understanding of language which emphasises a rigid interpretation of meaning in a text, and she suggests that:

> Too many of us have not only looked on Holy Scripture as one dead level of mechanical inspiration, but have been content to accept and adopt, not only conventional, but even corrupt meanings of words.[44]

Here Welby echoes both Newman and Eliot in denouncing the tendency to view language as having a technical precision in providing us with univocal, single meanings to words. She criticises the concepts of 'plain or obvious meaning' and that of 'plain common sense meaning' as in her view they create obscurity as a consequence of reducing plurivocal meaning to univocal. Welby also points out that the term 'sense' has to be understood in its double reference: negatively as a reduction to simple, plain text, or positively as a kind of an a priori of signifying processes. In other words, what Welby identifies as the positive aspect of sense is what she called in her later work Primal-Sense or Mother-Sense, namely the primary part of or the necessary condition for all signifying processes in both the biological and cultural realm. Mother-Sense, is worth repeating here, is the ability to connect ideas or to associate things that would seem distant from one another or even contradictory. From a biosemiotic perspective, Mother-Sense can be likened to the iconic and indexical dimension of sign-relations, which are hidden from conscious reasoning and which are grounded in the logic of abduction. As discussed in Chapter One, the logic of abduction rests on the inferential processes which are based on patterns of similarity and difference, or rather on metaphor-like processes. For Welby, similarly, Mother-Sense is the condition for the interpretive process of meaning which is generated in terms of a creative response to signs.

[44] V. Welby, (1883) *op.cit.*, p. 51.

Another important aspect that Welby raises in *Links and Clues* and that is strictly related to Welby's understanding of Mother-Sense is the discussion of truth and attainment of knowledge. Here she starts her argument by pointing out that truth, just like language, is not univocal. That is, truth is not inherent in definitions or definitive formulae, but is open to creative discovery found in the plasticity of signs. In order to elaborate her view, Welby gives an example of how inadequate is human perception of truth by saying that if four people were looking at the planet Earth through four separate telescopes and each having a radius of a few miles and unable to change telescopes, they would each produce a different and contradictory truth about the planet. Such truths wouldn't necessarily be wrong, but only partial as those men looking with the telescopes would say that all the Earth is either covered in water, forest, or mountain. And that would be so only because 'they would use the word "all" instead of saying that What I see.'[45] She proceeds to argue that things, in order to unite in central truth, must come from many quarters, each the opposite of another.

> Are not extremes discordant and divided because they don't go far enough? […] Are not "extreme" thinkers opposed because they are unconsciously at the two ends of the segment of a circle of truth, so great that the curve is imperceptible by us; so that if they only would go on, on, they would all at last find the point of union?[46]

What Welby seems to be suggesting is that truth is not sanctioned by dogma, but is to be found in the ability to see things from different perspectives that potentially unify, or even perhaps in the ability to recognise patters of similarity and difference. A significant aspect of Welby's discussion of truth and knowledge is related to her consideration of the relations between Light and Knowledge, where the metaphor of God as Light becomes a significant religious analogy.

> Light, life, love – how these three thoughts, taken together, help us in conceiving a threefold perfectness, The Triune Glory! But of the three,

[45] *Ibid.*, p. 312. It is important to note here, that Welby's understanding of truth and reality echoes Eliot's specifically in the way that perceiving, or rather seeing, means interpreting.
[46] *Ibid.*, p. 313.

> love alone fully includes the other two. We can conceive light without love, as knowledge; of light without life, only revealing, manifesting it. But we say the light, the life of love; and this is a fuller thought than the love of light or life.[47]

Petrilli observes that the metaphor of light as truth and knowledge, as well as illumination indicates that the possibility or the idea of 'seeing beyond vision, of knowing beyond knowledge,' is as an act of abductive logic.[48] The metaphor of light is also particularly poignant if we consider it from the standpoint found in the Book of Genesis. Light was in fact God's first creation as he uttered 'Fiat Lux!'[49] (Let there be light) while on the last day the miracle was to endow man with Lumen Animae (the illumination of the soul) or Reason. According to the Book of Genesis, God created light before the sun, moon, and stars which appear on the fourth day. Howard Schwartz argues that the light thus created is a primordial light which is different from the sun.[50] It is this type of light, the primordial or the pre-rational one that becomes important in Welby's concept of 'Primal-Sense' or 'Mother-Sense.'

As observed in the previous discussion, Welby also links Mother-Sense with the construction and interpretation of worldviews that ultimately afford new knowledge and truth.[51] Petrilli notes that Welby defined sense as 'knowledge that is instinctively religious, where religious has to be understood in etymological sense of the term *religare*, to link, unite or relate together.'[52] The concept of Mother-Sense thus understood, presents similarities to Newman's concept of 'illative sense' and to Peirce's concept of abduction, inasmuch as they refer to that non-conscious capacity which, as Peirce argues, is necessary for responding to any sign creatively and for the

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[47] *Ibid.*, p.23.
[48] S. Petrilli, *op.cit*., 2009, p.154.
[49] New Jerusalem Bible, Genesis 1:3.
[50] H. Schwartz. *Tree of Souls: The Mythology of Judaism*. Oxford University Press, 2004, p.85.
[51] The metaphor of Light will be used by Welby in other important writings such as the essay 'Light', printed in 1886, and in the parable 'The Evolution of Heliology', also printed in 1886 where she develops the metaphor of light as knowledge and criticizes the myth of the sun. Another important essay is 'Light and Its Meaning' which also appeared, together with 'The Evolution of Heliology' and 'Light' in her collection of parables and short essays entitled *Grains of Sense* (1897).
[52] S. Petrilli, *op.cit*., 2009, p. 585.

acquisition of knowledge and truth. Thus for Welby, true knowledge cannot be regulated by authority or given a definitive formula, but must be open for critical creativity; in other words be open to semiosis. She further develops the point of God as light in a letter to Lynn Linton, where she writes

> God is revealed as Light – in order to clear. God being Light does not follow that every intelligible question implies an intelligible answer, and that we are intended not to rest content until we find it? If we were incapable of receiving an answer, we should be incapable of conceiving the corresponding question. Each seeking "why?" is put into our hearts by the very Light, whereby we are at least to learn the answer. Our measure of what Light can do for us, morally, intellectually, spiritually is too often poor and contracted; and thus the advancing growth of men's awakening faculties, the increasing area of scientific, historical and general knowledge, tends to deprive us of what little light we have; we tremble and we dare not look God's own facts in the face, we shiver in a darkness miscalled faith. Yet even what we are not able yet to see we may sometimes, if we will use God's gift, infer [...] Whole worlds of truth are surely hidden in the depths of the Living Word, ready for the patient and faithful inquirer, which uses fearlessly the instruments which God himself has given him, and as Light shall enable him to apply.[53]

In this letter Welby criticizes the tendency to see truth as a definitive doctrine, a fixed meaning instead of seeing it as innovation. Truth, as she says in the last paragraph of her letter, is hidden in the living word. That is, it coincides with life and it cannot be rigid. She insists on the fact that in order to find truth one should use God's gift, or the lumen anime, since modern scientific method would necessarily leave us in darkness. Importantly, such truth should be expressed not in dogmas, but with the living power of language which cannot be fixed, but should be allowed to be what it is, flexible and ever changing.

This view about truth and language has a resounding similarity with Friedrich Nietzsche's idea that language is an accurate description of Truth. In his 'On Truth and Lying in a Non-Moral Sense' (1873), Nietzsche argues that the belief that Euclidian

[53] N. Cust., *op.cit.*, 1929, pp. 174-175.

language with its emphasis on precision and logical/ denotative clarity is somehow true to nature is plainly erroneous since all language is essentially poetry, inherently metaphorical. A metaphor is by definition a figure of speech where relations are identified among seemingly different fields of experience. What this implies is the fact that language not only is creative, but is open to different interpretations, hence there couldn't be one definitive Truth, but truth is, in Nietzsche's poignant phrase, 'a mobile army of metaphors.'[54] Welby used the metaphor of God as Light to criticize the imposition of dogma and the conventional canons of knowledge, not only in the Church, but also in lay institutions. She promoted a critical and active interrogation against passive acceptance of the sacred Truths and highlighted the importance of looking beyond the plain written word since the answers are not contained in words themselves, but in their metaphors or rather in their relation to all things, to life:

> We are ever tempted to assume that what is not revealed in plain words is not revealed at all. But running through every thought of mine will be found this main clue - the mother of many – that there is much implied in the words of Christ especially, and in the Holy Scripture generally, which, not lying on the surface, is to be discerned by the light of what He *is*: and that we are not merely to learn from words alone [...] For the Word of love and life interprets alike [...][55]

In a letter to Max Müller, Welby reiterated this point by saying that the only way we can define God is through 'perceptible or intelligible things'. However, she felt that we should look 'beyond the word, significance beyond meaning.'[56] She was convinced that in order to find Truth and knowledge we should be ready to acknowledge the presence of many voices and not only one. This voice, she denounced, was usually anthropocentric. Truth, according to Welby's view, is plurivocal, that is, it brings together different views and voices from different fields of research. As such it cannot

[54] F. Nietzsche. "On Truth and Lying in a Non-Moral Sense." *The Birth of Tragedy and Other Writings.* Cambridge: Cambridge University Press, 1999, p. 145.
[55] V. Welby, *op.cit.,* 1881, pp. 53-55.
[56] V. Welby to Max Müller in N. Cust, *op.cit.,* 1929, p. 30.

be rigidly attributed to specific concepts, ideas and disciplines. In the section entitled 'Truth' Welby writes the following

> Things, in order to unite in central truth, must come from many quarters, each the opposite of some other - the line of which, if carried through the centre, would join and run in its opposite. The unity of truth to which all must converge involves the diversity and thus the apparent contradiction of converging paths to it.[57]

Welby's seminal idea of truth considered as an open process between different fields of research, and more precisely between the scientific and religious spheres, was further developed in an essay she published anonymously in the 'Church Quarterly Review' in 1888. In 'Truthfulness in Science and Religion' which was originally intended as a critical comment on Thomas Huxley's essay entitled 'Science and Bishops' (1887), she analysed the concept of truthfulness as it emerged in the relation between science and religion. She criticises both scientists and theologians for their dogmatism and authoritarianism. She maintains that science and religion need not to be reconciled, since they both stem from the same principle. As she puts it 'they radiate from one centre,'[58] though she acknowledges that they pertain to two different domains. Here, 'science can be separated from life and from personal intercourse' whereas theology 'introduces us, by communion to a living being.'[59] Yet, as she argues,

> [...] there are connexions which are absolutely essential and which must render for ever impossible the attempt to cut off from each other by a dividing wall these two domains so different in their nature and their productions. Although science considered as the observation of phenomena and their sequences is something wholly different from thinking, feeling, and willing, yet science considered as the act of observing carried on by living minds imperatively requires the whole three. The difference is great. Observation is one thing, the act of observing is another; no observations help us to know what the act of observing is and how it is done, and the ideal instrument of observation would seem to be some automatic machine by which facts of all sorts should be registered without any of the failures and uncertainties which attend the use of human faculties. But as it is, observations can only be

[57] V. Welby, *op.cit.,* 1881, p. 245.
[58] V. Welby. "Truthfulness in Science and Religion." Reprinted in S. Petrilli, *op.cit.,* 2009, p.198.
[59] V. Welby, *op.cit.,* 1881, p. 198.

> made by observing. And the science of the most rigidly scientific man is thereby brought into the same sphere of thinking, feeling, and willing to which religion belongs. It is in this way that science often becomes a kind of religion to those who follow it, both in respect of devotion and of moral power.[60]

Welby here points out that although science is traditionally seen as being concerned with facts and observations, this view is however deficient since it doesn't take into account the fact that any observation is mediated by an interpreting self – the thinking, feeling and willing being part of such self - hence the ideal of a detached, mechanical understanding is untenable. Most importantly she underlines that those interpreting faculties are the same for the scientist and the theologian alike and she explains, echoing Newman, that:

> When we regard the subject from the side of religion we equally perceive the impossibility of divorcing it from science. Religion is a matter of thinking, feeling, and willing, while it hands over to science the whole body of facts. But we find that feeling, thinking, and willing are dependent upon facts. Certain conditions are necessary before these acts of the mind become possible; and when science informs us that no act of the mind can in our present life be performed without a corresponding material change in the brain, there cannot be a doubt that the information is of high importance to religion. When religion leads us to think about God, to love Him, and to will what He wills, it is implied that God exists, and that His will can be known to men, and these are facts. Religion requires a theology, and theology is a science which cannot renounce connexion with other sciences, or refuse to accommodate herself to them. The thinking, feeling, and willing, of which religion consists, must be attached to facts either past or future, either in heaven or earth: from facts these actions must set out, and to facts they must tend. And no fact can be wholly withdrawn from science.[61]

By stating that science and religion share the same principles, or have a common grammar, Welby also implied that they stem from the inferential process, akin to that advocated by Newman and Peirce, which is used for the search and attainment of truth. The question Welby raised is whether modern scientific method based on inferential processes of induction and deduction can account for all the things in man's life and

[60] *Ibid*., p. 199.
[61] *Ibid.*, p. 200.

actions. She realised just like Newman and Peirce, that such method could only provide a partial understanding, therefore she introduced Significs as a methodology which aimed to bridge, as Petrilli describes, 'the various sciences, theoretical trends, and practices in human experience, be they scientific or pertaining to everyday's life.'[62] In the following section I'm going to discuss in more detail Welby's view on inferential processes and show how translation, which is based on the ability to shift from one sign system to another, becomes for Welby a method of understanding and interpretation and acquisition of new knowledge.

Significs as the Philosophy of Translation

A determining influence in Welby's studies during the 1880s was William K. Clifford's *Lectures and Essays* (1879) which acquainted her with Clifford's peculiar take on the inferential process of inductive reasoning. Petrilli points out that what Clifford identifies as inductive logic is similar to what Peirce termed abduction or retroduction[63] which he defines as 'the process of forming an explanatory hypothesis; as the only logical operation which introduces any new idea' (CP 5.172). It was this understanding that prompted Welby to question the validity of deductive reasoning processes in her quest to explore what exists and that sharpened her attention to the need to solve the problem about meaning. She expressed her realisation in a letter to Sir F. Pollock thus:

> Two or three years ago I discovered that I had begun (so far as explanation went) at the wrong - deductive – end of things. So I forced my way back and down step by step; nowhere satisfied till I had got to what I saw must be admitted as primary by all. Having descended from philosophy and psychology through biology to physics and the very elements of experience, I found that below these even there still everywhere arose the prior question: *What do we mean* by time and space, motion and mass, body and consciousness, and so on? *What do we mean* by 'mind' and 'self'- by 'reason' or 'moral sense'? And to my

[62] *Ibid*., p.102.
[63] S. Petrilli, *op.cit.,* 2009, p. 194.

> amazement I seemed to find that no one had ever asked the question in my sense or even explicitly recognized that change in some sense underlies all continuity. It is not enough to meet such questions, as scientific men admit, by a mere restatement of the ordinary positions, however able and brilliant; for they are worthy of notice on the assumption that they may thus come from a deeper layer of experience, bringing us new and vital messages.[64]

Welby saw that true research should not be bound to the desire to defend truths already possessed; instead it should be moved by the desire to discover which stems not only from rational inferences, but from a 'deeper layer of experience' which she found in meaning. Welby considered meaning to be the connective tissue not only between all aspects of life, but also between all disciplines such as art, philosophy, linguistics, psychology, science, and anthropology. She felt that there is a fundamental continuity between all these spheres and she found in the unique intellectual capacity of translation a way of transcending certain limits of discipline-specific approaches which she considered sometimes inadequate and certainly partial most of the time. Translation was, in Welby's view, a method to gain new knowledge, which involved comparison, association and analogy among different fields of experience. To translate means to interpret, to illustrate one piece of knowledge or experience in the light of another, becoming itself a new experience thus creating an open array of new possibilities. This is why a fundamental aspect of translation is the view that language is flexible and thus capable of adaptation to ever new expressive situations.

Welby formulated the concept of translation, as we know, in the early stages of her studies on language and expression and more specifically during the time when she was mostly concerned to update interpretation of the Christian doctrine in the light of progress in the sciences. In true spirit of her Significs and the concept of translation she saw religion as a system of signs and values that interacts with other systems. She attempted an experimental translation of parts of Dr Hughlings Jackson's '*Croonian*

[64] V. Welby to Pollock, in N. Cust, *op.cit.* 1929, p. 268.

Lectures of the Nervous System' (1884), translating from one field of experience, the scientific, to the other, the religious, and vice versa, in order to show the validity of both discourses. She proceeded by analogy to show the links between the scientific language (that of the nervous system) and religious language (that of ethics and value).

A similar attempt had been carried out by G. H. Lewes when he tried to marry biological discourse to other sorts of discourse with a rather different outcome to that of Welby's translation. Let us compare the two attempts. The first is taken from Welby's translation of the *Croonian Lectures* where the parts in italics, as Welby explains, are the direct verbal quotations from the lecture. The second is Lewes' example which he proposed in volume IV of his *Problems of life and Mind* (1879) where the words in italics are those which Lewes borrowed from different disciplines with the aim of eliciting a more complex and questioning response in the reader and achieving what he called a unitary language:

1. *Progressive muscular atrophy begins in the most voluntary limb - the arm; and in its most voluntary part - the hand and fingers.* So also progressively spiritual atrophy befalling a Church (or community) or an individual, may perhaps be said to begin in prayer its most voluntary practice. The atrophy of insight, leading to the decay of prophetic, that is revealing power, is not here considered.[65]
2. We find the impersonal experiences of tradition *accumulating* for each individual a *fund of knowledge*, an *instrument* of *Power* that *magnifies* its existence.[66]

There is a stark difference between the two attempts which shouldn't be understood only along the lines of a different theme they propose, but in terms of methods they use. Where Welby translates and interprets a discourse in the light of the other, showing similitude by analogy and by metaphor, Lewes simply borrows terms from different disciplines, such as 'accumulation' and 'fund of knowledge' which are drawn

[65] V. Welby quoted. in S.Petrilli, *op.cit*., 2009, p. 524
[66] G. H. Lewes, quoted in R. Rylance, *op.cit*., 2000, p. 279.

from economics, or power which could be applied to physics, history, politics etc., and applies those to a cultural discourse.[67] As mentioned earlier, Lewes's method was used to elicit a questioning response in the reader, whereas Welby's method was used to show how different signifying systems can interact and thus open new possibilities for the acquisition of knowledge. The importance of both attempts, however, lies in the fact that they rely on the use of the figurative power of language, that is, metaphors. According to Welby, metaphors enhance processes of knowledge, understanding and ultimately translation. It is through metaphor that we discover the unknown on the basis of the known and this is why they have, according to Welby, a vital role in the developing of human cognition and human behaviour.[68]

Welby pondered on importance of the figurative dimension of language and metaphor in particular in her major monographs, *What is Meaning* (1903) and *Significs and Language* (1911), although she discussed it in her earlier essays 'Meaning and Metaphor' (1893), and 'Sense, Meaning and Interpretation' (1896) where she theorised the relation between metaphorical, figurative or indirect meaning and literal or actual meaning. She criticises the fact that literal meaning is possibly even more ambiguous than the figurative one, by asserting that: 'Most certainly much that is called 'literal' is tinged with the figurative in varying degrees, not always easy to distinguish, even with the help of context.'[69] She focused on the symbolic use of language and, in her essay discussed Huxley's remark on the difficulty in using it and his comment on the difference between a 'philosopher' and an 'ignorant' person in

[67] *Ibid.*, p. 278.
[68] See D. Neubauer. "Lady Welby and the Interpretive Mind." *Semiotica.* Spec. Issue On and beyond Significs: Centennial Issue for Victoria Lady Welby (1837-1912). Vol. 196 n.1/4 (2013): 243-260.
[69] V. Welby. *Meaning and Metaphor* (1893). Reprinted in S. Petrilli, *op.cit.*, 2009, p. 422.

dealing with symbolism,[70] she underlined the inadequacy of language in scientific inquiry by stating that:

> On all sides we have to use, as best we may, modes of expression that inevitably convey ambiguous meanings, even to the thoughtful, even to the trained mind, which cannot but carry with them a background of outgrown disproved premises, vitiating more or less every conclusion that we draw from them.[71]

Some of the main issues of looking at these linguistic inadequacies are that they seem to be fixed and invariable in meaning and, permanently uniform. Hence, according to Welby, our assumption that words do not change their meanings, or, rather, that the value we endow a word with is necessarily exactly the same as it was in the past.[72] To clarify this point, Welby highlights the fact that in modern culture we do not mean the same things as Copernicus did when he uttered 'the sun rises', or when we use the word heaven which could mean both sky and human destiny. The meaning of such words, according to Welby, is changing due to the swaying between the 'literal' and the 'metaphorical.' In order to solve this problem she hypothesized a third value of meaning, one that would be 'neither wholly figurative, nor wholly literal in which both are present to varying degrees',[73] and where new meaning can be created. The third value of meaning alludes to a third dimension of signifying process where the literal and figurative converge. She was aware that figurative meaning can be so deeply rooted in human consciousness that is often mistaken for the so called plain

[70] *Ibid.*, p. 421. In this essay Welby summarises Huxley's comment thus: The difference he sees is 'that the philosopher who is worthy of the name knows that his personified hypotheses, such as law, and force, and ether, and the like, are merely useful symbols, while the ignorant and the careless take them for adequate expressions of reality.' He then goes on to warn us against dealing with symbols as though they were 'real existences.'

[71] *Ibid.,* p. 421.

[72] A similar discourse had been observed in the twentieth century by the philosopher Alasdair MacIntyre when discussing the relation between language and morality. In After Virtue he suggested that what human beings possess in terms of understanding are fragments of a conceptual scheme which lacks contexts from which the significance of the word ethikos (lat. moralis) originally derived. He argues that we possess what he identifies as 'simulacra of morality' which means that we continue to use many of the key expressions although we lost our comprehension of them. A. MacIntyre. *After Virtue*. *A Study in Moral Theory*. 2nd Ed., London: Gerald Duckworth & Co. Ltd., 1985.

[73] V. Welby in S. Petrilli, *op.cit,* p. 423.

meaning. She describes it as a 'linguistic trap and a major cause of confusion and error',[74] and she advocates for a plain meaning critique, namely to critique the erroneous idea that meaning is literal and defined once and for all. As already stated, language was, for Welby, like an evolving and living organism where words acquire new meaning, or as Petrilli says, 'a fresh impress'[75] each time they are used as the factors conditioning meaning change. For Welby the relation between meaning (understood in the broad sense of her meaning triad, sense, meaning and significance) and language (which comprises text or utterance) is creative as it lies in the capacity to form new metaphorical associations that are at the basis of new cognitive combinations. In order to clarify this point, in the next section I'm going to address Welby's understanding of language as organic and show how her postulation of the parallel development between the biological meaning and cultural meaning prefigures the concept of semiotic scaffolding in biosemiotics.

The Organic Quality of Language: Signs, Life and the Meaning triad Sense, Meaning and Significance

Drawing on Darwin's evolutionary theory, Welby turned to analogies from the organic world when discussing verbal language in her attempt to prove that the essential quality of language is its plasticity, that is, its adaptability which she sees as an organic quality. In *What is Meaning* she writes:

> What we do want really is a plastic language. The biologist tells us that rigidity in organic activities can never secure accuracy – is indeed fatal to it. The organism can only survive by dealing appropriately with each fresh emergency in more and more complex conditions. Only the utmost degree of plasticity compatible with persistence of type can give the needed adaptiveness to varying circumstances.[76]

[74] *Ibid.*, p. 357.
[75] S. Petrilli, *op.cit.*, 2009, p. 360.
[76] V. Welby, *op.cit.*,1903, p. 60.

Welby reinforced this position by postulating an analogy between word and context and organism and its environment. In *What is Meaning* she expressed this view as 'we must postulate an analogy between Context and Environment: the adaptation of a word, as of the organism, to its surroundings, and conversely its effect upon this.'[77] The underlying implication of this view is that language not only is dynamic and in a way living, but that it evolves, adapts and therefore changes according to the expressive needs of the environment much like an organism needs to be flexible in its adaptation to the environment in order to survive.

One can thus see why Welby insisted on the plasticity of language as a necessary condition for successful communication in the social as well as in the organic world, and especially understand her emphasis on the use of metaphor as a way to enhance the process of knowledge and discovery. This is because metaphor-like processes afford the identification of relations that had not been previously observed, and, by doing, thus create new ones *ex novo*. Meaning thus develops in a signifying network made of the various associative connections which form language and is fundamentally evolutionary and dynamical.

Welby's view here prefigures the biosemiotic insight about the parallel behind the evolution of biological meaning and cultural meaning. As discussed in Chapter One, this parallel is seen in the way in which semiotic scaffolding devices both in nature and culture are dependent upon changes in time (history/evolution) and upon interpretation. This interpretation relies on the organism's ability to recognise patterns of similarity and difference of form (iconic and indexical) which brings forth new semiotic associations. Evolutionary layers of meanings are built on preceding meanings via semiosis or signifying processes. Thus meaning on a cultural level emerges from the biological inasmuch as it is based on similar patterns of metaphorical

[77] *Ibid.*, p. 40.

recognition (iconic and indexical), however it grows in complexity because it is embedded in symbolic referencing.

According to Welby meaning involves three levels: sense, meaning and significance, each of which involves a progression in the capacity for interpretation and signification. Yet the definition of 'sense' can be ambiguous as it could have different meanings relating either to the biological world, or to the cultural world with its connection with value and ideology. 'Meaning' on the other hand, is related to intention, whereas 'significance' is the overall effect. In *What is Meaning* (1903) she defines these three levels as follows:

> There is, strictly speaking, no such thing as the Sense of a word, but only the sense in which it is used-the circumstances, state of mind, reference, 'universe of discourse' belonging to it. The Meaning of a word is the intent which it is desired to convey - the intention of the user. The Significance is always manifold and intensifies its sense as well as its meaning, by expressing its importance, its appeal to us, its moment for us, its emotional force, its ideal value, its moral aspect, its universal or at least social range. All science, all logic, all philosophy, the whole controversy about aesthetics, about ethics, about religion ultimately concentrate on this: What is the Sense of, What do you mean by, What is the significance of, that is Why do we care for Beauty Truth Goodness? Why do we value experience? And why do we seek for Significance, and resume the value of innumerable observed facts under formulae of significance like gravitation or natural selection? Because we are the expression of the world, as it were 'expressed from' it by the commanding or insisting pressure of natural stimuli not yet understood.[78]

As Petrilli points out, the term significance replaced the original term interpretation in the meaning triad as Welby believed that interpretation 'invests all three levels of meaning.'[79] Moreover, with reference to significance, Petrilli argues, 'meaning is delineated in all its signifying valences, and signs (verbal and nonverbal) emerge in their specificity as human social signs.'[80]

[78] *Ibid*., pp. 5-6.
[79] S. Petrilli, *op.cit.*, 2009, p. 265.
[80] *Ibid.*, p. 266.

The continuity between the organic and the cultural realms was identified by Welby in the double reference of her basic meaning triad: sense, meaning and significance. She first discussed it in *Grains of Sense* (1897) where she introduced the hypothesis that the organic dimension of sense, and its counterpart in the human dimension, are closely related. She gave it her full attention in *What is Meaning* where she gave a double reference of sense; on the one hand the organic and, on the other, the human with its linguistic, intellectual, aesthetic and moral world:

> Sense, in all its senses may be called the link or nexus between the intellectual, the moral and the aesthetic worlds. For in all senses, it is the sense wherein and whereby they are possible. The double reference is the condition of this.[81]

By emphasising both aspects of sense, Welby showed that there was a fundamental continuity between the natural and cultural realm due to the signifying processes - the process by which signs are exchanged and by which meaning is generated - thus echoing Peirce's understanding of sign relations and prefiguring Sebeok's view of semiosis as the 'criterial attribute of life.'[82]

Welby's evolutionary understanding of the meaning triad was applied to other aspects of life. Like Peirce, she recognized a tendency to triadism throughout the universe. For instance, on the level of knowledge and experience she devised the triad consciousness/intellect/reason, whereas on the level of psychological processes she devised the triad instinct/perception/ conception, and on the level of consciousness she devised the triad solar/planetary and cosmic. Peirce, who also based his theory of signs on a triadic relation, commented in his review of *What is Meaning* that:

> The greatest service the book can render is that of bringing home the question which forms its title, a very fundamental question of logic, which has commonly received superficial, formalistic replies. Its vital and far-reaching significance has been even more ignored than usually happens with matters of universal and ubiquitous concern. To direct

[81] V. Welby, *op.cit.*, 1903, p. 48.
[82] See P. Cobley, *op.cit.*, 2010, p. 227.

> attention to the subject as one requiring study, both on its theoretical and on its practical side, is the essential purpose of the work. But in doing this the authoress had incidentally made a contribution towards the answer to the question, in pointing out three orders of signification. She has wisely abstained from any attempt at formal definitions of these three modes of significance. She tells us what she means only in the lowest of those three senses. To have gone further would have shunted her off upon a long and needless discussion.[83]

Peirce's acknowledgment of Welby's contribution to the study of signs is particularly important if we consider that despite Welby's efforts to institutionalise Significs during her lifetime, her ideas and her work were forgotten until the recent re-discovery by Schmitz and Petrilli. The only exception to this, is represented by Charles K. Ogden and Ivor A. Richards who, at the beginning of the twentieth century, raised to Welby's challenge of developing an approach to the study of signs that would incorporate philosophy and psychology. In chapter three of their monograph *The Meaning of Meaning* (1923) they develop the basic premises of behaviourism which they wed to Welby's sign theory.[84]

Evolution, Mind and Meaning in Nature and the Human Realm

In considering the signifying implications in the development of meaning and experience, Welby postulated an interrelation between organic sense and mental life based on her meaning triad. She elaborated this position in relation to developments in sciences and psychology, specifically in connection to George Romanes' *Mental Evolution in Man* (1888) where he tried to show that there is an essential similarity

[83] C.S. Peirce, in *Semiotic and Significs*: Correspondence between Charles S. Peirce and Victoria Lady Welby. Ed. C. S. Hardwick. Lubbock: Texas tech University Press, 1977, p.159. Peirce and Welby were familiar with each other's work, yet they developed their sign theory completely independently from each other. Their epistolary friendship was inaugurated in 1903 and lasted until Peirce's death in 1911. As Gerard Deladalle explains, Welby took the initiative of the correspondence after reading Peirce's entries in Baldwin's dictionary of Philosophy and Psychology in 1902. She also promoted Peirce's ideas among the intellectuals of her time, such as Bertrand Russel, C. K. Ogden and others. See G. Deladalle. "Welby and Peirce: Meaning and Signification." Ed. H.W. Schmitz., *op.cit.*,1990, pp.133-146.

[84] Quoted in G. Deladalle, *op.cit*., 1990, p. 135. See C. K. Ogden and I. A. Richards. *The Meaning of Meaning: A Study of the Influence of Language upon Thought and of the Science of Symbolism*. New York: Harcourt, Brace &World, 1923.

between the reasoning processes of higher animals and human beings based on his discussion of sign theory in chapters V, XII and XIII. Romanes' work prompted Welby to address this issue from her unique language theory perspective. She did so in three papers, namely 'Is there a Break in Mental Evolution?' (1890), 'An Apparent Paradox in Mental Evolution' (1891) and 'The Significance of Folk-Lore' (1892). In these papers, she reflects on the thought processes in the animal kingdom and proceeds by analogy to the discussion of thought processes in human beings through her understanding of the different levels in sign activity.

However, it was in an earlier paper, 'Mental Biology or Organic Thought' (1887), where Welby first addressed the issue of the understanding of mind and thought and where she turned to developments in biology in order to explain the history and nature of thought. She realised that there was a continuity between organism and thought, or rather between mind and body, and her aim in the essay was, as she put it, to 'critically analyse the analogy between body and mind and to denounce a fatal defect',[85] namely that when we talk about mind we define it in terms of physical organism, or as an activity called in its lowest form sense, mind, consciousness and in its highest form rational thought. On the other hand, she continues 'we postulate nothing as corresponding to the brain in its capacity of means or condition of the knowledge of body and brain.'[86]

Welby criticised the tendency to over simplify mental processes from a mechanistic point of view, and she insisted that there is correspondence between the 'Thought-history of man with the history of life.'[87] Traditionally, she argued, men

[85] V. Welby. "Mental Biology or Organic Thought" (1887) in S. Petrilli, *op. cit.,* 2009, p. 472.
[86] *Ibid.,* p. 470.
[87] *Ibid.,* p. 469.

accept as evidence those aspects which are verifiable by sense experience and which coincide with three states of matter. As she put it:

> as sensible people our experience is as yet limited to three forms of impression, corresponding to the three forms of matter. We know things, so to speak, in mental sense, as solid and fixed, as liquid and flowing, or as gaseous and volatile. What answers to touch gives us the first and the second; and, as refined and specialised, the third; -in flavour and odour.[88]

Yet, she states 'we find that the first definite mental act is unreasoned response to a 'palpable' impression corresponding to that of Touch.'[89] She comes to this conclusion by analysing the various and complex responses human beings and organisms present to external stimuli or environment and she states, echoing G. H. Lewes whom she quotes from, that our understanding is the product of both internal and external factors.

> Once more, to quote a passage in Mr G. H. Lewes's 'Problems of Life and Mind' which I had neither seen nor heard of when I first used the term 'mental organism': – 'Let us now pass from Life to Mind. The vital organism we have seen to be evolved from the Bioplasm, and we now see how the psychical organism is evolved from what may analogically be called the psychoplasm. . . The movements of the Bioplasm constitute vitality; of the Psychoplasm, sensibility. The forces of the cosmical medium which are transformed in the physiological medium build up the organic structure, which in the various stages of its evolution react according to its statical conditions, themselves the result of preceding reactions. It is the same with what may be called the Mental Organism. Here also every phenomenon is the product of two factors, external and internal, impersonal and personal, objective and subjective. . . An organism lives only in relation to its medium. What *growth* is, in the physical sense, that is *experience* in the psychical sense; namely, organic registration of assimilated material. [90]

She further asserts that:

> As the physical body can only become aware of itself through the agency of the physical brain, which it includes, so the mind in its turn cannot know itself except through the medium of the mental brain. And as the physical brain can receive, verify and utilise impressions entirely beyond the scope of the rest of the organism, so the 'mental brain' can deal with regions and subjects which to the 'mental body, corresponding

[88] *Ibid.*, p. 467
[89] *Ibid.*, p. 467.
[90] Ibid., p. 471.

> to the organism in which brain in the full sense is not yet specialised, must be strictly inaccessible and apparently supernatural.[91]

As mind interprets body by its power of perception, judgement, reflection and inference, so both the connection of the mind and its connection with the body need to be 'interpreted by that of which in its turn is an embodiment.'[92] In Welby's view the secret of the link between thought and things may lie in what she calls the 'further dimension' of consciousness which also puts us in relation with a spiritual or cosmic sphere. What she means by a further dimension is what she later identifies as Primal-Sense or Mother-Sense, or what, at one stage, as Rita Nolan points out, she calls 'human tacit understanding' or pre-rational thought.[93] In the twentieth century Michael Polanyi will employ the same term, that is, 'tacit knowledge' to refer to that embodied capacity which precedes rational thought and knowledge.[94] For both, Welby and later Polanyi, the concept of tacit knowledge represents a challenge to the received conception that humans are consciously fully and articulately aware of the stimuli they respond to. As Nolan argues, Welby 'challenged the empirical notion that all phenomena, including mental ones, should be explained in terms of spatio-temporal properties and having precise boundaries and unique, stable constituents.'[95]

Welby's interest in the evolution of human mind was also stimulated by her friendship with the psychologist James Ward, the philosopher George F. Stout (editor of *Mind*) and the American psychologist William James (1842-1910) all of whom were in varying degrees critical, on experimental, biological and introspective grounds, of the atomistic and mechanistic conception of human psychology inherited from the eighteen-century empiricist, Hume and Locke. As Nolan points out, the science of

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[91] *Ibid*., p. 472.
[92] *Ibid.*, p. 470.
[93] R. Nolan. "Anticipatory Themes in the Writings of Lady Welby." Ed. H.W. Schmitz., *op.cit.*,1990, p. 90. An abridged version of this essay is presented in Welby's monograph *What is Meaning* (1903) as part of Appendix A, note XIV on pp. 287-288.
[94] M. Polanyi. *The Tacit Dimension*. New York: Anchor Books, 1967.
[95] R. Nolan, *op.cit.*, p. 93.

Welby's days was still under the influence of the Newtonian mechanical paradigm of explanation according to which the events are the effects of the motion of material bodies.[96] Lady Welby saw this presupposition as being partly responsible for the interpretation of myth and religion which judged 'primitive' humans as far more out of touch with the natural world than other species. On this account Welby entertained a long correspondence with the anthropologist and linguist Max Müller. Welby with Müller shared similar views about the great religions and myths of primitive human beings and their anthropomorphic representation of natural forces, however she disagreed with his assertion that these representations functioned as a theoretical construct in a mistaken, primitive understanding of the natural world. In the Victorian era, as Petrilli suggests, 'the dominant anthropological theories of primitive religions, which were widely viewed as important expressions of early stages in the development of human mind, presupposed and conceptualised a possible break in the relation between organism and environment.'[97] Welby was highly critical of this hypothesis and showed why such theory was unacceptable as stated before, in three papers: 'Is there a Break in Mental Evolution?' (1890), 'An Apparent Paradox in Mental Evolution' (1891) and 'Abstract of an Apparent Paradox in Mental Evolution' (1890). She then developed this argument in chapters 22 to 25 in *What is Meaning*, chapters that Peirce suggested in his review of the monograph, should be read first.

In these works Welby analysed the evolution of intelligence by applying her theory of meaning to anthropology in order to show how signifying processes developed from primitive forms to more complex ones through translation or translative processes. She theorised an evolutionary continuity between organism and environment through three levels of development of mind, namely sense, imagination

[96] *Ibid*., p. 91.
[97] S. Petrilli and A. Ponzio, *op.cit.*, 2005, p. 118.

and intellect. Drawing analogies from evolutionary theory she suggested that the evolution of mind began with a practical phase inspired by common sense and then moved onto a figurative phase, imagination, representation and signification.[98]

In 'An Apparent Paradox in Mental Evolution', for instance, Welby argued that examples of primitive myths and theories were the results of primitive man's attempts to understand the natural world he inhabited. Such efforts were to be understood as expressions and practical translations of an intuitive and instinctive comprehension of nature and the universe. These latter are the preconditions for the development to higher and more complex activity which is the consequence, as she states in 'An Apparent Paradox in Mental Evolution', of an 'unbroken correspondence between thing and thought.'[99] The central issue that Welby addresses here is the fact that the development of human mind, described merely on a model of stimulus-response, does not account for man's capability of producing figurative language and therefore the use of imagination. In 'Is there a Break in Mental Evolution?' she writes

> It may be argued that the imaginative or figurative power of the savage, like that of a child, lacks a corrective which is subsequently supplied. But why should this corrective have lapsed at all, since we find it throughout organic development in the automatic and increasingly complex form? When, then, in the developing consciousness does the link with nature fail, and the answer to stimulus go astray? And even if the majority of primitive men had failed to carry on the organic tradition of adjustment, why was not the tendency preserved amongst a dominant minority? [...] The truest ideas (however simple and even vague) of the element of experience ought to be most widely transmitted. Why, then, was the general tendency towards persistent illusion? The growing 'mind' must have lost the primordial ability to penetrate through mask of any kind to reality. But to have thus lost touch with nature ought to lead to the non survival of the false thinker.[100]

Welby thus suggests that to say that human beings have lost touch with nature is to presuppose that they lack in the biologically endowed adaptive responses to the

[98] *Ibid.*, pp. 121-123.
[99] V. Welby. "An Apparent Paradox in Mental Evolution" in S. Petrilli, *op.cit.*, 2009, p. 212.
[100] *Ibid*., p.208.

environment and that they possess, instead, traits of imagination which should have made the species extinct. In other words, she queries why the mental powers of imagination and representation didn't develop in the early stages of evolution. As pointed out before, Welby thought that mind developed through different stages, namely from a practical phase inspired by common sense, to the pictorial or imaginative level where religious ideas and practices can be found as well as the capability for understanding through the production of images. What is important to note is that in its primary meaning, the term sense corresponds to pre-rational life - to the primitive level of signification - and as such to the organic and instinctive response to the sign forming its environment.

Understood this way, Petrilli suggests, 'the concept of "sense" is fundamentally organistic and involves all entities populating the organic world.'[101] What this view implies is the fact that insofar as sense concerns the living world (plants, animals and human beings), the capacity for sense is not specific to human beings but is a shared, evolutionary capacity which gives rise in human beings to higher capacities such as meaning. In '*What is Meaning'* Welby asserts:

> The whole animal kingdom shares the sense world; whereas in the course of evolution the advent of the sense of meaning – the highest kind of sense – marks a new departure: it opens a distinctively new era.[102]

This seems to be why Welby was critical of those who chose to hypothesise a break in the evolution of mental faculties; a standard account at the time for scholars in various fields. Her critique was mainly methodological since she uses signifying processes and their development from an evolutionary perspective with a focus on verbal signs as her starting point. In 'An Apparent Paradox in Mental Evolution' she writes:

> Where, then is the missing link? Our very idea of mental and spiritual inter-communion in any exalted sense is among the latest of mental

[101] S. Petrilli and A. Ponzio, *op.cit.*, 2005, pp. 128-129.
[102] V. Welby, *op.cit*., 1903, p. 28.

> products. But are we not betrayed even by the ambiguities of language into ascribing such ideas to the primitive sense-bound mind? Where and why do we suppose that early men broke away from the strongest tie they had – those to the actual – and where are we to look for their link which bridges the chasm between the sensuous and the non-sensuous, which in much early animism might well be spelt nonsensuous?[103]

Thus Welby emphasised the inconsistency of the prevailing hypothesis that primitive groups made a sudden break in their relation with the sense world and she thus rejected the suggestion which ignored the fact that men inherited a 'tendency to right reaction or correspondence' in the relationship between organism and environment. Instead, she believed in the continuity of this ingrained tendency which had to be understood at a linguistic level:

> Do not all the theories hitherto advanced really imply that the primordial mind had affected all signs of its pre-intellectual ancestry and bequeathed to the earliest of its descendants of whom we can find traces, a practical *tabula rasa*? Do they not one and all involve the assumption that primitive men had to begin from the very beginning in their responses to environment, instead of inheriting a tendency to right reaction of correspondence ingrained in them from protoplasmic days and in the protozoic nursery, a tendency, which has but to be carried over and utilised in every fresh departure in development.[104]

Welby's view of the mind as somehow being a ramification of evolutionary life forms sets her apart from her contemporaries and places her among those intellectuals that most contributed to the future developments in biosemiotics.

Conclusion

Welby's Significs represents her unique understanding of the signifying processes which include both verbal and non-verbal language. Drawing on evolutionary theory she postulated connections between life and evolution, and life and semiosis through her concept of Mother-Sense. She emphasised the organic interrelation between

[103] S. Petrilli and A. Ponzio, *op.cit.*, 2005, p. 221.
[104] *Ibid.*, pp. 221-222.

organic sense and mental life and understood the mental processes of the human psyche in terms of sign interpretation. She endeavoured to show how mental life originally developed through interpretive-translative processes. Similarly to Peirce, she held that language and mental processes are not separate entities, but part of the same process, that is semiosis. Her assertion that there is a fundamental continuity between the natural and cultural realm which is grounded in the logic of interpretive-translative processes as well as her insight that human beings uniquely possess the capacity for articulate language-speech, locates her not just as a remarkable thinker, but also to some extent as a precursor of biosemiotics.

CONCLUSION

This thesis has traced, investigated and explored the philosophical and other writing of three very different Victorian thinkers, John Henry Newman, George Eliot and Lady Victoria Welby, all of whom contributed to the cultural environment from which biosemiotics emerged in the second half of the twentieth century and whose ideas they prefigured. The thesis has argued that Newman, Eliot and Welby envisaged a holistic understanding of life based on a developmental tradition of biology, philosophy and language - *Naturphilosophie* – which was familiar to Charles Darwin himself, as well as to C.S. Peirce and Jakob von Uexküll. The evolutionary ontology based on *Naturphilosophie*, with its ideas about nature as a self-organising, creative and living whole and its aesthetic postulation of the scientist/poet as being especially capable of the profound articulation and understanding of such creativity, necessitated a new epistemology, which was grounded in a mode of non-conscious creative inference, and which I have called biosemiotic imagination. This, I have argued, is akin to Charles Peirce's concept of abduction. Abduction, as defined by Peirce, is the only logical operation which introduces a new idea, and as such is the only source of adaptive and creative growth. For Peirce, it is closely tied to the growth of knowledge via the evolutionary action of sign relations. This thesis has shown how Newman, Eliot and Welby have conceptualised and articulated their own version of what would come to be understood as biosemiotic imagination within religious, literary and philosophical contexts respectively.

I developed Peirce's views in Chapter One, where I introduced his philosophy of signs and abduction, as well as Jakob von Uexküll's *Umweltehre*, as the two fundamental concepts that underpin biosemiotics. I showed how these concepts led to the biosemiotic insight that culture and nature are not separated, but rather that culture

is evolutionarily emergent in nature. Uexküll's *Umwelt,* as well as Peirce's semiotics introduce a way of seeing the natural world as being shaped by processes and organisation which are based on the living organism's ability to interpret and act upon the sign relations discovered in the environment. The implications of this and Peirce's semiotic theory more broadly are far-reaching in suggesting that mind, thinking and reasoning cannot be narrowly identified with human cognition; instead, mind, thinking and reasoning are a process of semiosis and therefore a capacity of all living organisms (e.g. Peirce and Welby) and systems (e.g. Bateson). It also points to the insight that the bulk of knowing is non-conscious knowledge shared by all organisms, living systems or, as Bateson might say, throughout the living world. These seminal ideas arguably contributed to the eventual biosemiotic view that creative knowing in culture is emergent in nature and repeats, at ever greater levels of complexity and abstraction, natural patterns. Based on this biosemiotic view, I have suggested that any form of creativity in art, science and religion is grounded in abductive inferences and it represents a link between nature and culture.

The continuity between nature and culture was more directly explored in Chapter Two which offered a historical and contextual overview of the role both language theory and evolutionary theory played in the development of nineteenth-century thought. Although the cultural climate in which biosemiotics arose was different to the cultural climate of the Victorian period, what became clear in my analysis was that there are striking similarities between nineteenth-century biologists and linguists (and similarly between biologists and semioticians in the second half of the twentieth century) who were deeply connected by their concerned attitudes toward the investigation and understanding of study of living nature. I highlighted how language theory and evolutionary theory were indebted to the core principles of *Naturphilosophie,* which saw nature as a self-organising, living whole and thought of

language as an equally living, organic medium that changes and adapts over a period of time. These concepts, which emphasised ideas of continuity and relatedness and which introduced the notion of historicity, came to be of central importance in the debates in religion, science and mind, since they challenged and questioned the very notion of man's place in nature.

An interesting and potentially important aspect that emerged from this discussion in this chapter and which I have tried to underline is the finding that Darwin's evolutionary theory, although it is part of a wider debate about evolution itself, was in part inspired by language theory and, more precisely, comparative philology. With its insistence on the developing and changing nature of language, philology not only offered an important thought-model during the period in which Darwin was organizing and elaborating his theory of evolution, but also became one of the constitutive models for Darwin's attempt to develop a naturalistic account of the origin of language. Indeed, rather than yielding to beliefs that language was a distinguishing feature of *homo sapiens*, Darwin argued that it was through natural selection that the primitive vocal efforts of animals and human beings had evolved into a vast array of songs, sounds and cries, and ultimately into speech that was shared by human beings and animals, for discussion inasmuch as they provide an insight into the idea of continuity between the animal and human realm not only in terms of a common ancestor, but also in terms of language as a way of world modelling. Another interesting aspect which emerged from the broader discussion in the chapter and which offers a platform for future research was the fact that Darwin didn't seem to conceive of natural selection in mechanistic terms, but rather as a self-organising process. *Naturphilosophie* furnished important metaphors that Darwin, like Newman, Eliot and Welby, drew upon to help articulate their respective views of language as a living organism. It also provided Newman, Eliot and Welby with a powerful metaphor for

their common understanding of a unifying force that subtends human cognition, and this is what I have come to call biosemiotic imagination.

As discussed in Chapter Three, for John Henry Newman, illative sense (his original conceptualisation of what I have called biosemiotic imagination) was the grounding principle on which both faith and science are based. In this respect, I showed how his argument shares important similarities with another significant precursor of biosemiotics, Gregory Bateson, and his view that intimations of the sacred (expressed in abductive inference) found in religion are also found in forms of abduction in nature. Although as I pointed out, Newman didn't explicitly state that such forms of abductive logic are shared by humans and other organisms, he implicitly acknowledged this through his equation of the instinct of the mind necessary for the recognition of God with the instinct other organisms possess. This instinct, I argued, is to be understood in relation to his broader view of natural forms of reasoning or abduction.

In Chapter Four I explored Eliot's philosophical reflections on epistemology and her view of reality. I argued that her adherence to an organic and evolutionary view of culture prompted her to understand reality in a proto-biosemiotic way; as a web of suprasubjective semiotic relations in which reality is always partial since it is based on the cyber-semiotic interaction between an individual's *Umwelt* and *Innenwelt.* I also argued that her postulation of the continuity between nature and culture through aesthetic practice, which she understood through her reading of Schelling and the *Naturphilosophen*, is akin to Peirce's abduction. Emphasising metaphor, I argued that the aesthetic imagination or biosemiotic imagination is a form of world disclosure or word modelling. This, I argued, is most clearly at work in *Middlemarch* where the interlinked web of metaphors - the perception of analogies, connections and affinities between separate objects - are not only set as examples of figurative speech, but rather, they are a source of that type of creativity that begins with the discovery of similitude

in difference and goes on to explore the nature of semiotic relations that Peirce identified as semiosis. I showed how metaphors, as semiotic relations, are at the basis of *Middlemarch*'s characters interpretation and understanding of their own reality or *Umwelt* which is nested through recursive feedback loops into a wider web of semiotic relations with other characters. Each character, I argued, is thus seen as a sign, or rather, as a sign relation or interpretant of the Peircean triad in an open evolutionary process of semiosis where sign relations become the connective links not only between characters, but also between characters, the narrator and reader.

In chapter five I focused on Welby's Significs and her unique understanding of signifying processes, which include both verbal and non verbal language. Drawing on evolutionary theory she postulated connections between life and evolution, and life and semiosis. She emphasised the organic interrelation between organic sense and mental life and understood the mental processes of the human psyche in terms of sign interpretation. She endeavoured to show that it is through interpretive-translative processes, again akin to Peirce's abduction, that creativity emerges in nature and culture and that mental life develops. Similarly to Peirce, she held that language and mental processes are not separate entities, but part of the same process, namely, semiosis. Her assertion that there is a fundamental continuity between the natural and cultural realm which is grounded in the logic of interpretive-translative processes as well as her insight that human beings uniquely possess the capacity for articulate language-speech, sets her apart from her contemporaries, and locates her not only as a remarkable thinker, but as a precursor to biosemiotics in the development of thought.

Through the use of a biosemiotic framework to investigate the thesis's main question – 'does the biosemiotic imagination allow the comparison of creativity in nature and human beings' – this thesis has proposed that important elements of semiotic thinking were already present in embryonic form in the nineteenth century,

as expressed by Welby, Eliot and Newman, and that forms of creative formal discovery in culture were thought to be similar to the creative process of evolution and development in nature. Biosemiotics, with its evolutionary focus grounded in semiosis, enables us to re-imagine culture and literature as being themselves evolving processes of semiosis, and suggests new ways in our understanding of culture and literary work.

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