

## **Neurocognitive Literary Studies and Digital Humanities**

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**Keywords:** Humanities-Inspired Technology, Research in Digital Humanities, Neurocriticism, Autism, Literary Studies, Literary data Modeling, Digital Narrative, Social Media, Transdisciplinary Research

# Neurocognitive Literary Studies and Digital Humanities

## ABSTRACT

The paper demonstrates how neurocognitive social psychology can be applied to study human behavior through literary character analysis with digital tools; and how the digital literary studies in terms of neurocognitive psychology may help develop new models for technology and theories of contemporary science. On the basis of the theses, the paper illustrates the theoretical methodology called “Humanities-inspired technology for society” as an essential sub-branch of Digital Humanities and its application to the two major research studies: to great classics of all times and to etiology of autism. The paper advocates to bring literary theory and neurocognitive literature in the curricular of science and technology.

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## 1. Introduction

Psychology, Cognitive Science and Psychoanalysis are often intersectional subjects with literary studies. Digital Humanities strengthens literary studies when its scholarship help develop models for advancement of science and technology. Till date, a very few studies have gone to this direction-how DH scholarship help technological modeling for challenging social problems and healthcare issues. The paper highlights the conceptual ground of humanities-inspired technology for society (HITS), its applications and functions. It has a major component 'neurocognitive literary study' through digital tools and hence the paper establishes a networked rapport of literary arts with neurocognitive science and digital humanities/studies. At the beginning of the paper, the author defines HITS as an approach to knowledge system and concludes with its applications.

## **2. HITS as Sub-branch of DH: A Study in Digital Humanities to Technological Advancement**

Digital Humanities scholarship is utilized to disseminate, preserve, conserve and represent visuals of the knowledge system but seldom used for advancing human technologies for social welfare. The paper explores humanities inspired technology as a subdiscipline of Digital humanities which studies how humanities scholarship intersected or interpreted or analyzed with digital technological tools and it demonstrates attributes to modelling for technological development. It deals with practical expositions of literary or language philosophers, and critical theorists as impetuses for modeling of cognitive computational technology. Hence, it strongly establishes an inseparable bridge between practices in technology and humanities epistemology. The function of Humanities-inspired technology for society (HITS) essentially lies with developing models based on digital studies in philosophy of language and literary studies in terms of brain, mind and behavior. It coordinates the two different streams of knowledge system for three reasons: first, to remind; second to upgrade; and third to develop. It reminds what is missed by the world of technology; suggests to upgrade technological tools and devices for their humane utilization without their hazardous impacts on the earth and beyond; and develops new models out of scholarly studies in humanities for technological advances. For instance, there is no neuro-model based technology developed till date to identify the factors of sexual deviant criminals, to control or detect such heinous criminals. Begun with empathy to the victims, a HITS scholar studies the behavior patterns of such personalities in Literature in terms of neuro-cognitive psychology and social psychology and may develop behavior semiotic model based on the studies patterns and prepared corpus. Such studies develop industry-based research and development in the fields of Digital Humanities, which is much awaited epistemological contention in the arena of humanities departments in India and across the world.

For ages, Literature is studied in its own terms: Aristotelian, Longinian, Classicist, Romantics, Modern, Postmodern, Gender, Colonial and Postcolonial. Literary studies seldom go beyond its defined disciplinary territories and this was the major reason for its fall across the world.

Its boundary is defined for its users and the users are not allowed to go beyond the boundaries, thus, communication with the real world is questioned in literary studies. The influences of Marx, Freud, Nietzsche, Foucault, Lacan, and Derrida are irresistible penetrating human thinking so they could touch the offshoots of the literary studies despite the disciplinary resistance of classical rhetoricians. Now, something has happened more than that: interferences of science and technology in the study of Humanities with slow but steady manners; in respective phases resulting in Humanities Computing, Computational Humanities, Digital Humanities, Speculative Digital Humanities (SpecLab), and Public Digital Humanities.

### **3. Conceptualization, Experimentation, and Invention**

The demand of transdisciplinary studies of science and arts, aesthetics and technology are observed in the history of ideas of contentions of difference and epistemological hybridity. I.A. Richards's collaborative works with C.K Ogden developed a transdisciplinary approach to the poetics called 'science of criticism' (Green); C. P. Snow observed two cultures in the "intellectual life of the whole of western society" (Rede lectures); E. O. Wilson's *Consilience: The Unity of Knowledge* (Wilson) is the finest exposition of trans-disciplinary thought argues for "consilience" referring to "the synthesis of knowledge" derived from different specialized fields of human endeavor to envision a new field of knowledge serving the society. "The greatest enterprise of the mind has always been and always will be the attempted linkage of the sciences and humanities." (Wilson; Morris) How this linkage is possible? Let's understand with few examples: Descartes' painting is a part popular science known as a pattern-design of the first experimentation in designing the airplane.(Miller) The coordinate system is ingrained in Descartes's philosophy; and similarly, Thomas Carlyle's Circle is well-known model in Mathematics (DeTemple) as "a certain circle in a coordinate plane associated with a quadratic equation" and may similar studies are yet to be done. The implications of humanities knowledge of the two are examples of Humanities inspired technology and science. Such findings of interferences of Humanities in the domains of science and technology are observable to establish an ideation that science and technology are developed also by the epistemological influences of Humanities (esp. linguistics, literature and cultural heritage). The HITS never establishes superiority of a knowledge system over another one such as demonstrated in *Science and Poetry* as a problem in epistemological enquiries. (Midgley)

#### **4. Literature, Neurocognitive science, and Technology: Substantial Studies in Neurocognitive Digital Humanities**

Based on the concept argued above, the paper now reflects substantiated studies research on Humanities inspired technology. In this, it is shown how knowledge of Humanities polishes, cherishes the motives for developing technological tools to guarantee the safety and security of the human society at large. We conducted two studies together:

I theorized the ‘Neurocognitive literary theory’ based on “activated neurons affecting/effecting the human behavior (ANAEHB)” patterns and applied to study Hamlet’s neurological problems equating his mental status with existing persons in real society; to study R.N. Tagore’s *The Post Office* in terms of how neurocognitive forces in an author empathetically influence the audiences of the play resulting in its translation and staging across the world during the World War. (Rahaman and Sharma); and to study neurodevelopment issues reflected through behavior such as the mental anguish and moral dilemmas of Rodion Raskolnikov in Fyodor Dostoyevsky’s *Crime and Punishment* (1866), and neurocognitive factors of racial discriminative behavior patterns of Marlowe & Kurtz in Joseph Conrad’s *Heart of Darkness* (1899), and sexual deviant behavior of David Lurie in J. M. Coetzee’s *Disgrace* (1999).

These characters illustrate the behavior patterns of the socially disturb mindset resulting in numerous societal problems at large. The specific factors of behaviors disturbing the other members of the society and their connection with the CNS are etiologically studied and replied to the research questions: Can Literary reading be intersected with neurological and computational studies? Can reading in Humanities or knowledge of humanities help solve complex problems in the development of AI, Neurocomputation, Human Nature Inspired Computing, and Medical computing?

Based on the following findings which are observed as outcomes of neurocognitive literary studies: 1. the impulses of human beings through deep reading of literary classics, and compare with real-life situations in Human Society is feasible 2. Understanding human impulses identifying neurological causes behind human behavior and developed computational modeling to express the criminal mindset 3. Based on Humanities and Knowledge Engineering for Medical & Technology, developed a device to protect a woman from the unwanted accident 4. Established the possibility of

Trans-disciplinary research in Arts & Literature intersected with cognitive sciences and computational studies 5. Established Literature & Language as a reflection of socio-neuron behavior and identified mental patterns of the neurological disorder in humans to commit Rape and Murder. For literary studies, words are the only media for assessing human behaviors so Atlas.ti the software application is used to analyze the patterns of behavior through frequencies of words used by the characters of the literary works.

## **5. Literary Narratives, Neurodevelopment and Techno-epidemiology**

As argued, the trans-disciplinary approach always brings novelty in the procedures of experimentation resulting in prismatic ways to see the world. For example, Friedrich Salomon Rothschild (1899-1995), a psychiatrist and colleague of Erich Fromm (1900-1980) developed the theory of biosemiotics. Rothschild was a reader of Charles W. Morris (I have cited above) who studied Engineering and Psychology at NU and earned a Ph.D. under the research supervision of psycho-sociologist George Herbert Mead (1863-1931). His book *Signs, Language, and Behavior* (1946) elucidates the signs representing human behavior; specific modes of signifying adequacy, truth, and reliability of signs; and defined life is but the semiotic narrative, and as the signature of human behavior. Similarly, J. C. Whitehorn and G. K. Zipf collaboratively wrote “Schizophrenic language” (1943); G. K. Zipf edited *The Psycho-Biology of Language* (1939), “The Unity of Nature, Least-Action, and Natural Social Science” (1942), and “Observations of the Possible Effect of Mental Age Upon the Frequency-Distribution of Words, from the viewpoint of Dynamic Philology” are the oldest research papers archived in the PubMed and remain foundational works in cognitive-linguistic disorders which symptomatize the Autism basically. These works are the consequences of inclinations towards what we called “research consilience” a trans-disciplinary approach to knowledge serving humanity and its associated agencies.

## **6. ZEF factor of Autism**

The prevalence of the rate of autism in the world states itself the facts of a less effective approach to cure and challenge autism. To do so, there is unavoidable necessity to observe the history of the etiology of autism: from the second decade of the twentieth century to the WW I & II, and to 2019. The entire history of autism reveals various factors of autism established by medical practices

or special treatment. The keen observation of etiology of autism states that the epidemiological historians of autism could really not differentiate the terms between symptomatology and etiology of autism. The problem is strongly put forth in “Deconstructing the Etiology of Autism and its Cure through Social Media & Digital Literary Narratives” (Rahaman 2020) and came up with a major finding that Autism eventuates during fertilization periods, longtime before the birth of a child.

It is the evaluative study of the research pursued in the etiology of ASD and the possibility to develop a parallel treatment way by deconstructing the established hardcore medical practices for ASD. We studied, critically evaluated articles published between 1943 and 2019, consulted the world health organization reports of the prevalence of ASD in USA & eight South Asian countries, and develop an additional idea as therapy of ASD through “Social Media” & “Literary Narratives” differentiating technological and developed a model of post-technological Autism treatment.

The study contributed to help the cure procedures for ASD through “Social media” and “literary narratives” further requirement of upgradation in epidemiological treatment through technological imaging and development of technology based on the ZEF factors of Autism. The other findings establish the open possibilities of research in the fields required to design further research and make policies to resist the prevalence of ASD around the world.

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