

Virginia Woolf, Hippolyte Taine and a Neuroscientific Approach

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It was perceived that a work of literature is not a mere play of imagination, a solitary caprice of a heated brain, but a transcript of contemporary manners, a type of a certain kind of mind. It was concluded that one might retrace, from the monuments of literature, the style of man's feelings and thoughts for centuries back. The attempt was made, and it succeeded.
(Taine, 1873:1)

Abstract

In this paper, by bridging the gap between neuroscience and literary study, Hippolyte Adolphe Taine's historical method, revitalized by neuroscientific studies, would be obtained to investigate Virginia Woolf's style of writing. Specifically, Taine's theory — it is through race, surroundings, epoch that the life of an author and his/her literary productions are shaped — would be conjoined with the neuroscientific notion of epigenetics inherent in the theory which asserts that the character of an individual is the result of the mixture of the individual's circumstances of birth and his/her sociocultural environment to illuminate the shaping powers beneath Woolf's style of writing. As a result of Taine's updated theory, Woolf's worldview was shaped by, first, the race; the second, the surroundings, which investigates childhood condition, which acted upon Woolf's predisposition to bipolar disorder to lead to her mental illness because of her experience as a sexually abused child. The epoch or sociocultural environment, the third force, affected Woolf's worldview through the dominant ideas (of William James) and major events (such as two great wars as well as scientific and technologic progress). Thus, this study would seek a collaboration between neuroscience and Taine's historical approach to literary productions with the aim of updating and invigorating this literary theory in order to scrutinize Woolf's style of writing.

Keywords: Virginia Woolf, Hippolyte Adolphe Taine, Neuroscience, Antonio Damasio

1. Introduction

The stale, invalid, indeterminate theories and methodologies of literary criticism have led into a crisis by producing, even if producing, defunct subjective knowledge, which does not match or correspond to the existing knowledge in other scientific and, even, humanistic fields. This is the reason Jonathan Gottschall contends that the most important problem of literary study, in contrast to science, is its inability to be “a progressive discipline where the space of possible explanation is gradually narrowed” (2008: xi-xii). To put it another way, the field is

not capable of producing sound and solid knowledge: Robert Storey puts this problem as “empirical indefensibility” (1996: xv) of some theories; they are “immune to falsification” (1996: xxi) while “the very refutation of a theory — that is, of any serious tentative solution to our problem—is always a step forward that takes us nearer to the truth” (Popper, 1962: vii).

Woolf theorizes a justification for her experimental writings: “There is no limit to the horizon, and that nothing — no ‘method’, no experiment, even of the wildest — is forbidden, but only falsity and pretense” (2009: 12). This advice is appropriate not only for art of fiction but also for literary criticism. This paper pays homage to Woolf through its liberality with obtaining a transdisciplinary neuroscientific approach. Thus, committing to consilience — “a ‘jumping together’ of knowledge by the linking of facts and fact-based theory across disciplines to create a common groundwork of explanation” (Wilson, 1998: 8) — seems necessary if the field is going to overcome this crisis: “Literary studies should move closer to the sciences in theory, method, and governing ethos. In the long view, this scientific turn represents the only responsible and attractive correction of course — the only correction with the potential to lift the field from its morass” (Gottschall, 2008: 3). Consilience not only help to get rid of obsolete, invalid, theories and flawed methodologies (which result in and perpetuate invalid theories) but also lead to the discovery of new hypotheses and, consequently, new knowledge.

1.1. Hippolyte Adolphe Taine

Hippolyte Taine (1828-1893) was a French historian and literary critic who systemized the historical approach to literary analysis: the historical and biographical approach “sees a literary work chiefly, if not exclusively, as a reflection of its author’s life and times or the life and times of the characters in the work” (Guerin et al., 2005: 51). He lived in the mid-nineteenth century when sociological and scientific ideas were prevalent; therefore, “he believed that he could substitute new scientific ‘truths’ about literature for the old ones” (Hall, 1964: 104). He tried to obtain a scientific approach to literary study through his book *History of English Literature* first published in 1863. In its introduction, he discussed that three shaping powers lurk beneath history to regulate it. It is through “the *race*, the *surroundings*, and the *epoch*” (10) — according to Bressler, “dominant faculty” is the fourth force in Taine’s thesis (2007: 39) — that the life of an author and his/her literary productions are shaped; thus, by investigating these forces in a specific literary work, a critic can reach to a better understanding of it. Therefore, Woolf’s style of writing would be better understood with the help of Taine’s historical approach revitalized by the theory that the character of an individual is the result of “a unique synthesis of an individual’s genetic endowment [the *race*], circumstances of birth and upbringing [the *surroundings*], and sociocultural environment [the *epoch*], as experienced by the individual” (Changeux, 2011: 61); this theory has the neuroscientific notion of epigenetics — “The productive interaction between genetic information and environmental changes” (2011: 55) — in itself (this notion will be discussed more in upcoming sections).

2. Race

By race, Taine means the characteristics a particular race has. These characteristics “are the innate and hereditary dispositions which man brings with him to the light, and which, as a rule, are united with the marked differences in the temperament and structure of the body” (1873: 10). He believes these characteristics are almost common in each person of a particular race, and they are manifested in the language of that specific race. This notion of the race is too vast and general to lend itself to any precise, rational investigation. To avoid reductionism, this paper confines Taine’s notion of the race to the hereditary characteristics

transferred from Virginia Woolf's parents to her. This limitation of the notion of the race makes possible its investigation in a life of a specific person without stereotyping a particular race or committing to racism.

Maxwell Bennett believes that Woolf is predisposed "to manic-depressive disorder because of a familial inheritance from her father" (2013: 29). For this assertion, Bennett provides the following evidence. Woolf's paternal grandfather "Sir James Stephens, was given to acts of self-mortification and suffered from chronic depression"; her father, Leslie, "suffered from sudden changes in mood between excitement and depression, which probably amounted to a mild form of manic-depressive psychosis." Virginia's half-sister, Laura, "was institutionalized for a life-long psychosis, which was probably childhood schizophrenia." Her cousin, "James Kenneth Stephens, had a seemingly insignificant head injury in 1886 and was institutionalized for intense mania until his death by self-starvation in 1892." Finally, Virginia's uncle, "Leslie Stephen's brother, Fitzjames, suffered from severe mental illness, probably schizophrenia, and died in 1894" (2013: 29).

Woolf's predisposition to mental illness needs to be studied in relation to the surroundings to show its effects on her style; therefore, this pre-language hereditary feature of the family transferred to Woolf is the biological root and the base of her personality to be affected by the surroundings and the epoch.

3. Surroundings

Considering the race (hereditary characteristics) as the background upon which the surroundings acts, Taine defines the surroundings as the condition of a particular environment or culture "by which the external acts on the internal" (1873: 12). He argues that "man is not alone in the world; nature surrounds him, and his fellow-men surround him; accidental and secondary tendencies come to place themselves on his primitive tendencies, and physical or social circumstances disturb or confirm the character committed to their charge" (1873: 11). In a literary text, these cultural circumstances "inevitably surface in an author's text" (Bressler, 2007: 40). In this paper, the surroundings are confined to Woolf's childhood, as well as adolescence, condition to show how it imprints its effects on the worldview and style of the author.

Some scholars argue that Woolf's mental illness affected her style and writings. Specifically, the mental illness that they speak about is "mood disorders, probably of the bipolar variety" (Bennett, 2013: 16). Bipolar disorder "is a brain disorder that causes unusual shifts in mood, energy, activity levels, and the ability to carry out day-to-day tasks" (Bipolar Disorder, <https://www.nimh.nih.gov/health/topics/bipolar-disorder/index.shtml>). Bipolar disorder, because of other symptoms such as manic and depressive symptoms, is "also known as manic-depressive illness" (Bipolar Disorder).

The cause of this bipolar disorder is grounded in Woolf's circumstances of childhood and adolescence. As a child, she was sexually abused by her half-brothers, Gerald and George Duckworth, which lasted for nine years. When she was thirteen, her mother died. Two years later, her half-sister died. And in 1904, it was her father's turn to die. After her father's death, "she tried to commit suicide by jumping out of a window and was briefly institutionalized" (Bennett, 2013: 3). In 1910 she visited an asylum after her beloved brother Thoby died of typhoid. Her fourth breakdown happened "when she was 31, shortly after her marriage to Leonard Woolf and the completion of her novel *The Voyage Out*," and periods of depression followed until they led to the last breakdown, her suicide in 1941 (Bennett, 2013: 3-4).

Bennett argues that Woolf's sexual abuse from her half-brothers led to her deep depression throughout the rest of her life only to end with her suicide. This argument is supported by statistics which show that "the major risk factor for suicide is sexual or physical

abuse in childhood. Indeed those that have been sexually or physically abused when children amount to about 65% of all those who attempt suicide” (2013: 41). The reason for depression and suicide of adults who have been sexually abused in childhood is the biological changes that affect “the normal functioning of the brain of a child” (2013: 31). An exact description of such changes in Woolf’s biology is depicted below:

Virginia Woolf’s failure to be able to restrain herself from suicidal thoughts throughout her life can be traced to the disease state arising from a loss of gray matter in the prefrontal and anterior cingulate cortex due to the abuse she received from George and Gerald Duckworth. Underlying this loss are the pathological changes in synaptic connections with the subsequent failure of neural networks. . . .The core pathology involves excess levels of the hormone cortisol, released under stressful conditions from the adrenals, entering the brain and acting to disturb synapses in the prefrontal cortex. The resulting failure of normal prefrontal cortex releases the amygdala from inhibitory control so that it becomes hyperexcitable, a signature for severe depression. The traumatic effect that the Duckworth’s behaviour had on Virginia led to decreases in the expression of GRII genes so removing the normal regulatory mechanisms that control cortisol reaching excessive levels. (Bennett, 2013: 44)

This issue of abuse (the surroundings) augmented the effect of and acted upon Woolf’s predisposition to hereditary manic-depressive disorder (the race) to lead to her mental illness; her illness was, in turn, affected by “stressful events that occurred at the beginning of the Second World War” (2013: 31) (the epoch) to lead to her suicide.

These frequent periods of depression and nervous breakdowns affected Woolf’s worldview and style as Lehrer, among many, believes: “Woolf’s writing style was deeply rooted in her own experience of the brain,” or “her illness also gave her experimental fictions a purpose, a way ‘of depositing experience in a shape that fitted it’” (2007: 186). In addition, Woolf was obsessed with her mental illness, to the extent that it led to her use of medical jargon in her writings; for instance, “*nerves* was one of her favorite words. Its medical variations — neurosis, neurasthenia, nervous breakdown, neurasthenic — continually entered her prose, their sharp, scientific pang contradicting the suppleness of her characters’ internal soliloquies. In Woolf’s diary, notes on form were always interwoven with comments on headaches” (2003: 185).

Therefore, her mental illness acted as a background for her style of writing as well as an energetic force for her creative writing. In Lehrer’s words, “after each depressive episode, she typically experienced a burst of creativity as she filled her journal with fresh insights into the workings of her own ‘difficult nervous system’” (2007: 186). For instance, in her diary, after a sudden attack of nerves, she wrote: “My body was flooded with rapture and my brain with ideas. I wrote rapidly till 12” (qtd. in Bennett, 2013: 7).

By this type of argument, we can attribute Woolf’s new realism, going beyond the surface appearances, to the consequences of her mental illness: “Considering how common illness is, how tremendous the spiritual change that it brings, how astonishing, when the lights of health go down, the undiscovered countries that are then disclosed” (Woolf, 2009: 101). One of this undiscovered countries, as Lehrer argues, is: “She decided that she had ‘no single state.’ ‘It’s odd how being ill,’ she observed, ‘splits one up into several different people.’ At any given moment, she was both mad and lucid, ingenious and insane” (2007: 186).

In sum, Woolf’s mental illness was caused by her childhood condition (the surroundings) and her hereditary characteristics (the race). Her mental illness affected her worldview as she admitted: “Not that I haven’t picked up something from insanities and all

the rest. Indeed, I suspect they've done instead of religion" (qtd. in Lehrer, 2007: 185). Her worldview, in turn, is transferred in her style of writing: Her writings are a "detailed and powerfully moving record of repeated episodes of decline into and recovery from mental illness" (Bennett, 2013: 3). Therefore, "what Woolf learned about the mind from her illness—its quick-silverness, its plurality, its 'queer conglomeration of incongruous things' — she transformed into a literary technique" (Lehrer, 2007: 186).

4. Epoch

Taine contends that in a particular point of history "a new idea springs up, destined to a like domination, and the like number of creations" (1873: 13). Therefore, the epoch is referred to "the dominant ideas or worldview held by people at that particular time" (Bressler, 2007: 40). A particular idea "imposes on each new creation its bent and direction" (Taine, 1873: 13). This paper does not confine the epoch to the dominant ideas of a particular period. It argues that major events of a particular era also mark their imprints on the mind of the authors living in that era and their literary texts.

4.1. Dominant Ideas

4.1.1. Woolf's Style and William James

This part investigates Woolf's style to trace it to the dominant ideas of her epoch. As mentioned, Woolf finds "the form of fiction most in vogue" unable or unwilling to contain the "true and the enduring" materials (2009: 8). She believes a true and enduring form of fiction should be able to answer this question: "Is life like this?" (9). The form materialists adopted was not like life. They ignored the realm of mind: "Is it not the task of the novelist to convey this varying, this unknown and uncircumscribed spirit, whatever aberration or complexity it may display, with as little mixture of the alien and external as possible?" (9). To be like life, according to Woolf, means to "examine for a moment an ordinary mind on an ordinary day" (9). This statement leads to two questions. First, what is an ordinary mind? Or, "what is reality?" (43). Second, how should a writer examine "an ordinary mind on an ordinary day" (how to represent the reality in fiction)? In other words, "if art is based on thought, what is the transmuting process?" (Woolf, 2003: 94). In sum, Woolf endeavors "to grasp and communicate what endures beneath or across the evanescence of subjective experience" (Parsons, 2007: 15).

4.1.1.1. What Is an Ordinary Mind?

To answer the "what" question, Woolf explains: "The mind receives a myriad impressions — trivial, fantastic, evanescent, or engraved with the sharpness of steel. From all sides they come, an incessant shower of innumerable atoms; and as they fall, as they shape themselves into the life of Monday or Tuesday" (2009: 9). First, this statement denotes, implicitly, what recent neuroscientists propose about the function of the mind. Thus, a neuroscientific perspective provides discipline and clarification to Woolf's ideas and intuitions — she acknowledges the instinctive, rather than rational, nature of her thoughts: "It will not bear arguing about; it is irrational" (qtd. in Priest, 2009: 291).

According to Antonio Damasio, "the mind is a process" (2003: 183) which is "dependent on the operation of many specific systems of brain circuits" (2003, p.189). Brain circuits are made of neurons which are essential for making images. Images are "the brain's momentary maps of everything and of anything, inside our body and around it, concrete as well as abstract, actual or previously recorded in memory" (2010: 48). In other words, images "are the result of interactions between each of us and objects that engaged our organisms, as mapped in neural patterns constructed according to the organism's design" (2003: 199-200). These images have the potentially of affecting our behavior: "Having a mind means that an

organism forms neural representations which can become images, be manipulated in a process called thought, and eventually influence behavior by helping predict the future, plan accordingly, and choose the next action” (1994: 90). Simply, our interaction with our environment results in images which are like “incessant shower of innumerable atoms” (Woolf, 2009: 9). Consequently, these images affect our thought and behavior which they, in turn, constitute “the life of Monday or Tuesday” (2009, p.9). Therefore, Woolf, unlike her predecessors, does not consider “the mind as a static thing” (Lehrer, 2007: 182); indeed, it “was very erratic, very undependable — now to be found in a dusty road, now in a scrap of newspaper in the street, now in a daffodil in the sun” (qtd. in Lehrer, 2007: 183). Therefore, her writings are “neither a continuous transcription of the character's self-consciousness (as in Joyce's *Ulysses*) nor an objective description of events and perceptions (as in a typical nineteenth-century novel). Woolf's revelation was to merge these two polarities. This technique allows her to document consciousness as a *process*” (Lehrer, 2007: 188). Thus, through her writings, Woolf challenges:

The opposition between an objectivist truth (as facts or logical relations), recoverable thorough a strict scientific “method,” on the one hand, and a subjectivist “meaning” (values and affections), requiring an “inward” turn, on the other. Woolf saw this kind of “looking out” and “looking in” as two sides of the same coin, locked in agonistic limitation. (Waugh, 2012: 30)

Second, Woolf's statement implicitly rejects Descartes' dualism. He treated the mind as a distinct independent substance characterized by thought which was different from the other spatially extended substance, the matter. In contrast to Descartes' idea, Woolf's statement considers no distinction between the mind and matter. It is through the interaction of a person with a particular environment that “incessant shower of innumerable atoms” (images made by brain from neural representations of things or matters) constitute the mind, thought, and behavior. This mind-aboutness means that mind is inseparable from things. Patricia Waugh, also, highlights this issue: “She [Woolf] undoes Cartesian closure by drawing out its contradictions. First, the idea of thoughts as things. . . .If thoughts and things are claimed to be substantially distinct, then she will make thought into things and things into thought” (2012: 28).

Therefore, Woolf's statement attacks Descartes' dualism from the perspective that to write about the mind is similar to write about the days, generally about the universe. She emphasizes their togetherness: how mind extends into the world, and how a person, along with his/her mind, is embodied in the world. In Park's words, “by cutting loose from ‘orderly introductions of characters and structured plots’ and tracing the ‘ordinary mind on an ordinary day,’” Woolf recreates “not just a knowledge of the mind or the world but mind in the world as it is in the process of being constituted by the world” (2012: 111).

In another statement, Woolf claims: “I have a very clear notion of which parts of my brain think” (qtd. in Waugh, 2012: 28). By discussing that the mind is the product of the brain or, in Damasio's phrases, “mental states and brain states are essentially equivalent” (2010: 224), Woolf, with a different argument, abolishes the distinction between the mind and matter. To put it another way, Woolf “subjects the spiritual ideal of introspection as ‘looking in’ to a mechanical operation of the spirit that brings the individual soul off the production line of the material brain” (Waugh, 2012: 28). This argument has found solid facts and is explainable neuroscientifically. Damasio named his book *Descartes' Error: Emotion, Reason, and the Human Brain* because he believes that there is no separation between body and mind: “That not only must the mind move from a nonphysical cogitum to the realm of biological tissue, but it must also be related to a whole organism possessed of integrated body proper and brain and fully interactive with a physical and social environment” (1994: 252).

In our way to know how Woolf looks at the mind, another point is needed to be illuminated. She, first, advises writers to investigate “an ordinary mind,” then, in next lines of her essay “Modern Fiction,” Woolf argues how a writer should “work upon his own feeling and not upon convention” (2009: 9). Subsequently, she puts thoughts and feeling together: “‘The proper stuff of fiction’ does not exist; everything is the proper stuff of fiction, every feeling, every thought; every quality of brain and spirit is drawn upon; no perception comes amiss” (2009: 12); or writing to Katherine Mansfield, she reveals her decision to write about “only thoughts and feelings” (1991: 128). Is she seeing a correspondence between feeling and mind (according to Descartes’ idea, mind is characterized by thought)? To understand why she puts feeling and thought together, a neuroscientific explanation is illuminating.

Damasio believes that there is a difference between emotion and feeling. Emotion is “the collection of changes in body state” (1994: 139) which are “largely triggered by external stimuli (perceived or recalled)” (Damasio and Carvalho, 2013: 145). In other words, “emotions entail the perception of an emotionally competent trigger, a situation either real or imagined that has the power to induce an emotion, as well as a chain of physiological events that will enable changes in both the body and mind” (Immordino-Yang and Damasio, 2007: 7).

Feeling is “the experience of those changes” (Damasio, 1994: 139). As it is evident, “the term *feeling* should be reserved for the private, mental experience of an emotion, while the term *emotion* should be used to designate the collection of responses, many of which are publicly observable” (Damasio, 1999: 50). Therefore, “emotions play out in the theater of the body. Feelings play out in the theater of the mind” (Damasio, 2003: 28). Simply, “Feelings are mental experiences of body states” (Damasio and Carvalho, 2013: 143) as changed by emotions.

Therefore, “emotions and related phenomena are the foundation for feelings, the mental events that form the bedrock of our minds” (Damasio, 2003: 28). In sum, feelings are mental images of body conditions; and, as it was argued, images constitute mind. Thus, when Woolf puts feeling and thought together, she understands the importance of feelings in constituting mind. This notion, also, strikes a blow at Descartes’ dualism because he believes that emotions and feelings are misleading in our search for truth since they are originating in the body, matter, while the mind, along with thought, is the truth. As discussed, there is no mind without feelings. Finally, it is important to mention that by discussing the mind, Woolf does not commit to any metaphysical dualism because she does not use the mind in opposition to the body: she considers its relation to the brain, body, and world.

Woolf’s idea about mind is traceable to her great contemporary psychologist William James. While describing human thinking, James attributes five characteristics, as Wayne P. Pomerleau categorizes, to it:

- (1) all thought is owned by some personal self;
 - (2) all thought, as experienced by human consciousness, is constantly in flux and never static;
 - (3) nevertheless, there is an ongoing continuity of thought for every thinker, as it moves from one object to another (like the alternating times of flight and perching in a bird’s life), constantly comprising shifting foci and the contextual fringes within which they are given;
 - (4) thought typically deals with objects different from and independent of consciousness itself, so that two minds can experience common objects;
 - and (5) consciousness takes an interest in particular objects, choosing to focus on them rather than on others.
- (William James, <http://www.iep.utm.edu/james-o/>)

Among his ideas are that the mind extends itself to the world, that thought is about things, and that matter and mind dualism is a fiction: there is “no aboriginal stuff or quality of

being, contrasted with that of which material objects are made, out of which our thoughts of them are made” (James 2010, pp.248-9). The importance of James in modern neuroscience is crucial because he “brought feeling and knowing and mind and body into a new relationship of homology” (Waugh, 2012: 34). For instance, Damasio contends that “James inverted the traditional sequence of events in the emotion process, and he interposed the body between the causative stimulus and the experience of emotion” (2010: 80).

James in his *The Principles of Psychology* investigates the role of feelings in self, memory, mind, and consciousness: “The central part of the *me* is the feeling of the body and of the adjustments in the head” (2012: 371). It is also interesting that in his book James frequently uses feelings together with thought and quotes Mr. Lewes that “Algebra cannot exist without values, nor Thought without Feelings” (2012: 270). Damasio believes that feelings are associated with knowing because feelings are the images of what is going on in our body; when a special kind of bodily feeling, primordial feelings, is modified by the image of an object the process of knowing, consciousness, begins (1994: 230). In other words, it is “the remapping of the changing organism state in relation to a causative object as the basis for the experience of knowing, the very core of the process of consciousness and self” (Parvizi and Damasio, 2001: 152-53). This knowledge would be manipulated in the process of thinking to shape thoughts. To conclude, Woolf’s notion of mind is fashioned by her contemporary psychologist, William James, then transferred to her writings, but how?

4.1.1.2. *How to Communicate Mind in Fiction?*

Woolf’s worldview and idea of mind demanded a new form to be transferred in her literary writings. In other words, writing about “an ordinary mind” needed a new form: a form that can capture “shower of innumerable atoms” as they constitute “no plot, no comedy, no tragedy, no love interest or catastrophe in the accepted style” (Woolf, 2009: 9). Woolf declares that it is the novel, rather than poetry, that can carry mind’s “monstrous, hybrid, unmanageable emotions” (2009: 75) because poetry is almost unable “to express this discord, this incongruity, this sneer, this contrast, this curiosity, the quick, queer emotions which are bred in small separate rooms, the wide, general ideas which civilization teaches” (2009: 79). She believes that “interest in our selves and in other people’s selves is a late development of the human mind. Not until the eighteenth century in England did that curiosity express itself in writing the lives of private people” (2009: 116). That interest in the selves shows itself, mostly, in the novels and biographies; thus, the novel is “man’s most successful effort to describe the experience of individual human beings moving through space and time” (Lodge, 2002: 10). In addition, Orhan Pamuk contends that the form of novel is anti-Cartesian by nature:

The art of the novel relies on our ability to believe simultaneously in contradictory states...developing the habit of reading novels, indicates a desire to escape the logic of the single-centred Cartesian world where body and mind, logic and imagination are placed in opposition. Novels are unique structures that allow us to keep contradictory thoughts in our minds without uneasiness, and to understand differing points of view simultaneously. (2011: 33)

After considering the form of the novel for her writings, a technique was needed to convey the flow of mind into her literary texts. William James believes that the method suitable for investigation of the mental states is introspection: “The looking into our own minds and reporting what we there discover” (2012: 185). There we discover that, conscious experience “is nothing jointed; it flows. A ‘river’ or a ‘stream’ are the metaphors by which it is most naturally described. *In talking of it hereafter, let us call it the stream of thought, of consciousness, or of subjective life*” (2012: 239). It is this fluidity of the mind that makes the

catching of thoughts difficult: “The phantom is through the mind and out of the window before we can lay salt on its tail, or slowly sinking and returning to the profound darkness which it has lit up with a wandering light” (qtd. in Waugh, 2012: 25). Therefore, stream of consciousness seems a good technique for Woolf to catch this phantom in her literary texts. In literary criticism the stream of consciousness is linked “with the narrative technique of interior monologue, but it would be more accurate to think of it as the active subjective life that interior monologue, in an attempt to represent it, imitates in the symbolic form of language” (Parsons, 2007: 56).

In addition, James’ notion of stream of consciousness “sets the path for the literary experimentation with associationist memory in the early twentieth century” (Nalbantian, 2003:77). In Woolf’s writings “emotional memories are attached to material objects and places by association; they are dependent upon the exterior world to be revived” (2003: 85). As discussed, this dependence of mind on the external world refutes Descartes’ dualism; moreover, Woolf’s “fiction also offers a post-Cartesian working through and performance of an idea of mind that is close to current developmental systems theory in biology, and the enactive, autopoietic, extended or distributed mind” (Waugh, 2012:32).

In sum, Woolf’s new style translates the workings of mind “into narrative form” (Parsons, 2007:80). Novel has the capacity to contain and show how discorded and contradicted, how “disconnected and incoherent” (Woolf, 2009:9), how flowing and fleeting the mind is. And stream of conscious is the narrative technique with the potentiality of transmuting the rawness, fluidity, disconnectedness, contradictory nature of impressions in incoherent structures into narrative form as Woolf wishes: “let us record the atoms as they fall upon the mind in the order in which they fall, let us trace the pattern, however disconnected and incoherent in appearance, which each sight or incident scores upon the consciousness” (2009: 9). In Addition, Woolf’s “works and critical writings constantly assert the inseparability of form and content” (Parsons, 2007:16): This issue may correspond to her idea, as discussed, that the body and mind interact harmoniously with each other and with the world in order to create meaning. By this type of argument, this inseparability of form and content is her last blow on Descartes’ dualism.

4.1.2. Woolf’s Style and Other Dominant Ideas

Woolf lived in an era when ideas of Albert Einstein, Sigmund Freud, Henry Bergson, to name but a few, dominated the thoughts. It is by the influence of Freud that Woolf declares: In novels “the point of interest, lies very likely in the dark places of psychology” (2009:11); it is by the influence of Einstein’s notion of relativity—“the idea that scientific laws themselves are universalised conventions, and that the empirical observation of time and place will always be contingent on the position of the observer”—that “the aesthetic and social rejection of the novelistic conventions of authorial omniscience, narrative chronology and situated plot” (Parsons, 2007:114) increased; and it is by the influence of Bergson’s notion of duration that Woolf sets her experimentations with time which emphasized “the inability of an hour on the clock to mark the experience of ‘duration’ in the mind” (115). To catch this experience of duration Woolf relies on the perceptions. James contrasts “the fixed, stationary nature of the concept, or abstract thought, with the transience, fluidity, and mobility of the percept, or phenomenal perception” (Cuddy-Keane, 2010:687). Woolf prefers percepts, rather than concepts, because concepts, according to James, “selectively map and reductively circumscribe the fullness of our experience. Percepts, in contrast, connect us to the experiential flux” (Cuddy-Keane, 2010:687). Therefore, Woolf uses percepts in her writings, “shower of innumerable atoms” (2009: 9), because percepts can depict “the thing itself before it has been made anything” (Woolf 1992, p.323) and “engage the full potentialities of our experiential life (Cuddy-Keane, 2010:687).

4.2. Dominant Events

In addition to the dominant ideas, this paper argues that major events of a particular era also affect authors and their literary texts. For instance, Woolf lived in an era when two great world wars happened: these wars, especially World War One, acted as motifs in her literary writings and caused the resurrection of themes such as disillusionment, indeterminacy, anxiety, doubt, and conflict in her texts. Furthermore, it was the time of fast technological progress which affected thoughts. For example, telephone brought the idea of being in two places in the same time into the fore of attention to set the path for experimenting with time. Finally, in that epoch:

Science and art no longer seemed in opposition, but part of the same radical reframing of modern reality. Demonstrating that the workings of the universe were more random and the existence of things less solid than had previously been assumed, the new philosophy and the new physics resonated in both formal and conceptual ways with the new realism of the modern novel. Lending metaphoric force to its questioning of social and aesthetic norms and conventions, and offering a 'science' of the unknowable subjective mind and incomprehensible physical universe, they stimulated new ways of conceiving and representing in art the relation of physical and spiritual existence, and of the transience of immediate experience and the immensity of the distant past. (Parsons, 2007:131)

5. Dominant Faculty (Right-Brain Perspective)

Bressler attributes another force to Taine's historical thesis; this fourth force, "dominant faculty" (2007: 39), joins the others (the race, the surroundings, and the epoch) to shape an author's worldview and his/her literary texts. This section investigates Woolf's dominant faculty and its influence on her style of writing.

Woolf believes that her obtained form and subject matter correspond to life as she sees it: "Life is not a series of gig lamps symmetrically arranged; life is a luminous halo, a semi-transparent envelope surrounding us from the beginning of consciousness to the end" (2009: 9). Priest in her essay "Virginia Woolf's Brain: Mysticism, Literature and Neuroscience" interprets the above statement as: "Life is not linear, a series of events unfolding in sequence—like a row of carriage lanterns (or, in more contemporary parlance, car headlights) stretching off into the distance. Instead, life is a single expansive moment," and she attributes this kind of perception to "a classic right-brain perception" (2009: 299). In other words, the interconnection and unity of all things, as well as the perception of timelessness, are the typical right-brain perception while "the left-brain, however, takes that collage and breaks it down into its component parts, imposing sequence and order. In this way, it creates time: past, present and future. Without that division, we would live in the eternal now" (299). Anyway, it is the left hemisphere of the brain that dominates most of our consciousness: "Though the two spheres of the brain work together in highly sophisticated ways to give us our everyday perceptions, actions and experiences, when it comes to our own sense of ourselves, the left brain tends to dominate" (293). The domination of the left hemisphere is due to the fact that it "is the seat of language and other verbal functions, and thus the site of verbal consciousness" (293).

The above statement "suggests that there may be a link between right-brain awareness and mystical experience. In fact, one could speculate that those who have spontaneously experienced the oneness of everything (what scholars of mysticism call 'unitive consciousness') may simply have switched from left-to right-brain consciousness" (Priest, 2009: 294). The scientific explanation for this mystical feeling is:

The researchers . . . identified in the brains of meditating subjects a "sharp reduction in activity levels" in the posterior superior parietal lobe, the part responsible for

keeping the body oriented in physical space. With this area disengaged, they write, the brain is unable to create a sense of the body's physical boundaries and thus "would have no choice but to perceive that the self is endlessly and intimately interwoven with everyone and everything the mind senses." (2009: 294)

The main conclusion to be drawn is that there is no reality beyond what our brain, in relation to our body, creates: Damasio contends, "the images you and I see in our minds are not facsimiles of the particular object, but rather images of the interactions between each of us and an object which engaged our organisms, constructed in neural pattern form according to the organism's design" (1999: 405). In other words, there is no pure perception (the ability to perceive the object as it really is outside of us); we are limited to what our organism is designed to perceive. Therefore,

The modern writer no longer believes in . . . generalisation, however, and thinks the only material he can faithfully represent is the fragmentary impressions of his own subjective experience. If the essence of life was no longer to be understood in terms of an external reality, then the traditional means of representing characters by relating them to their external surroundings could no longer be of any use. The novelist needed to devise new methods of characterisation, more appropriate to the modern age. (Parsons, 2007:69-70)

The right-brain perception affected Woolf's worldview and, consequently, her style. For example, Priest argues, "the idea that time does not exist and that past and future are contained in the present moment can be glimpsed in much of her work. In particular, she sought to create a sense of the richness, the comprehensiveness, the multifariousness of each moment" (2009, p.299). Then, she relates this desire to "give the moment whole; whatever it includes" (qtd. in Priest, 2009:299) to a typical right-brain perception:

She [Woolf] includes details that would seem peripheral or irrelevant to other writers, while excluding the kind of narrative progression (exposition, rising action, denouement) that is the staple of most fiction. She wants to capture all the parts that make up the moment, rather than engage in the left-brain processes of selection and exclusion. (2009:300)

Therefore, Priest believes it is because of this point of view that Woolf seeks her new realism. Woolf endeavors to depict the reality beneath appearances in order "to represent experience in its raw state, as it happened, rather than in its final, neatly packaged form," in order to "undo the coherence imposed upon the world by language—in order to reveal what would otherwise be hidden, lost" (2009: 298). This going beyond the appearances, Priest argues, "gives so much of Woolf's writing its mystical flavour" (2009: 291).

Furthermore, this shifting of perspective between the right and left brain led to contradictions in Woolf's worldview—"Now is life very solid or very shifting? I am haunted by the two contradictions. This [moment] has gone on forever; will last forever; goes down to the bottom of the world [. . .]Also it is transitory, flying, diaphanous" (qtd. in Priest, 2009: 03)—and in her style—"This double vision informs all her writing: the timelessness and infinity of the present moment versus the logical progression of past-present-future, the fluidity of the unbounded self versus the singleness and solidity of the 'I'" (Priest, 2009: 303). To conclude, Priest contends that the incentive force beneath Woolf's worldview and her mystical writings was her ability to see the world from a right-brain perspective; therefore, this characteristic could be considered as Woolf's dominant faculty that made her style of writing unique.

6. Conclusion

Any single point to be deemed as the only reason in determining Woolf's Worldview and style is a path to abyss of reduction. Woolf's art, itself, is a defining and illuminating example of how each perception, "shower of innumerable atoms" (Woolf, 2009: 9), in each day, "Monday or Tuesday" (9), can affect our behavior and worldview. This issue corresponds to a notion in neuroscience which is called epigenetics: "The productive interaction between genetic information and environmental changes" (Changeux, 2011: 55). This interaction plays a complementary role for genetic mechanism to expand its function and to make it more efficient:

The exceptionally long period of *epigenetic* evolution undergone by the human brain enables it to incorporate information about the external world that is not obtainable by genetic mechanisms. This process also makes possible the production of a cultural memory not directly subject to the intrinsic limitations of the brain, thus capable of being epigenetically transmitted at the level of the social group. (61)

Among the examples of epigenetics are "the invention of dairy farming and the availability of milk in the diet" which "has led to changes in the genes that permit lactose tolerance" (Damasio, 2010:209) and, as discussed, the change in the function of a gene which led to the excess of cortisol as the result of Woolf's abuse in childhood.

Taine's historical approach reflects the notion of epigenetics, at least implicitly. In other words, Taine's thesis is adjustable to the recent neuroscientific theory that asserts: "The maturation of neuron circuitries in each brain is . . . seen as subject to selection pressures resulting from the very activity of organisms and the processes of learning. The repertoires of neuron circuitries initially provided by the genome [the race] are changed accordingly [by the surroundings and the epoch]" (Damasio, 2010: 13).

As argued, "individual experience shapes the circuitry (Damasio, 2010: 221). Thus, neuroscientifically, the character of an individual is the result of "a unique synthesis of an individual's genetic endowment [the race], circumstances of birth and upbringing [the surroundings], and sociocultural environment [the epoch], as experienced by the individual" (Changeux, 2011: 61). According to Taine's thesis modified by the above neuroscientific theories, Woolf's worldview, and its transmission in her style, was the result of the interactions between three major forces. First, the race: the notable point in the genetic endowment stage which affected Woolf's worldview and literary style was her genetic vulnerability "to manic-depressive disorder because of a familial inheritance from her father" (Bennett, 2013: 29). Second, the surroundings: this stage investigates the "circumstances of birth and upbringing" (Changeux, 2011: 61). In this stage, as a child and an adolescent, Woolf was sexually abused by her half-brothers. This abuse, along with her confrontation with the death of her beloved ones, worked upon her genetic endowment and her disposition to manic-depressive disorder to result in her mental illness.

The third level in constituting her notion of reality was her sociocultural environment, the epoch. She was influenced by the dominant ideas of William James, Einstein, and Henry Bergson, to name but a few; and by the major events such as two great wars and scientific and technologic progress. To conclude, if we accept that "a writer's (or more broadly period's) ideological and epistemological position on the nature of reality will generally determine the narrative approach they take" (Parsons, 2007: 22); then, Woolf's notion of reality, which was shaped through these three forces, found its voice in her style to form her new realism.

Along with revitalizing it with neuroscientific theories, Taine's approach needs further slight philosophical and literary revisions. Taine acknowledges that the reconstruction of an author's life and the condition upon which a literary text is shaped "is always

incomplete; it can produce only incomplete judgments; but to that we must resign ourselves. It is better to have an imperfect knowledge than a futile or false one" (1873: 4). However, his historical approach is considered deterministic because he believed that "if these forces could be measured and computed, one might deduce from them as from a formula the specialties of future civilization" (1873: 14). On this issue of using these distinct forces to predict future, this paper takes side with Karl Popper who claims that the predicted result differs from the real outcome because the latter "will always be the resultant of the momentary constellation of contesting forces. Furthermore, under no circumstances could the outcome of rational planning become a stable structure; for the balance of forces is bound to change" (1983: 296-97).

Another flaw of Taine's historical and biographical approach is his belief that it is through studying literature "that one may construct a moral history, and advance toward the knowledge of psychological laws, from which events spring" (20). He uses literature for understanding history and deciphering psychological laws; in other words, "Taine subordinates literature to sociology" (Hall, 1964:107). This subordination ruins the aesthetic quality of a literary text, as well as an author's skill. However, this paper employs history in service of literature to clarify Woolf's unique style of writing.

Finally, to seek Woolf's style in both her biology and her social environment, and the way they interact with each other, connects humanities to science, especially neuroscience, to bring this paper one step forth in achieving its goal, consilience. In addition, this style of argument ends the nature/nurture dualism inherent in most literary theories, such as the blank slate of poststructuralism: Woolf's case showed that this dualism is unsatisfactory because there is an interaction between biology and culture. In other words, we are not a tabula rasa to be only inked by cultural influences, nor by our genes.

*all italics are original.

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