Impact Factor 4.991, ISSN: 2320-5083, Volume 6, Issue 10, November 2018

SCIENCE POETRY: THE ALLUSIONS TO SAUDADE

DONNA GRACE I. COTEJO, DA*

*Instructor 1, College of Arts and Science, Cebu Normal University, Cebu City, Philippines

Abstract

Saudade is a deep emotional state of profound melancholic longing for an absent person. This study investigates the Saudade of Science poetry. Specifically, this analyzes the persona-vision-addressee saudade relationship, scientific allusions, denotative and connotative meanings of science language, and the creative saudade's write back. The Research Design is Descriptive as it utilizes discourse analysis that is qualitative in nature. The results of the study show the unified vision of Saudade: separation anxiety, nostalgic emotions, poignant longing, and melancholy about love and deep emotions, the linguistic allusions of science to exhibit the tone of "Saudade", the denotative and connotative meanings that interplay Saudade, and the creative writeback. The "Letter to Ling", "Love Lot like Physics" and "Love is Chaos" are science poems that talk about the "Saudade" which is a very important tool in discussing love to the millennial learners and at the same time simplify the complexity of science concepts being taught. The study recommends to future researchers to look at the effects of science poems to the students' NAT, scientific allusions of Saudade to novels and drama, and comparative linguistic analysis of General English vs Scientific English.

Keywords: Science, Poetry, Saudade, Allusions, Discourse

Introduction

Poetry is a product of a poet's wandering mind. It secretly divulges his innermost thoughts, his wildest dreams, his uncountable reveries, his significant and deep human emotions intricately woven through word aesthetics such that describing unconscious human soul and deep feelings to someone but not a simple missing - "Saudade."

Saudade (Grad, 2017) "is a deep emotional and nostalgic state of melancholic longing for an absent something or someone. Moreover, it often carries a repressed knowledge that the object of longing might never return." The poet may write about something he respects or something he hates, but all writers have some perspectives of "Saudade". His attitude is conveyed through his tone and is often expressed through his word choices. The use of allusion reveals unspoken assumptions that provide a different creation of angle in poetry.

The tone of missing someone is created and established more than merely an author's attitude towards his addressee and readers; it is the stylistic means by which he creates the persona in his peace of work.

With high consideration for diction, a poet remarkably can use science to express himself even if other readers find them impossible to collide. *V. Lindsay* in her poem "*The Horrid Voice of Science*" (Lindquist, 2018) says that without science, there might be no poetry. Moreover, the great John Donne in his publication "*An Anatomy of the World*" where its task is to feed in new information to the readers about the nature of reality that people have been missing through its art of poetry without losing its touch to the scientific Earth.

At present, the mean percentage score of NAT Deped Cebu City is in the range of 35-40 as of 2017(deped.edu.gov.ph). Students lack scientific vocabulary which hampers their reading comprehension to 50 item scientific text. It is the intention of this linguistic-literary research to exposethe disciplinary divides ("science and poetry") to be vitally opposites, if not enemies, as science is for facts and poetry is for emotions. More than that of exposure, poetry and science intertwine with one another and the content analyses of science poems are proofs of the marriage of the head and of the heart to form a duality of purpose in teaching to the 21st century learners. The contemporary English words through scientific allusions are personified with a human heart. These science poems are emblems of combined knowledge of both art and science that make them fit to be the sources of the study.

This research is an addendum to the body of linguistics and literature where in it targets the deep understanding of science in a poetic world. Specifically, this delves into the science poems in terms of their persona-vision-addressee saudade relationship, persona's allusion of scientific terms to his tone, denotative and connotative meaning, and their creative saudade's allusion of write back. Based on the aforementioned reasons, this study is conceived of.

Theoretical Background of the Study

This multi-critical analysis theorizes the presence of "Saudade" which allude to science poems entitled "Letter to Ling", "Love is Chaos" and "Love is a lot like Physics". This is strongly supported by Formalistic, Mimetic, and Affective Readings.

Adams (2010) takes formalism into account the objective form of the order of the story, the characters, connotative and denotative language, point of view, and some other literary elements that contribute to the whole meaning of the fiction. It is necessary to assess the value of this kind of criticism which neglects the expressivist's side of the author and

instead embraces the form or the structure of the piece as this is the focus for interpretation. The objective form targets important queries referring to the structure of the literature which is formal in nature. Formalism or New Criticism argues that each text has a central unity. The responsibility of the reader is to discover this unity. The reader's job is to interpret the text, telling in what ways each of its parts contributes to the central unity. The primary interest is in themes. A text is spoken by a persona (narrator or speaker) who expresses an attitude which must be defined and who speaks in a tone which helps define the attitude: ironic, straightforward or ambiguous. Formalist criticism regards literature as a unique form of human knowledge that needs to be examined on its own terms. The impulse to abstraction the New Critics saw as the scientific impulse to concretion they claim for poetry.

Adams (2010) thinks of the writer in Mimesis as copier of the essential truth as the main mediation of many objects which prioritizes emotions more than that of logic. The art of ideas copies the first human experience and is taken out and replaced with duplicate of concepts as expressed by the original theorists of Mimesis- Plato and Aristotle. The simple becomes complicated without eternity and is dropped into the point of hyperbolic ideas. The more authentic an imitative thing is, the more it becomes deceitful the reality is. It is simply pointing out the symbols or the signifiers that describes the signified or the theme of the literature that is close to the real and universal life experiences of the people in terms of psychological, philosophical, sociological, and cultural aspects. Saussure's Semiotic Mimesis is a type of Mimesis which talks about the theory and analysis of symbols and signs. The signifiers and signified are linguistically named into denotation and connotation; they depend on the understanding and definitions from different resources. Denotations are the exact meanings of the words while Connotations have different meanings based on the cultural, sociological, and ideological contexts that they are used.

Girard (2013) realizes that any themes are mimetic in nature such that of envy, hatred, love, and anger. They are product of mimetic criticism. René Girard distinctively talks of his Mimetic Theory which copies the importance of copying in the aspects of religion, culture, and historical implication. There are two important foundations: 1) the role of copying in the positive and negative themes and 2) the origin of mimesis of religion and culture in changing the results of a person's replica. It gives significant benefit that takes on the main concern to imitating the characteristics of the human to understand, relate, and appreciate significant human experiences which are helpful to some theorists.

Affective criticism evaluates literary works in terms of the feelings they arouse in audiences or readers. This is a theory which becomes popular in the late 1960s and popularized by Stanley Fish in which it is in its scope to analyze the reader's responses and reactions in a variety of ways. Fish (2018) acknowledges that the intended reader he has in mind is the "reader whose education, opinions, concerns, linguistic competencies make him capable of having the experience the author wishes to provide. The reader's experience of the text is the one that creates the meaning. The efforts of the readers are always efforts to discern and therefore to realize (in the sense of becoming) the author's intention. Affectivism is equivalent to constructing or writing the text as equivalent to grasping in a temporal fashion, the author's intention is already a product of interpretation of the lines or phrases or themes in a poem which are overtly controversial. The abstract insight is taken more consideration to have its distinctions from other literary criticisms.

These theories are the strong frameworks that strengthen the conduct of the study.

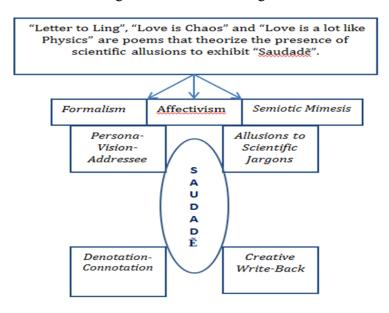


Figure 1. Theoretical-Conceptual Framework of the Study

Objectives of the Study

This study investigates the Saudade of Science poetry. Specifically, this analyzes the persona-vision-addressee saudade relationship, scientific allusions, denotative and connotative meanings of science language, and the creative saudade's write back.

Literature Review

The following articles, journals, and publications are relevant to the present study conducted.

Simmons (2014) explains "Why Teaching Poetry Is So Important". The use of neglected literary poetry would significantly improve the comprehension of the students in their reading and writing. Poetry enables to students to express their bottled feelings and eventually learn free writing before the fixed rules in poetry writing will be established. The challenge of the teachers is always making the students who originally hate poetry and essays love writing. It teaches syntactic rules such as that of Dickinson and Cummings style that make them popular. The teachers are encouraged to teach poetry to the students so that the understanding of literature is more in-depth.

Science language, as discussed by Holub (2009), is said to be formal and specialized in contextual meanings. It does not connote double definitions to avoid subjectivity. It gives the accurate process to the readers. On the other hand, poetry is controlled by romantic play of language and they are not concrete. Thus, the poetry elements produce subjective experience. The discovery for "poetry" is in language experience which conveys emotional factors. Deming (2008) in her article "Science and Poetry" shed light to readers that both disciplines are equally important to establish a solid comprehension. The language used is more strained and more formal than an unusual conversation to elicit a poetic output.

Paz (2015) in his "Modern Poetry and Science" pinpoints the same characteristics in the object of their study. They both have the same hypotheses to strengthen or reject an assumption. The science and poetry have both survived the guise of critiques as they both seek for the truth but the language that they use come from the different worlds. The experimenters search, checks, and test their ideas to find truths. In this manner, Paz, argues that poetry is a form of experimentation using beautiful words similar that of science. It strives to see the impact of both poetry and science as they manifest the urgent need to understand the natural world.

The Russian and Polish **formalism** of Jakobson (2016) convert the early works of study and its role in poetry. Formalism demonstrates "poetic language not only through limiting it to the sound structure but also through their components: syntax, vocabulary, and semantics. The problem of verse language serves as the best examples of formalist studies concentrated on a close correlation of sound and meaning in poetry." The New Formalism focuses on new form called free verse poetry which makes a new poetic standard which is in

line with itself and their own properties. Gioia (2012) takes a look at every contemporary piece which is required to have an in-depth investigation on its formal element regardless of its style. Nobody is exempted of the scrutiny whether it's formal or "pseudo-formal" poetry.

Auerbach(2013) asserts that **Mimesis** is an ideology, a scientific criticism and specifically a sociological one, would seek to explain the literary work (signifier) in term of the sociological-ideological structure (the signified) of which the literary is part, which transforms in its art.

Barton (2002) stresses out that the reader is an important person in "Affectivism theory" in the *writer-text-audience relationship* of literature in which it interprets the imaginary transaction is interpreted, analyzed, and actualized based on their own understanding and background. It may be personal and anecdotal as Horace of Greece stressed dulceet utile (sweet and useful), delight and instruction in Rome.

Allusion, as an artistic device, is said to be helpful in untying difficult concepts and helping readers to understand them through references of various characters, places, and events that are common such that of mythology and science, and biblical terms (Bakhtin, 2007).

Grimes (2018) concerns Poe's poetryentitled "Sonnet to Science". It says that science impairs the ingenuity of the poets. His analysis involves allusions of Greek mythological characters Naiad and Hamadryad nymphs to explain science in a sonnet form. The use of science words in his sonnet suggests a deviation of the usual form of a poem. It hails that not at all times, a poem is as free as a bird to explain the subtlety of his mind.

Saleem's study (2015) focuses on the use of allusions in John Milton and Hafiz Sherazi's poetic works. However, some readers find them difficult to use allusions. It arises some difficulties and problems for the readers of the other culture and language. In his study, it is concluded that it is hard to understand allusions but it crosses the gap between foreign lands after the poems have been compared.

In Robert Frost Poems by Kandilas (2017), it is clearly emphasized how "tone carries out the values and the theme of the entire piece. When Frost explains his "theory of the sound of sense", the vision is easily portrayed because the living tone makes their voices be heard. These journals and studies justify the conduct of the study.

Research Methodology

This research employs the qualitative method which is descriptive in its design. It is arranged in a systematized manner through matrices and textual format. The method focuses

on analyzing the contents of the science poems in terms of their a) the persona-vision-addressee saudade; b)allusion of scientific terms to his tone; c) denotative and connotative meaning; and d)creative write-back of saudade. The select science poems "Letter to Ling" by Anthony Tan "Love is Chaos" and "Love is a lot like Physics by Maureen Doallasare chosen and used as the principal reference of the study since they speak of contemporariness, comply of the necessary problems of the study, and they clearly represent the free verse poetry in scientific jargons.

Results and Discussions

The first phase explains the persona-saudade vision-addressee transaction of the science poems. "Letter to Ling" by Anthony Tan is a free-verse letter type of poem which narrates his reminiscence of memories and feelings of loneliness upon the disappearance of the woman. The persona or speaker of the poem is a lonely lover who considers Ling, the addressee, a very special girl. He describes his lonely night without Ling, someone special in his life. Their relationship is of that childhood friends turned into childhood sweethearts as reflected in lines 6-10: "Where we used to talk, In the dilapidated school House on the dream-sanctified beach, When we were small." He only longs and longs but he never did anything to fill that emptiness. In fact, there is no statement whether this letter has been sent to Ling or not. He is confined to her illusion of wonderful memories in the past because the persona and the addressee have these walls to protect them from the attacks of very old memories as lines 1-5 say: "Those flaming ramparts; We have left them where we used to talk;". Ling in the poem has left to live in another place so the man is devastated because of the woman's sudden adieu. The speaker is strongly attached to the woman as he is experiencing "separation anxiety" and he is crushed by this parting of ways. It creates a beautiful and evocative ending as the man feels that his being away is being taken and being stolen by the addressee, Ling. She carries the part of the man with her. And if the man can travel using his mental telepathy, all is left is just his pure body- the man is floating without a soul and the poetry has ended as lines 27-30: "Tonight, across the light years of your absence, The silence in this room is made palpable By the rasping of amorous lizards on the wall." The lonely speaker faces his solitary confinement as he listens to lizard who make love on the wall. His letter is an empty evening full of thoughts to the woman who occupies his total being.

"Love is a Lot like Physics" by Maureen Doallas is a free verse poem with fragments of stanzas that talks of love in comparison with Physics. The persona is a love guru who explains the impact of physics to love and he lectures the people who are in love. He scolds, and reminds the student how hard it is to understand love like physics when a student assumes and fails to see the right connections, it will surely cause a clash and produce a disastrous relationship as in the lines 21-25: The outcome of that, one wrong electrical charge, leaves all the circuits broken. You begin to oscillate, fall from orbit. He talks of his own broken love circuits. In a relationship, there should be reciprocation of both emotions, and of expectations. He is nostalgic when he sees people who fail to understand its complexity. He does not want that an innocent student of both love and physics will experience the same obstacles of love.

"Love is Chaos" by Prasanta is also a free contemporary poem which expresses his deep pain and confusion over troublesome life about love. The persona is a confused person who experiences dilemma of choices. He longs and wishes that love is not opposite poles apart and he addresses this poem to a dreamy and innocent lover who knows nothing about difficult choices in love as reflected in the lines 6-8: Stretched between magnetic fields Of Reason and Desire, How will the equation balance? This science poem is poignant longing and melancholy over a chaotic love and so he advises the addressee to wake up from illusory images of romance as stated in the lines 11-13: Explain entropic delusions and test assumptions of reality.

The three science poems present a unified vision of Saudade: separation anxiety, nostalgic emotions, poignant longing, and melancholy about the complexity and troublesome love.

Table 1.Persona-Saudade-Vision-Addressee

SCIENCE POEMS	PERSONA	SAUDADĒ VISION	ADDRESSEE
Letter to Ling	lonely lover	The lover experiences separation anxiety to Ling's memories.	Ling
Love Is a Lot Like Physics	love guru	The love guru talks nostalgic emotions when he recalls failing to understand the complexity of love.	people who are in love
Love is Chaos	chaotic and confused person	The lover narrates his poignant longing and melancholy over chaotic decisions on love.	a dreamy and innocent lover

The second phase talks about the allusions of scientific jargons used in the three love poems. Letters to Ling poetry is alluded to the scientific jargons namely: Earth's magnetic core, implosion, blackhole, planet, gravity, space, and vertigo. These create a tone of emptiness, melancholy, and longing. "Love lot like Physics" uses Physics, Mass, Heart Rate, Acceleration, Heat, Conduct, Velocity, Speed, Force, Newton 3rd Law of Motion, Electrical Charge, and Orbit create a mixture of the writer's confused emotion, insecurity, melancholy, and his nostalgic longing. "Love is Chaos" uses reflection, refraction, centripetal force, entropy, angle of incidence, collision, and antimatter. "Love is Chaos" uses angle of incidence, reflection, refraction, antimatter, centripetal force, and magnetic fields in alluding his tone of saudadě. The tone exhibits his bitterness towards pretentious love that made the poetry bitter, pretentious, and melancholic. The three science poems use scientific allusions to explain the vision of Saudadě: separation anxiety, nostalgic emotions, poignant longing, and melancholy of chaotic, confused and complex love.

Table 2. Scientific Allusions and Collective Saudade Tone

SCIENCE POEMS	SCIENTIFIC ALLUSIONS	COLLECTIVE SAUDADĒ TONE
Letter to Ling	Earth's magnetic core Implosion Blackhole Planet Gravity, Space, Vertigo	Emptiness Melancholy Longing
Love Is a Lot Like Physics	Physics Mass, Heart Rate Acceleration Velocity Speed, Force Newton 3 rd Law of Motion Electrical Charge Orbit	Confusion Insecurity Melancholy Nostalgic Longing
Love is Chaos	Angle of Incidence Reflection Refraction Magnetic Fields Equation Centripetal Force Entropic	Pretense Sarcasm Bitterness Melancholy

The third phase explains the denotative and connotative meanings of the scientific allusions. Denotative meanings mean the exact scientific meanings based on different types of science dictionaries and the connotative meanings are defined on how they are used in the context of science poems. In the "Letter to Ling" implosion, Black Hole, Earth's magnetic

core, planet, light years, gravity, and vertigo are written in order to create a tone of "Saudade." Magnetic core "refers to the central part of a celestial body (as the earth or sun) usually having different physical properties from the surrounding parts." Connotatively, the man wants to see her again but he is too weak to find her as his will is not the cynosure of his personality as in the lines 11-15: "My will is not the earth's magnetic core; My world has suffered an implosion; But unlike a black hole." Black Hole is the persona's feeling of "Saudade" unlike the Black Hole which has a gravitational field. Because the speaker is too old and outdated, the persona is comparing himself to a lost and tired planet as reflected in the lines 20-21: "Indeed like a tired planet, I have lost my gravity." Losing gravity means losing weight, power and strength. Vertigo scientifically concerns of "spinning and wobbling head that connects to the eyesight." Generally, "Letter to Ling" expresses a "Saudade" of "recollection of feelings, experiences, places or events that once brought excitement, pleasure, well-being, which now triggers the senses and makes one live again." The individual feels destitute because of his absence to the person- the depth of missing is simply indescribable. The persona in the poem clearly talks to Ling in his mind so he is sending him his words of "Saudade" to her through letters.

In "Love is a lot like Physics", the scientific jargons such as Physics, Mass, Acceleration, Heart Rate, Speed, Force, Newton 3rd Law of Motion, Electrical Charge, Orbit, Heat, and Conduct are playfully used to explain the complexity of love. "Physics deals with matter, energy, and physical processes" Webster (2015). Connotatively speaking, love is compared to Physics as intricate, difficult to understand and complex. Heat is the energy in association with the random motion of molecules but the heat of the body significantly means in the poem; the warmth that it has when two bodies are in contact as in the lines 7-10 "attract; how his body; heat conducts and your heart rate accelerates". They are the causes of the inexplicable speed of the heartbeat. Heart Rate denotatively means the degree of the pulse beat per minute. Velocity speaks of speed toward a certain direction while in the poem this is untied as the persona talks to the innocent lover who assumes that he understands the swift motion of his love in approaching to him but fails to see that other side of love. In order to love, there is reciprocation of emotions and learn to be careful to understand someone's actions as in the line 11-13: "You think you understand velocity, assume his speed at take-off matches yours. "Newton's law of motion emphasizes that for every action, there is an opposite of equal reaction. The poem also wishes this kind of love. If this is a one side of love, it will surely end up a broken relationship compared to broken circuits. Circuit means

"the complete path of an electric current". If this is broken, it means that the wires do not match and are wrongly connected just like a mismatch in love. If they have wrong connections, they clash and they break. However, when one is in a relationship, they both agree to be happy or be sad in that place. The words "oscillate" in science means to swing forward and backward such as in the pendulum swing and if it is compared to a person in that relationship, he may go forward depending on another person's action of pursuing, he may go backward depending on another person's action of retreat. The status of relationship is very complicated like a physics subject. And if both people (Line 25) fall from orbit, which scientifically means a long circular path to complete a revolution, they both experience difficulty as their relationship travels in circles and have no direction as stated in line 26, "of just so much hot air." Generally, "A Love lot like Physics" expresses a "Saudade" of nostalgic emotions and emptiness of the complexity of love described through Physics.

In "Love is Chaos", the angle of incidence, reflection, refraction, antimatter, magnetic fields, centripetal force, and entropy are beautifully written to describe that Love spells trouble. The angle of incidence means "angle that an incident ray makes" in which if it is not aligned then it causes two objects to "strike violently to one another". In love, if two people suddenly bump with each other without particular plan, they end up hitting and hurting each other. The angle of reflection means "the angle made by a reflected ray." Refraction is a "phenomenon being deflected through interfaced direction." After a person carefully thinks deeply of something he comes to realize that there is something wrong with love- with the idea of love as reflected in the 1st stanza: "The angle of reflection— the realization, Burned by the egregious refraction, Of searching eyes". Connotatively, the person has realized that something has been distorted by the evasive eyes and it is hard to see the truth- it does not look exactly what is in the mirror. Love has pretense. Love has a façade. Antimatter is "composed of antiparticles- produces opposite results". When antimatter exists in love- there is chaos. One must balance the mind and the heart in making decisions pertaining to love as "reason and desire" must invariably solve at least one position. A centripetal forcer means a kind of force in a circular motion and direction and if a person is a centripetal force itself he is beating around the troubled world of love if he is not able to balance his logic and matters of the heart. He goes crazy and he is stuck in the limbo of illusions as he gets inside the organization of entropy-"a degradation of the matter and energy". A person who gets inside the world of entropic delusions become too obsessed with love that he has a hard time waking up from the reality. Thus, love is chaos. It expresses a "Saudade" of poignant longing and

sarcasm over hopeless romance and idealistic concepts of love in which the speaker speaks based from his crazy moments of love.

The three science poems use scientific jargons to explain emotions of "saudade" in denotation and connotation aspects.

Table 3. Denotation and Connotation of Scientific Jargons

SCIENTIFIC JARGONS USED	DENOTATION	CONNOTATION
IN THE LOVE POEMS		
Letter to Ling		
Earth's magnetic core	Center	focus of will
Implosion	Collapse	sad emotion
Black Hole	gravitational space	deep hole in one's heart
Gravity	force of attraction	Strength
Space	Expanse	empty space
Vertigo	light-headedness	Uncomfortable
Love is a Lot like Physics		
Physics	natural science	difficult topic
Mass	Property	heavy weight
Acceleration	vehicle's speed	Fast
Heart Rate	Rate of the heart	heart beat
Speed	rapid motion	Fast
Force	Power	Strength
Newton 3 rd Law of Motion	action-reaction	opposite equals
Electrical Charge	positive-negative	opposite relationship
Orbit	Track	travel in circles
Heat	hot surface	warmth of emotion
Conduct	electricity conductor	cause of something
Love is Chaos		
Angle of Reflection	reflected angle	thoughtful images
Refraction	wave change	moving away
Centripetal Force	circular force	beat around
Entropy	degradation of thermodynamics	disorder, chaos
Angle of Incidence	light ray angle	moving away
Collision	Clash	hit
Anti Matter	antiparticled matter	imaginary/not real

The fourth phase talks of creative saudade write-back. It is a free verse poem that uses scientific jargons to explain the saudade of the poet.

It is a free-verse poem whose persona is a sad person. He is a broken hearted person and the effect of this is his suppressed pain. He addresses this poem to his ex-lover whom he remembers clearly of bittersweet memories. He wants to forget but he simply cannot forget. The pain is repeatedly felt and it is inevitable longing. Yet, he finally realizes that everything about them is but an empty dream. In explaining his pain, he also uses scientific jargons such as Milky Way, galaxy, polaris, meteor, Chemistry, Toxicity, palpitations, push,pull, inertia, Big Bang, and the like to exhibit the saudade of longing, melancholy, and emptiness.

"Nothing" (A Creative Saudade)

Too late-I am in the other world. Milky Way- I am beyond your reach.

I am a Polaris; you are a meteor
I reach out for you but you leave as you wish.
never had chemistry
it is a cycle of toxicity
of love and hate and hate and love

BIG BANG! There is inertia of push and pull; of pull and push

in as much as I want to close and blind my eyes the memories still look back to you I want to deafen my ears the voices still serenade me

my love, my love still holds Though my legs are amputated, the reveries are my crutches

of hello and goodbye; of goodbye and hello chills, sweats, palpitations... until I wake up from a dream

you never exist

EMPTY.

Conclusion and Recommendations

The presence of scientific jargons in "Letter to Ling", "Love Lot like Physics" and "Love is Chaos" exhibits a tone of Saudadē. The melancholy, nostalgic emotions and poignant longing can be alluded scientifically. The language of science is also the language of love. Just like science, love is a complex process that can be hardly understood by the human minds. Yet, love is widely talked about by the millennial learners. Hence, this literary-

linguistic research makes the teacher's job easy by using this as a very important tool to transfer knowledge to the 21st century students. If science as well can be explained through love, the students can easily grasp the complexity of these concepts. This is a significant contribution to the focus of the content in teaching poetry. Thus, this study recommends to future researchers to look at the effects of these science poems to the NAT of students, scientific allusions of Saudade to novels and drama, and comparative linguistic analysis of General English vs Scientific English.

References

- 1. Adams, Hazard& Searle, Leroy. (2006). *Critical Theory Since Plato*. United States of America: Thomson Wadsworth. Publishing.
- 2. Adams, Laurie. (2010). The Methodologies of Art: An Introduction. USA: West view Press.
- 3. Auerbach, E. 9 May 2003. *Mimesis: The Representation of Reality in Western Literature*. Retrieved from https://press.princeton.edu/titles/10107.html
- Barton, J 1 February 2002. Thinking About Reader-Response Criticism. Retrieved from http://journals.sagepub.com/doi/abs/10.1177/001452460211300502?journalCode
- 5. Boer, Roland. (2017). *Bakhtin and Genre Theory in Biblical Studies*. USA: Society of Biblical Literature Press.
- 6. Chandler, R. (2010). Saussure's *SEMIOTICS The theory behind media literacy*. Retrieved fromfile:///C:/Users/Hp/Downloads/semiotics.pdf
- 7. Deming, A. 11 November 1998. Science and Poetry: A View from the Divide. Retrieved from https://www.creativenonfiction.org/online-reading/poetry-and-science
- 8. Goia, D. 7 August 2012. *Paradigms Lost: Interview with Gloria Brame*. Retrieved fromhttp://www.talawas.org/talaDB/showFile.php?res=877&rb=010
- 9. Girard, Rene.(2013). *Mimetic Theory*. USA: Michigan State University Press.
- 10. Grad, Laurice. 29 June 2017 Saudade: *The Presence of Absence*. Retrieved from https://www.huffingtonpost.com/laurieburrowsgrad/saudade b 10611606.html
- 11. Grimes, A. 30 April 2018. Poe's Poetry Summary and Analysis of "Sonnet To Science"
- 12. Retrieved from https://www.gradesaver.com/poes-poetry/study-guide/summary-sonnet-to-science
- 13. Holub, Miroslav. 16 September 2009. *Science and Poetry*. Retrieved fromhttps://my.greasy.com/anacoana/miroslav holub science poetry.html#.Wzw34dIzbIU
- 14. Lindquist,LW. 08 August 2018. *Top 10 Science Poems*. Retrieved from https://www.tweetspeakpoetry.com/2016/08/18/top-10-science-poems
- 15. Mambrol, N. 13 February 2018. *Key Theories of Stanley Fish*. Retrieved from https://literariness.org/2018/02/13/key-theories-of-stanley-fish/
- 16. Mambrol, N. 17March 2016. *Defamiliarization*. Retrieved from https://literariness.org/tag/roman-jakobson
- 17. Paz, Octavio. 27 December 2015. *Modern Poetry and Science*. Retrieved from http://www.paep.ca/en/CIYL/2002/doc/paz poetry and science.pdf
- 18. Ransom, J. 7 July 2007. *Critical Theory of Ransom as a New Critic*. Retrieved from http://shodhganga.inflibnet.ac.in/bitstream/10603/61985/7/07 chapter%203.pdf
- 19. Saleem, T. (2015). A Comparative Study of Allusions in the Poetry of English Poet John Milton and Persian Poet Hafiz Sherazi(Published Thesis). University of Lahore, Pakistan.
- Simmons, A. 8 April 2014. Why Teaching Poetry is so Important. Retrieved from https://www.theatlantic.com/education/archive/2014/04/why-teaching-poetry-is-so-important/360346/