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**A PEEP IN TO THE CRITICAL SPACES IN
AUTOBIOGRAPHICAL WRITINGS**

Dr.A.V.S JAYA ANNAPURNA,
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Writing Autobiography is to find a new meaning for the old reminiscences that serves as a spike in the wheel of life. To recognise the meaningfulness of one's individual experiences and reflections that function as a lens through which the narrative impasse flows its pace with a speed that reader alone can identify the larger culture of narrative making. It is evident that the reader cannot reconcile issues regarding the extraction of truth through situations and conversations. The reader seeks to peep into the narrative making guided by unending questions finding the impossibility of possible truth by the question after question that stirs the reader to dwell into the private space of autobiography. To the reader, the attempt of autobiographer wishing strongly to retain himself and wanting to be in the same spirit, in spite of wanting not to belong to any objective looks strange. Knowingly, the narrator thus, stirs and tries to unearth his lived experiences to preserve truth guided by common situations that the reader unknowingly reconciles to the issues the narrator dwells into.

The public space and private space are at loggerheads in a narrative impasse. The society that coined the pattern of autobiographer no longer desires to identify the new individual to be judged by the world out of his tender imagination

REFLECTIONS OF THE NARRATOR

The extent of the narrator's explorations, his inheritance of dreams and desires and fulfilment of life in the roads of immense past, tries to find conclusions to shadows and lights that illuminated his past life's episodic journey, which reflects as to how he unmakes himself in order to remake his own world.

FEAR OF UNMAKING IN MAKING

The fear of less than perfect creates and opens doors to any autobiographer towards nightmarish disillusionments to understand himself and free himself to understand the auto journey. The author realises his pranks and overlooks certain issues that raises controversies about the authenticity of the narrative.

THE SENSORSHIP OF CULTURE OF THE LAND

Being affected by the aggressive tone of the contemporary social order, the narrator tries to be a silent wanderer loitering in to the moors of the mistaken past memory lines and cannot rely on instinct alone to justify his decisions or mistakes committed apparently in the already rolled over past. Often look back into the situations of uncertainty opens its blackheads in the specific unwanted past dilemmas.

SHIFT OF INTEREST FROM TRUTH TO UNTRUTH

The shift of interest in different phases of life pushes the narrator to relocate himself as an individual and creates trends, patterns and mirages before the narrator to remake his past in to a kindled personification of his deeds as justified and inevitable sequences and tries to mislead the reader into frontiers of temporary calculation of misguided imaginations. of truthfulness of narration

AUTO-IDENTITY

The author solicits sympathetic identification from his readers and raises consciousness among readers. While acknowledging the value of experiential writing, the reader demonstrates a continuing interest in communal identity mediated by the awareness of difference. Autobiographical writings are perhaps new way of man's search for identity. Formation of Identity is a never ending story evolving out of self-construct, that a person finds sense and meaning out of his own life experiences which continues across the life course.

Designing of life narrative out a selective reconstruction of memories out of innumerable reminiscences of past which relates to the reader about the autobiographical past that serves to explain moments of importance from the memory lines of forgotten past is a intricate task. Though the evolution of identity starts in childhood, yet its formation grows with cognitive identity of self as a metaphor to recognize the self and emphasize social and emotional aspects of multitude of experiences at analytical level. The content and structure of a life story encompass the varied life themes, approaches and viewpoints of the protagonist. The categorisation of identity formation takes place at different transitional phases of the protagonist without his own knowledge. Autobiographical writings are perhaps new way of man's search for identity formation of Identity is a never ending story evolving out of self-construct, that a person finds sense and meaning out of his own life experiences which continues across the life course.

To conclude there are no essential qualities and theories of nature of identity and the importance of situated experience. There is a need to read the autobiographies with gender awareness which is shaped by the conditions of the time and the constraints of the genre. The intention and social function of autobiographical writing in collaboration to contemporary context and resultant critical reception it receives from the readers, creates conceptual awareness and construct relationship between the author and reader to develop and cherish a desire in self-narrative, a mode of reading which generates and acknowledges the aesthetic satisfaction it inculcates to its readers.

REFERENCES

1. *Autobiographical intentions and interpretations* Mane cardinal, Annieleclerc
2. University of North London, London Metropolitan University Ph.D. award 2001.
3. Trev Lynn Broughton, *Autobiography: Critical concepts in literary and cultural studies*, London, Routledge, 2007.
4. William Zinsser, *Writing about your life: A journey in to the past*, Richard Blake, 2011.
5. William Zinsser, *Inventing truth: The art and craft of Memoir*, 1998, New York, Houghton Mifflin, 1998.



जिये सिंध आंदोलन

कमला,

सहायक प्रध्यापक, जा कर हुसैन देल्ही कॉलेज
दिल्ली विश्वविद्यालय

सार सिंध के संजातीय राष्ट्रवाद की पृष्ठभूमि बहुआयामी है। आंतरिक तथा बाहरी प्रवासन, राजनीतिक अस्थिरता, सैनिक शासन, सेना पर पंजाबियों का आधिपत्य, नौकरशाही पर पंजाबी + मुहाजिरों का प्रभुत्व, संजातीय संघर्षों में बढ़ती हिंसा तथा खून खराबा, सिंध के विखंडन का भय, स्वायत्तता की मांग तथा सिंधियों में पहचान खोने का भय यह सभी तत्व सिंध में उत्पन्न संजातीय राष्ट्रवाद के जन्मकारक तत्व हैं। जिये सिंध तथा मुहाजिर कौमी मूवमेंट जैसे आन्दोलनों ने ना वेफवल सिंध की प्रशासनिक, राजनीतिक, आर्थिक तथा सांस्कृतिक संरचना को प्रभावित किया है, बल्कि पाकिस्तान की एकता तथा अखण्डता को भी गहरी आन्तरिक चोट पहुंचाई है।

संजातीय विविधता, बहुलवाद तथा विषमरूपी समुदायों के अस्तित्व के कारण यहाँ संजातीय संघर्षों तथा सामाजिक तनावों का जन्म हुआ है। सिंध के मुल निवासी सिंधियों का अल्पविकास तथा संजातीय समुहों के असन्तुलित आर्थिक विकास के कारण यहाँ नागरिक समाज का पूर्ण विकास नहीं हो पाया और इन पिछड़ेपन तथा अलगाव की स्थितियों ने यहाँ संजातीय राष्ट्रवाद को जन्म दिया। सिंध एक बेहद विकसित प्रांत होने के बावजूद दुर्भाग्यवश यहाँ के मूलवासी बेहद गरीबी में जीते हैं तथा सिंधी लोग ब्लूचियों के पश्चात् सबसे ज्यादा हाशिये पर है यहाँ शहरी तथा ग्रामीण लोगों के रहन सहन तथा आर्थिक स्थिति में भारी असमानताएँ हैं। कराची में जहाँ बड़े उद्योग स्थापित हैं, तथा वाणिज्य की बेहतर स्थिति है तथा इसके कारण सिंध की प्रति व्यक्ति आय भी सर्वाधिक है जबकि सिंध के ग्रामवासी बेहद गरीब लोग हैं।

¹ यह सभी वास्तव में संजातीय राष्ट्रवाद के जन्म के लिए उत्प्रेरक कारक है। इस अध्याय में सिंध प्रांत की सामाजिक तथा ऐतिहासिक पृष्ठभूमि का जिक्र करते हुए भारत पाकिस्तान विभाजन के समय सिंध में प्रवासन के कारण उत्पन्न हुई समस्याओं का जिक्र किया जाएगा। सिंधियों की मुहाजिरों तथा अन्य संजातीय समुहों के प्रति क्या-क्या शिकायतें हैं यहाँ के भाषा विवाद तथा कैसे सिंध में सिंधी संजातीय आंदोलन का जन्म हुआ है। इस पर विस्तार से चर्चा की जाएगी। सिंध प्रांत का अपना एक समृद्ध इतिहास, विविधापूर्ण संस्कृति तथा सशक्त परंपराएँ रही हैं जो सदियों पुरानी हैं भारतीय इतिहास पर अगर नजर डाली जाए तो सिंध को इसकी धूरी के रूप में देखा जा सकता है।² सिंधु घाटी की सभ्यता से सिंध में सर्वप्रथम मानव समुदायों का यहाँ निवास हुआ जो कि एक बेहतर नियोजित शहर बना, सिंधु नदी के कारण यहाँ अर्थव्यवस्था, व्यापार, कृषि तथा सांस्कृतिक विकास को बढ़ावा मिला। सिंधु घाटी सभ्यता के पतन के बाद मूलवासी द्रविड़ों पर आर्य लोगों ने अधिपत्य कर लिया जिन्होंने इस सभ्यता को पुनर्व्यवस्थित किया।³

1971 में बंगलादेश के निर्माण से पाकिस्तान के अन्य संजातीय समूहों में भी पृथक्करण की भावना का विकास हुआ। इस्लाम धर्म के सहारे देश के सभी संजातीय समूहों को एक रखने की रणनीति अब कारगर साबित नहीं हो पा रही थी। एकीकरण को बनाए रखना सभी शासकों हेतु बड़ी चिन्ता का विषय था।⁴ देश की संघीय सरकार की छोटे प्रांतों पर मजबूत पकड़ को देखते हुए तथा राष्ट्रीय राजनीति से मोह भंग के कारण जी०एम० सईद ने जिये सिंध आंदोलन की शुरुआत 1971 में की।⁵ 'जिये सिंध' आंदोलन सिंध के मूलवासी सिंधी लोगों के क्षेत्रीय तथा संजातीय चेतना का परिणाम था जोकि अपनी भाषा, साहित्य तथा सांस्कृतिक पहचान और परंपराओं के प्रति प्रतिबद्ध थे। 'जिये सिंध' का अर्थ है, सिंध सदा अमर रहे। जिये सिंध आंदोलन में सकारात्मक तत्व यह था कि सिंधी लोग सिंध हेतु प्रांतीय स्वायत्तता मांग रहे थे तथा साथ ही राजनीतिक शक्ति का विकेंद्रीकरण तथा आर्थिक संसाधनों के न्यायपूर्ण वितरण की मांग ये लोग कर रहे थे। नकारात्मक तत्व यह था कि सिंधी लोग इस आंदोलन के जरिये एक स्वतंत्र तथा पृथक राष्ट्र 'सिंधु देश' की मांग कर रहे थे।⁶

¹ Syed Anwer, *The Discourse and Politics of Zulfikar Ali Bhutto* (London, Macmillan, 1992), p. 191.

² Hamida Khuhro (ed.), *Sindh through the centuries* (Karachi, OUP, 1981), p. x.

³ V.Y Gankavsky 'Sindh Ethnic Community at the end of colonial era' in Hamida Khuhra (ed.), *Sindh through the centuries* (Karachi, OUP, 1981), p. 180.

⁴ G.W. Chaudhary, *The Last Days of United Pakistan* (Bloomington, Indian University Press, 1974), pp. 1-10.

⁵ Manbir Singh Chawdhry, G.M. Syed on the "Unity and Diversity of Religion", *Sikh Spectru.com*, Issue No. 19, February 2005 at www.sikhspectru.com/022005/gmsyed.htm on 14-3-12

⁶ Surendra Nath Kaushik, *Contesting Identities in Pakistan Region, Religion and the Nation-State* (Jaipur, Pointer Publication, 2005), p. 80.

सिंधु देश के विचार पर सर्वप्रथम सिंधि नेता जी०एम० सईद ने जोर दिया। यह 1972 की घटना है जब जी०एम० सईद का भुट्टो के प्राधिकारी शासन से मोह भंग हो गया। भुट्टो के प्राधिकारी शासन की आलोचना करते हुए इन्होंने यह चेतावनी दी कि हम इस शासन व्यवस्था से तंग आ चुके हैं अब और ज्यादा इसे नहीं बनाए रख सकते या तो शासक हमारी बात मान लें या पिफर हमें स्वतंत्र सिंधु देश दे दें। 'चमच पद जव जीम चेंज' नामक लेख में जी०एम० सईद लिखते हैं कि 'सिंधु देश' की माँग से मुहाजिर और पंजाबी समुदाय के हितों को झटका लगा तथा इन्हें हैरानी हुई क्योंकि सिंधु देश के जरिए सिंधि समुदाय सिंध हेतु पूर्ण स्वतंत्रता चाहते हैं। मूल निवासी सिंधि लोग पंजाबी तथा मुहाजिरों के अधिपत्य वाली शैतानी ताकतों से तंग आ चुके हैं। इस अनुभव से यह लोग विचारधारात्मक रूप से ओर अधिक अनुभवी हो रहे हैं। अब सिंधि लोगों को समझ आ चुका है कि 'कायदे आ'म जिन्नाह जिंदाबाद' 'कायदे मिल्लत लियाकत अली खान जिंदाबाद' तथा 'कायदे भुट्टो जिन्दाबाद' जैसे नारे केवल छलावा मात्र थे और इनके जरिये आत्मदंभी, बातूनी तानाशाहों को बढ़ावा मिल रहा है। यह तीनों लोग जिनके लिए नारे लग रहे थे यह केवल मुहाजिर व पंजाबी हितों को बढ़ा रहे हैं ना कि सिंधियों के हितों को, वास्तव में यह सिंध के दुश्मन हैं।' इसी लेख में आगे सईद ने बताया है कि सिंधु घाटी में एक समृद्ध तथा उत्पादक मिट्टी है। यहाँ के लोग स्नेही तथा परिश्रमी हैं। इसकी भाषा, संस्कृति यहाँ के लोग, इसकी खनिज सम्पदा इसकी कृषि, समुद्री व्यापार तथा समृद्ध समुद्री जीवन सभी हजारों सालों की प्राकृतिक प्रगति का परिणाम हैं। यहाँ के बेटे और बेटियों ने यहाँ धर्म तथा संस्कृति को अपनी कला तथा परिश्रम से समृद्ध बनाया है। संसार के प्रबुद्ध लोगों तथा प्रसिद्ध शांति दूतों ने मिलकर इसे इस स्थान पर पहुँचाया है। सिंधि लोग स्वतंत्र विचारों वाले, सहनशील तथा आभार लेने वाले लोग हैं जिनमें समानता तथा स्वतंत्रता की भावना सदा से रही है। यहाँ के लोग दास का जीवन जीने को कतई तैयार नहीं हैं वह दासता जो कि धर्म तथा मुस्लिम राष्ट्रवाद के नाम पर इन लोगों पर थोप दी गई है।⁸

सिंधु देश शब्द संस्कृत भाषा का शब्द है जिसका अर्थ है सिंधुओं का ग्रहस्थान। सिंध वास्तव में सदा से महान प्राचीन सभ्यता का घर रहा है, मोहनजोदारों, अमरी तथा कोट-दीजी इसके प्रतीक हैं। विभिन्न धर्म तथा विश्वासों के लोगों का मिलन स्थल रहा है सिंध। सिंध ने अनेक उतार-चढ़ाव तथा खूनी लड़ाईयों को देखा है पिफर भी आज अस्तित्व में है।⁹ 'जिये सिंध आंदोलन के जरिये जी०एम० सईद ने सिंधियों की पहचान को नया रूप दिया। इसका उद्देश्य सिंध की सांस्कृतिक विरासत, इसकी आर्थिक स्वतंत्रता और सिंधियों के राजनीतिक व्यक्तित्व को सुरक्षा प्रदान करना था। सिंधियों के हितों को पंजाबी तथा मुहाजिरों के अधिपत्य से से बचाना इसका उद्देश्य था।¹⁰

जी.एम. सईद ने सिंधी संजातीय समूह को एक पृथक् राष्ट्र कहा और सिंधी संजातीय राष्ट्रवाद वेफ पाँच प्रमुख सिद्धांतों की पहचान की जो निम्नलिखित हैं - यह विश्वास कि पाकिस्तान एक देश नहीं चार देशों का समूह है, सिंधी समुदाय अपने गृह स्थान, भाषा, संस्वृफति, ऐतिहासिक परंपराओं और राजनैतिक तथा आर्थिक हितों वेफ अनुरूप एक अलग राष्ट्र का निर्माण करते हैं, सिंधियों को अपने भविष्य का पैफसला करने का पूर्ण अधिकार है तथा अन्तिम यह विश्वास कि, पाकिस्तान की विचारधारा, इस्लामिक राज की अवधारणा तथा सशक्त वेफन्द्र, सिंधी राष्ट्रवाद की वास्तविकता में प्रमुख बाधाएँ हैं।¹¹

उत्तर-औपनिवेशिक काल में पाकिस्तान में हो रहे षड़यंत्रों को देखते हुए सईद को यह अहसास हो चुका था, कि देश की नई व्यवस्था में सिंधी समुदाय वेफ लोग हाशिये पर होंगे। सईद द्वारा प्रतिपादित 'सिंधु देश' का विचार पंजाबी तथा मुहाजिरों वेफ उपनिवेशवाद से सिंधियों की मुक्ति और स्वतंत्रता हेतु था। जी.एम. सईद वेफ अनुसार "सिंधु देश बनने से सिंधियों को कई पफायदे होने वाले थे, जैसे - पाकिस्तान निर्माण वेफ समय से ही सिंध वेफ राष्ट्रीय उत्पादन का वह भाग, जो कर वेफ रूप में वेफन्द्र को प्राप्त हो रहा था और मुहाजिर तथा पंजाबियों को लाभ पहुँचा रहा था, वह भाग बाद में सिंध की भलाई में इस्तेमाल होगा और सिंध को एक अति विकसित आधुनिक देश बनाने में सहायक होगा, सिंधु देश बनने वेफ साथ ही, सिंधी भाषा देश की राष्ट्र भाषा बनेगी और जो व्यक्ति सिंधी भाषा ना जानता हो, उसे देश की नागरिकता नहीं मिलेगी। इससे सिंधी समुदाय वेफ लोग उर्दू भाषा और मुहाजिरों वेफ अधिपत्य से मुक्त हो जाएंगे, स्वतंत्रता वेफ साथ ही सिंधु देश में प्राथमिक स्तर से विश्वविद्यालय स्तर तक मुफ्त शिक्षा की व्यवस्था की जाएगी तथा नया सिंधु देश धर्मनिरपेक्षता, समाजवाद, लोकतंत्र और राष्ट्रवाद पर आधारित होगा।'¹²(मम।चमदकपग.प)

⁷ G.M. Syed, "Peep into the Past", *Sindh Rises*, A Case of Sindh Desh, IV, Karachi, 1994 p. 3

⁸ *Ibid.*

⁹ *Ibid.*

¹⁰ M.G. Chitkara, *Jiye Sindh*, G.M. Syed, (New Delhi, APH Publication, 1996), pp. 143-44.

¹¹ Ashok Behuria, *State Versus Nations in Pakistan, Sindhi, Baloch and Pakhtun Responses to Nation Building*, op. cit., p. 84.

¹² G.M. Syed, *A Case for Sindh Desh*, (London, Sindh International Council, 2000).

सिंधु देश प्रस्ताव का अंतिम बिंदु, जो धर्मनिरपेक्षता, समाजवाद, लोकतंत्र तथा राष्ट्रवाद की बात करता है, की सभी बातें रसूल बक्श पालीजों की सिंध 'अवामी तहरीक पार्टी' वेफ भी मुख्य प्रमाण चिन्ह हैं। इस पार्टी का गठन 1970 में रसूल बक्श द्वारा हैदराबाद में प्रमुख सिंधी लेखकों, कार्यकर्ताओं और बुद्धिजीवियों की एक सभा में किया गया था।¹³ ये वही पॉलीजो थे, जिन्होंने जिये सिंध आन्दोलन की शुरुआत से पहले जी.एम. सईद वेफ साथ मिलकर काम किया था, किन्तु सईद से अलग इनकी राजनीति, गांधीवादी अहिंसा पर आधारित व्यापक सामाजिक आंदोलन वेफ पक्ष में थी, जो समाजवादी तौर तरीकों से भी लैस थी।¹⁴

'जिये सिंध' आंदोलन वेफ मुकाबले सिंध आवामी तहरीक (जिसका गठन 1970 में रसूल बक्श पालीजों द्वारा किया गया) ज्यादा व्यापक तथा सुगठित है, तथा इस पार्टी ने अलगाववादी कार्यसूची पर आधारित ना होकर, सिंधी समाज की बुराइयों पर ध्यान वेफन्द्रित किया। साथ ही इसने किसानों वेफ अधिकारों पर जोर देते हुए वामपंथी विचारधारा को पैफलाया।¹⁵ पार्टी वैबसाईट वेफ अनुसार मार्क्सवाद, लेनिनवाद तथा माओवाद वेफ वैज्ञानिक सिद्धान्तों वेफ आधार पर सिंधी लोगों को स्वतंत्र कराने वेफ अपने संघर्ष में आवामी तहरीक द्वारा गांधीवादी अहिंसा को हथियार बनाया गया है। यह पार्टी जन लोकतंत्र, आर्थिक तथा सामाजिक न्याय और कल्याणकारी राज्य वेफ निर्माण पर बल देती है, जहाँ लोग राजनैतिक स्वतंत्रता, समानता तथा आर्थिक अवसरों तथा प्रांतीय स्वायत्तता का लाभ उठा सवेफ।¹⁶ पालिजो वेफ अनुसार 'अवामी तहरीक राष्ट्रवादी प्रश्न वेफ साथ सर्वहारा वेफ अन्तर्राष्ट्रीयतावाद को भी मिश्रित करती है।'¹⁷ सामंतवाद वेफ उन्मूलन का तत्व, अवामी तहरीक को जिये सिंध आंदोलन से अलग करता है और इस तरीके से वह समाजवादी सिद्धान्तों से किसानों वेफ हितों को सुरक्षा तथा उन्हें बढ़ावा देते हैं।¹⁸ दूसरी ओर जी.एम. सईद वेफ सिंधु देश की उद्घोषणा में समाजवाद और लोकतंत्र को आधार तो बनाया गया है, किन्तु कहीं भी सामंतवाद वेफ उन्मूलन की घोषणा नहीं की गई, जिसवेफ कारण 'जिये सिंध' आंदोलन की व्यवहारिकता में अस्पष्टता नजर आती है। इन दोनों आन्दोलनों वेफ राजनैतिक शैली में भी स्पष्ट अन्तर है। जहाँ, सईद की राजनीति एक बड़े जन आन्दोलन को गति प्रदान नहीं कर सकी, वहीं पालीजो की राजनीति अवश्य एक जन आन्दोलन बनी, जो सामंतवाद विरोधी तथा सेना विरोधी था। इनकी सत्रिफय राजनीति की यह शैली 1980 वेफ मूवमेंट पफॉर रेस्टोरेशन ऑपफ डेमोक्रेसी (इत्क) वेफ समय में भी नजर आई, जब अवामी तहरीक वेफ कार्यकर्ता इसवेफ समर्थन में सड़कों पर उतर आए, जबकि जी.एम. सईद ने इसमें दिलचस्पी ना दिखते हुए एक मूकदर्शक की भूमिका निभाई।¹⁹

अदील खान वेफ अनुसार - "यदि सिंधी राष्ट्रवाद की बात की जाए, तो 1990 का दशक एक तरह से उदासीनता का काल माना जाएगा। सिंधी राजनीति में संजातीयता-आधारित राष्ट्रवादी आंदोलन, िया वेफ बाद वेफ काल में, वुफछ समय तक ठडे पड़ते दिखवाई दिये। इस दौरान, कोई भी सिंधी राष्ट्रवादी पार्टी, सिंध की राजनीति में सपफलता हासिल नहीं कर पाई। इस दौरान सिंधी संजातीय राष्ट्रवादी आंदोलन बेहद शांत दिखवाई दिया, इसका एक कारण 1995 में जी.एम. सईद की मृत्यु होना भी था।"²⁰

आज सिंध की राजनीति अनेक विवादों के बीच घूम रही है जैसे सिंध तथा केन्द्र के बीच विवाद, सिन्धियों तथा मुहाजिरों के बीच विवाद, मुहाजिर तथा पंजाबियों के बीच विवाद इत्यादि।

सिंधु देश आंदोलन का पुनरुद्भव तथा सिंधी राष्ट्रवाद की हालिया स्थिति

सिंधु देश आंदोलन पिफलहाल एक बार पिफर उछाल पर आया है तथा सिंधी लोगों में मशहूर हो रहा है। आज सिंधी राष्ट्रवादी पिफर से यह बात दोहरा रहे हैं कि, सिंध प्रांत का गैर-सिंधियों वेफ हित में इस्तेमाल हुआ है तथा मुहाजिर समुदाय वेफ लोगों ने सिंध वेफ प्रमुख शहरों (खासकर कराची) पर कब्जा जमा रखा है। आज खैबर परवूनरखा से भी भारी मात्रा में सिंध की तरफ आवर्जन हो रहा है। साथ ही तालिबानी शरणार्थियों की तादाद भी यहाँ बढ़ रही है, जिससे सिंध की हालिया

¹³ Farhan Hanif Siddiqi, *The Politics of Ethnicity in Pakistan*, op. cit., p. 89. Also see Awami Tahreek Website, www.atsindh.com/index.html, retrieved on 5-11-2014.

¹⁴ Tristan James Mabry, *Nationalism, Language and Muslim Exceptionalism*, (Philadelphia, University of Philadelphia Press, 2015), pp. 125-141.

¹⁵ *Ibid.*

¹⁶ Awami Tahreek Website, op. cit.

¹⁷ Interview with Rasool Bux Palijo, 30 September, 2006, cited in Farhan Hanif Siddiqi, *The Politics of Ethnicity... op. cit.*, p. 89.

¹⁸ Awami Tahreek Website, op. cit.

¹⁹ 'Biggest Problem is Structural : Palijo', *Daily Dawn* (Karachi), 19 August 2003.

²⁰ Adeel Khan, *Politics...*, op. cit., p. 156.

हालत बेहद दयनीय हो चुकी है। इस हालत को और भी खराब बनाने में सेना पर पंजाबी प्रभुत्व तथा सिंध में बढ़ रहे आंतकी हमलों ने महत्वपूर्ण भूमिका निभाई है।²¹

कंपसल जपउमे की एक रिपोर्ट वेफ अनुसार 24 मार्च 2014 को कराची शहर में हजारों की संख्या में सिंधी नेताओं, कार्यकर्ताओं और जिये सिंध कौमी महाज (श्रैफड) वेफ समर्थकों ने मिलकर एक पदयात्रा वेफ दौरान 'सिंधु देश' वेफ समर्थन में नारे लगाए। इस तरह वेफ जुलूस सिंध वेफ अन्य शहरों तथा कस्बों में भी आयोजित किए गए। श्रैफड वेफ चेयरमैन बशीर खान वुफरैशी ने, उर्दू भाषी समुदाय वेफ सामने सिंधी भाषियों वेफ साथ एकीकरण की इच्छा भी अभिव्यक्त की और उन्हें अपना भाई तथा सिंधु देश का हिस्सा माना²² और यह बात दोहराई गई कि "सिंधी राष्ट्र पिछले 64 सालों से इन्तजार कर रहा है कि, कब इन्हें उस पंजाबी आधिपत्य से स्वतंत्रता मिले, जो संघ, नौकरशाही, सेना न्यायिक व्यवस्था तथा सिंध वेफ सभी संसाधनों पर कब्जा जमाए हुए हैं।"²³ इसी दौरान 'बलूचिस्तान लिबरेशन आर्मी' की ही तरह 'सिंधु देश लिबरेशन आर्मी' (कैस।) का गठन एक स्वतंत्र सिंधु देश वेफ उद्देश्य हेतु सिंधियों द्वारा किया गया है। इसी उद्देश्य की प्राप्ति हेतु नवंबर 2010 से लेकर फरवरी 2011 तक प्रांत की रेलवे लाइनों पर अनेक आक्रामण सिंधु देश लिबरेशन आर्मी द्वारा किये गये और साथ ही ऐसे पैम्पलेट भी प्रचारित किये गये, जिनसे स्पष्ट होता है कि, कैस। द्वारा इस तरीके वेफ आक्रामण सिन्ध विरोधियों वेफ खिलापफ तब तक किये जाते रहेंगे, जब तक सिन्धु देश स्वतंत्र नहीं हो जाता। हालांकि 'सिंध तहरीक पार्टी' वेफ सदस्य डॉ. कादिर मगसी जैसे लोगों ने कैस। वेफ इन कार्यों को नकारात्मक हिंसा पैफलाने वाला कदम बताया। सिंधु देश लिबरेशन आर्मी वेफ इस प्रकार वेफ आक्रामणों से एक बात तो स्पष्ट होती है कि, यह आक्रामण हिंसा पैफला रहे हैं और यदि सिंधी लोग सिंधु देश लिबरेशन आर्मी वेफ इन कार्यों का समर्थन करेंगे तो डफड की तरह सिंधी संजातीय राष्ट्रवादी आंदोलन भी हिंसक रूप धारण कर लेगा।²⁴



²¹ Guerin, Orla (2010-06-22), "BBC News – Karachi Faces Growing Menace" at bbc.co.uk. Accessed on 2012-06-05.

²² "Leading News Resource of Pakistan", *Daily Times*, available at www.dailytimes.com.pk/E-paper, retrieved on 2014-06-05.

²³ "JST Demands Sindh's Independence from Punjab's Occupation". Available at the.news.com.pk. Retrieved on 2014-06-05.

²⁴ Tunio Hafeez, 'A Case of Exploding Railway Tracks', *The Express Tribune*, available at tribune.com.pk. Retrieved on 2012-06-05.

ICT AND CULTIVATION TOGETHER: A STUDY OF TELEVISION-BASED AGRICULTURE PROGRAMME

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Abstract:

India is blessed with all types of seasons so variety of crops and vegetables are cultivated all the year around. But from few years, Indian agriculture is characterised by small farmers, high risk, obsolete technology and production methods, inadequate research, poor rural infrastructure and inadequate institutional arrangements. With these given parameters, there is an urgent need to increase productivity. In these regards, it is very important to provide the farmers with the right information, in the right way, due to which, success will be definite. Television is one of the most popular electronic media for news and information. Therefore, this paper attempts to analyse the contribution of agriculture-related Television programmes on the dissemination of agricultural information for the framers for their agricultural enrichments. The study was conducted at Kalyan Taluka of Thane District of Maharashtra.

Keywords: Agriculture, Television, ICT, Information

Introduction:

According to CIA Factbook India, GDP of Agriculture in 2014 was 17.9%. Total production of agriculture sector is \$366.92 billion. India is the 2nd largest producer of agriculture products. India accounts for 7.68 percent of total global agricultural output. Contribution of Agriculture sector in Indian economy is much higher than world's average (6.1%).¹ 58 % of rural household in India are engaged in farming activity. This makes the gap between agriculture's share in GDP relative to that of the population residing in rural areas not as yawning as it may appear to be. It is, thus, an alarming situation to increase the production of declining natural resources, unavailable labour, lack of infrastructural facilities etc. The importance of agriculture has long been recognised by the stakeholders like the Government of India, Private Companies, Public Private Corporation and others. These stakeholders have been launched in a range of development projects and programmes in agriculture sector. Though various efforts of improvements are available, the agriculture sector is facing a range of challenges for its development like over-population, climatic change, loss of agricultural land, infertile land, use of excessive pesticides, lack of inputs, improper irrigation etc. Television constitutes an important medium widely used to disseminate information to its viewers. It has unique features of combining audio and visual technology, and thus considered to be more effective than audio-media. Since 1967, *Krishi Darshan*, or Agricultural Television, a 30-minute show broadcast by the state-run network has been keeping India's vast flock of farmers up-to-date with farming practices.

¹ <http://statisticstimes.com/economy/sectorwise-gdp-contribution-of-india.php>

Now, Prime Minister Modi’s government has decided to add to the pastoral programming with round-the-clock operations to create a channel for farmers and rural dwellers- called as the *Kisan TV* or Farmers’ TV.²

Research Type: Descriptive Research

Research Objectives:

- 1) To find out the type of agricultural information the respondents receive from the current Television-based agricultural programmes.
- 2) To find out the expectations of the respondents through the Television-based agricultural programmes.

Sample Size:

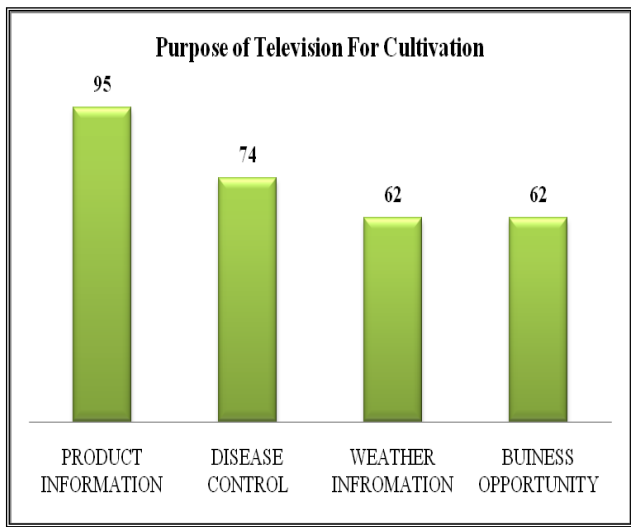
Farmers in Kalyan taluka who had government authenticate record that is 7/12 Extract were considered as population of the study. Total number of farmers in Kalyan Taluka is 8427. So 1 % of the farmers were taken for the study. So, this sample size became of 84 farmers.

Data Collection:

This study is based on Primary and Secondary data. Generally, the literacy level of the farmers is low. Due to this, collection of data with the help of Structured Questionnaire was difficult. Therefore, the researcher had designed Schedule in vernacular language, i.e., in Marathi for data collection.

Data Analysis:

Figure 1: Shows the purpose of Television for Cultivation Purpose

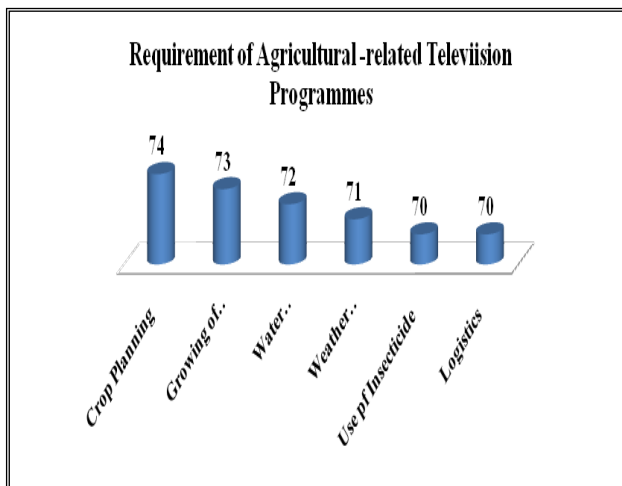


(Source: Primary Data Collected)

Figures are in Percentages

Figure 2: Shows that Expected Agriculture Information for Television Programmes

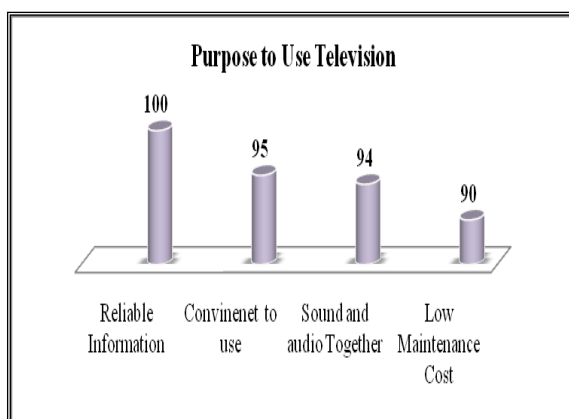
² <http://blogs.wsj.com/indiarealtime/2015/04/20/pastoral-programming-india-to-get-247-farming-tv/>



(Source: Primary Data Collected)

Figures are in Percentages

Figure 3: shows that Reasons to use Television for Agriculture Purpose



Findings:

- 1) 95 % farmers are get up-to-date information through Agriculture-related programmes.
- 2) Use of TV for agriculture purpose is nearly 98.81% in overall Kalyan Taluka. Majority of farmers watch agricultural programmes even though it is not useful for them. They try to implement the agro-practices explained in these cultivation programmes and modernise their traditional farming practices. The farmers hope that something could be useful for them. The farmers of Kalyan Taluka said that if some fruitful programmes are shown, they will definitely watch them. Therefore, screening of good quality of agricultural programmes is the urgent need; in order to save the farmers and their crops.
- 3) It is observed that TV is the highest ICT medium to provide information regarding product information, disease control, market information, weather information etc. Therefore, broadcasting Agriculture-oriented programmes can give a good impact on the cultivation practices.

Suggestions:

1. Decentralisation of cultivation-related programmes:

Programmes related to agriculture were watched almost by every farmer. But the requirement of every farmer is different. So, at least at the taluka level, programmes can be beneficial for the farmers. The programmes should be focused on the active participation of the farmers. The schedule of the programmes

should be known to the farmers, well in advance. So, here, with the help of mobile phones, SMSes can be sent to individual farmers.

2. **Tele-education to the farmers:**

Farmers should be aware about on the recent developments in their field. So, TV can be beneficial for the farmers. Introduction of some role models/ideals at the local level can be motivating through TV Programmes.

3. **Role of Government:**

Government of India is also working on the implementation of new technology for Agriculture. Many projects have already started and are getting good response from the farmers at the macro level. However, at the micro level, some of the major consequences faced by thenfarmers like local offices of the Governments in rural area are not well-equipped with up-to-date information. Awareness regarding these programmes should be done at the village level through local channels. So recent information can be reached to the farmers.

References:

1. Dewan M.L (2009) *Agriculture Rural Development in India (a Case Study on the Dignity of Labour)* Concept Publishing Company, New Delhi.
2. Bhagat B.T. (2004) *Bharatiya Sahakari Chalwaliche Shatak – Maharashtra (Marathi)* Sahakari Maharashtra.
3. <http://indianexpress.com/article/business/business-others/theres-less-of-krishi-in-bharat-now/>



ON STORYTELLING: A SEMIOTIC ANALYSIS OF GIRISH KARNAD'S *NAGAMANDALA*

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All that is on the stage is a sign

(Veltrusky, "Man and Object in the Theatre")

The stage is a semiotic space where signs are set in motion to generate possible meanings in relation to the plot. Everything that is put up on stage has a signifying function or let's say that whatever is used on stage acquires a semiotic quality. The semiotic units are varied ranging from actors, props, costumes to lights and so on. Each of these units come together to bring alive the story of the play through their performance. It implies that every play has a story to tell or perform and so has Karnad's *Nagamandala*. Growing up in Sirsi, Karnad was exposed to different types of traditional theatres and was heavily influenced by Yakshagana performances and folk tales (Mukherjee 28). *Nagamandala* is also based on two folk tales-one where the Flames gather in a dilapidated temple and their gossip is overheard by a Man who stands in risk of losing his life unless he keeps awake whole night; and the other about Rani, her husband and her snake-lover.

According to Karnad folk tales can emerge in different forms and told in innumerable ways (Mukherjee 42). His *Nagamandala* emerges as an allegorical representation of the act of storytelling. Storytelling, like drama, is also a performance that requires the skill of the storyteller and cooperation of the audience for a successful presentation. Stories are abstract entities that are brought to life through the human body that performs it. In dramatic performance the human bodies or the characters become signs on stage where each character signifies to one or more class of signified. Signs help in generating meaning out of the performance. For instance- the Flames here represent not merely fire or light but those typical gossip-loving Indian women (or maids) who gather around to exchange stories about their home and neighbourhood. Their coming together as enthusiastic audience to the Story reproduces the atmosphere of storytelling in traditional Indian households. The characters, thus, function on stage as "icon" wherein they acquire meaning beyond their stipulated roles in the play. Sebeok describes an icon as a sign that is made to "resemble, stimulate or reproduce its referent" in some way (10). In this way Karnad uses all his characters to reproduce a practice which is sadly fading away in the busy materialistic modern life. This paper would, therefore, make a semiotic reading of *Nagamandala* as a treatise on storytelling. Simultaneously it would also reveal Karnad's skill as a storyteller as to how he uses the characters to recreate a lost tradition.

The genre of storytelling, since time immemorial, has largely been the domain of women, especially old women. Until the emergence of the written culture, storytelling had been part of only the oral tradition²⁷. The oral culture rendered it the quality of liveliness and spontaneity. A 1999 survey on storytelling in India by Lee-Ellen Marvin revealed that the availability of story books and television changed the means of entertainment for the children. Story-reading became more popular than story-telling. Nonetheless it wasn't a completely lost tradition since stories were still told to young children to boost their moral conduct

²⁷ Here it means that stories were circulated only through the oral mode.

(macdonald 102-5). But storytelling has always been a community affair than the solitariness of reading story books. In the oral culture stories were preserved by passing it from one teller to another; its survival depended on its circulation. In *Nagamandala* Karnad creates this community set up very vividly, by gathering his characters in a ruined temple, where not only stories survive but they become source of survival for others as well. Through the multilayered structure of his play Karnad intertwines one story with another building up the atmosphere where stories connect people. For instance- the play begins with the Man sharing his story with the audience, he then happens to overhear the stories of the Flames and then they together listen to the narrative told by the Story. In this way strangers become familiar and storytelling becomes a community affair²⁸. The characters on stage, therefore, are not merely actors playing the given roles but are signs signifying to the traditional ambience of storytelling in past times. Their exchange brings to life the stories that would have lost their existence unless shared. For example-

NEW FLAME: Let me explain: My mistress, the old woman, knows a story and a song. But all these years she has kept them to herself, never told the story, nor sung the song. So the story and the song were being choked, imprisoned inside her. (Prologue 4)

It clearly signifies that stories are meant to be retold because the oral tradition has no other means of preserving the stories than retelling them. It can be seen as a limitation of the oral text as sometimes stories die along with its owner and therefore lost forever. As such the act of storytelling relies on its audience for approval and transmission:

STORY: You can't just listen to the story and leave it at that. You must tell it again to someone else. (Prologue 5)

Stories are born out of encounters between different people and culture and they survive when retold. However, the process of retelling isn't a simple exercise because at times stories undergo change when retold.

Edward Said argues in his 1982 essay "Travelling Theory" that theories develop out of certain historical and social issues but when they travel from their point of origin to the new location, they undergo change and transform themselves according to their present location (226-27). Similarly stories also change when they travel from one teller to another. Factors might be varied but it changes mostly in relation to its listener. For instance, Marvin records that stories were sometimes edited to suit the age of the listener (103). In the play *Nagamandala*, Rani's story changes twice- initially Story ends her tale with Rani recognised as the goddess and Appanna her forever slave. But the Man doesn't appreciate it as it provides no clue about the plight of Kurudevva, Kappanna or Naga. So on his insistence Story reframes the end where Naga dies in Rani's tresses. This time the Flames weren't satisfied and wanted a happy ending. On their demand the Man reframes the end where Naga is instead saved and hidden in Rani's tresses. As the story travels, the end narrated by the Story (teller) is reinterpreted by the Man (new teller) on behalf of the Flames (listener/audience). It therefore implies that the act of retelling also means reinterpreting. The interference of audience gives rise to multiple interpretations and the play vibrates with all sorts of possible meanings. It is the authority of the teller and the demand of the audience that necessitates the change calling immediately to our attention the role of the audience in performance²⁹. In an interview Karnad says that theatrical communication begins and ends with the spectator (Mukherjee 40). Every story needs an audience to watch/listen and appreciate it without which the performance remains incomplete. Therefore the storyteller has to be always aware of the taste of its audience and the beginning of the play suggests that Karnad is a well-informed storyteller³⁰. A storyteller's

²⁸ Not necessarily always a public gathering but at the domestic level too.

²⁹ My research isn't built around any particular performance; rather it looks at all the possible performances suggested by the text.

³⁰ Telling the story through his characters in the play.

basic skill is his ability to hold his audience's attention throughout the story. But the Man in the play is a poor playwright who has failed to do so and earned in return his audience's curse. Apparently it is the individual situation of the Man in the play but if studied in depth the Man is only a symbol, a sign signifying to the plight of all those playwrights and storytellers who fail to entertain their audience. These characters are, therefore, not to be seen as individual characters but as signs: each representing their signified class.

While the Man signifies the class of playwrights the Story signifies the class of storytellers, particularly women. Storytelling in India has mostly been the domain of women³¹, especially grandmothers. The structure of Indian joint families granted grandmothers the responsibility of storytelling, not only because they had leisure time but also as they had more experience. Marvin's study shows that in Indian middle-class families, women were considered specialised as storytellers. But among them grandmothers had more privilege because they were the senior most, and experienced, women in the family and this gave them the authority to take up the role of storytellers. In middle class families stories were also directed at boosting the moral character of the child. Since women with more experience had larger stocks of myriad stories, so grandmothers were better suited to this endeavour (104-5). Karnad represents this aspect very artistically by transforming the 'story' and 'song' into a woman and her saree- just as a saree adds beauty to a woman, so does a song to a story. Although the Flames do not have corporeal body but through their female voices they signify those groups of women who gather, in their leisure hours, to gossip about their neighbourhood and thereby share their individual stories. Women are mostly recognised as good conversationalists and with more knowledge they become excellent storytellers as well. The elderly woman's confidence is well depicted in Kurudevva's suggestion to Rani (about winning her husband's love through the magical root paste) as she shares her personal story with Rani. In writing the play Karnad has been very observant to include all these nuances of the culture of storytelling in India. He learnt a lot about it by studying folk tales and hearing from A.K Ramanujan, and contributed by enhancing the "theatrical appeal and dialectical possibilities" (Mukherjee 47)

Another aspect of storytelling is its selective nature. Stories can be real or fictitious depending on the events chosen by the storyteller. For instance- while taking the snake-ordeal, to prove her innocence before the village elders, Rani told the truth but only partially. She admitted that other than Appanna and the King Cobra, she had neither touched nor allowed to be touched by any other male. While this was certainly the truth, it was not the complete story because Rani didn't say about her encounter with Naga every night, even if she had insights about that. It is interesting to see how the choice of events decides the fate of Rani. The half-truth that she shares raises her to the pedestal of a goddess while the complete story could have brought her down to the status of a whore. After hearing the folk tales Karnad was intrigued by the thought as to how would a woman, in a conservative Indian society, face the fact that the man who visits her at night is not her husband. Would she commit a deliberate adultery or what kind of truth and half-truths would she say to avoid facing the unpleasant reality? For Karnad storytelling provides the "mode for expressing the yearning for love of the women often deserted or neglected in the patriarchal social system" (Mukherjee 42-43). Probably through the end, as reframed by the Man, Karnad has tried to justify the desires of woman as naturally as that of man³². It is this intermixing of old forms and contemporary ideas that shapes his new hybrid theatre.

However, the representation of this old form is not achieved exclusively by the characterisation of the play. The choice of location or the background against which the play is set is equally significant. Susan Bennett in her book *Theatre Audience: A theory of production and reception* suggests that the geographical location is always important for a play because the location needs to attract the audience (120). Karnad's plays usually have an unusual stage setting that relates to some remote locations. *Nagamandala* also opens in such a

³¹ It's mostly women but examples of men as storytellers are also found; though rare.

³² Appanna's relation with the harlot.

location of an old ruined temple which attracts the audience's attention and also makes them curious. Folk tales and myths are best represented in mysterious atmospheres. For a successful performance it is very important to gain the audience's faith in the story. To generate the willing suspension of disbelief for accepting the mythical character of Naga or the talking Flames, for a modern audience, the location of a dilapidated temple in a village at the hour of midnight is perfectly justifiable. The distant location would take the audience to a different time and assist in familiarising with an otherwise unfamiliar story³³. Locations are, therefore, equally important signs in reproducing the art of storytelling. Besides complementing the mysterious stories, the ruined temple also complements to the ruined state of the practice of storytelling. The ruined temple symbolises the presence yet neglected state of the art of storytelling. In this way the theatrical space acts as a semiotic field where all that is put up on stage turns into a sign of something.

Nagamandala is one of the notable works of Karnad that establishes him as an excellent playwright and storyteller. In his plays the worlds of reality and fantasy (or myth) blend together so well that an altogether new world is born. The play-within-a-play technique makes his plays multidimensional to allow the readers and audiences to address it with different viewpoints. Of all possibilities *Nagamandala* is also a play about 'storytelling', a practice that is losing its relevance in the digital world. Karnad's attempt introduces the modern audience to the art form that had been a source of entertainment until mass media crept into their lives. Besides entertainment storytelling also looked at developing the moral character of children; it brought people of myriad backgrounds together on the same plane; it provided for encounters between different cultures and traditions and above all it preserved the heritage of India's oral culture. It would be wrong to say that storytelling is no longer practised but it has definitely reduced to an occasional event. Storytelling will survive as long as people communicate with each other. The forms might keep altering, from oral to written to theatrical, but stories will always survive.

Works cited:

1. Bennett, Susan. *Theatre Audiences: A theory of production and reception*. London: Routledge, 1997. Print.
2. Routledge, 1997. Print.
3. Karnad, Girish. *Naga-Mandala*. New Delhi: Oxford University Press, 1990. Print.
4. Marvin, Lee-Ellen. "Storytelling in Middle-Class Indian Families" in *Traditional Storytelling Today*, ed. Margaret Read macdonald. London: Routledge, 1999. Print.
5. Mukherjee, Tutun, ed. *Girish Karnad's Plays: Performance and Critical Perspectives*. Delhi: Pencraft International, 2008. Print.
6. Said, Edward. "Travelling Theory" in *The World, the Text, and the Critic*. Cambridge: Harvard University Press, 1983. Print.
7. Sebeok, Thomas A. *Signs: An Introduction to Semiotics*. London: University of Toronto Press, 1994. Print.
8. Veltrusky, Jiri. "Man and Object in the Theatre" in *A Prague School Reader on Esthetics, Literary Structure and Style*, ed. Paul L. Garvin. Washington D.C: Georgetown UP, 1964. Print.



³³Mythical characters like Naga are not recognisable to the modern day audience.

A COMPARATIVE STUDY OF THE EXTENT OF ORGANIZATIONAL COMMITMENT AMONG HIGHER EDUCATIONAL FACULTIES OF PUBLIC AND PRIVATE SECTORS

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Abstract

The plight of higher education in India is despicable. It is because a number of private players of the nature of wily politicians and big name businessmen have taken a deep plunge in the pool of pedagogy and education and the upshot is gross putrefaction of the health of the higher education sector of our country which makes itself apparent in the form of equally grotesque and sordid figures on the various economic barometers. Although the private players are keeping up a splendid show when it comes to elementary education till intermediate levels than their public sector counterparts, the story runs the other way round for them when it comes to higher education with the result that higher educational public sector services being at par with the private ones in the same arena. The service providers i.e. the teachers working in these private institutions are of the nature of either fresh graduates or ex-vice chancellors, and so the strong middle cadre is grossly missing, with the result of total dismantlement of the work set up of these institutions. The young newbie are exploited as stooges by the owner of these private institutions with the result of tremendous workload subsequently leading to stubbed instances of organizational commitment and conversely higher instances of absenteeism and turnover, not to mention the filthy economic growth and scorings, since it is the teachers who are the career shapers of a country. Therefore the present paper addresses these pertinent issues and gauges the level of organizational commitment among the higher educational faculties of public and private sectors alike. The present study is thoroughly empirical in character and spirit.

General terms: newbie, stooges, economic barometers, empirical.

Keywords: Affective commitment, continuous commitment, normative commitment, absenteeism, turnover, organizational citizenship, higher educational faculties.

Introduction

The education system of India is growing at never before gargantuan rate. There is a recent upsurge of private colleges as well as universities of the character of deemed in the country. The commencement of higher education in India could be thought of with the inception of the three universities at Bombay, Calcutta and Madras, with the later development of universities and colleges all round the country catering to all the possible disciplines of studies. Studies from India suggest that private schools impart better quality education than government schools. But the condition is vice-versa when one comes across the situation of higher educational institutions in the country; for the research bears testimony to the fact that government institutions are at par with private ones. In the present study the levels of organizational commitment are studied among the faculties of public and private sector higher educational institutions and the deductions henceforth arrived at are reported. A standardized questionnaire framed by Mowday, Porter and Steers (1972) was administrated to the teachers of both sectors, and accordingly the results are drawn.

Review of literature:

1. Condition of higher education in India

Murthy¹ (1977) in his study reported better performance of private school teachers than their government counterparts. He opined that convent school students scored significantly higher grades than the government school ones. Findings suggest students of private schools outperform their government school counterparts and attribute the same to better work put in by the teachers of the former. Surprisingly, the situation runs the other way round for higher educational institutions in India where the system is putrefied by the private sectors. Sharma² (2014) states, "There seems to exist no comparative study of the two types of institution at the university/college level". Hence the research in this area demands a clarion call. Quality of education delivered by the privately funded and managed higher education institutions is relatively poor compared to the government-run and aided colleges and public universities. There are only a few reputed private institutions which are able to command student preference over public institutions. The major reason for this is that the employers in India at large accept the students of public universities. So the students opt for private universities and affiliated colleges only when they don't get admission in public ones, as a matter of compulsion, to merely drag on their career path and somehow earn their bread and butter. This leads to the conclusion that a relatively small class of A-list crème de la crème students could make it to public universities while the major chunk annihilate in the private colleges. Consequently there is inundation of students in private institutions, increasing the workload on teachers of this sector and upsetting the whole system and providing stress to the internal environment of the sector (administrators and faculty members at large). The condition eventually in the private sector is despicable and apparently glaring, for while some institutes have shabby and sleazy infrastructure and are indecent to work at, providing almost negligible facilities to its faculty members as well as other employees, others play some really subtle tricks, for instance, they have quite impressive outfits, and employ ex-vice chancellors as directors and very senior faculty members and pay them hefty amounts while the actual faculty members on which the burden of work actually lies are not only underpaid but are also made to work like their stooges and hence undergo immense workplace stress. Today the role of private sector in higher educational scenario in India is crucial. In this context Sharma² (2014) remarks, "Since there is an overflowing demand for technical and professional disciplines, including both conventional such as engineering, medicine, law, teacher education, etc, and emerging ones such as management, computer application, hospitality, media, architecture, pharmacy and dentistry, the private sector has patronized mainly these streams of higher education. While this is understandable what has contaminated the participation of private sector in higher education is the significant presence of wily politicians, businessmen, real estate dealers, etc among the owners of such institutions." These wily politicians and big name people exploit the teachers of their institutes as stooges, and not to mention the heavy workload they experience, but also the crappy pays and bleak career prospects, considering the amateurish and makeshift private colleges they are working in, aggravate their career concerns, also the poor interpersonal relations in the form of parochially competent peers who incessantly indulge in backbiting, leg pulling and flimsy peer support from smug heads of the department (HODs) impart even greater stress to the teachers, subsequently contributing to stubbed instances of organizational commitment. Bedi³ (2014) opines, "The near exponential growth of numbers has eroded quality because of acute shortage of intellectual resources such as faculty, laboratory technicians and equipment, facilities. Many private colleges have created good physical infrastructure in buildings, offices, laboratories and hostels but they have an acute shortage of intellectual, academic and learning resources, such as laboratory facilities and the faculty. This mismatch of physical and intellectual resources is a cause for serious concern. Acute shortage of faculty is due to an unreasonable gap in the compensation packages the faculty receives as compared to what their counterparts get in industry. The age profile of the faculty is also not conducive to quality. One comes across either fresh graduate in engineering from these colleges or retired senior professors. A balanced

age structure with strong middle cadre is missing.”This results in topsy-turvy situation in the private sector higher educational institutions leading to lesser degree of organizational commitment for the relatively younger faculty members who are still not mature enough to handle the work commitments and on the other side the complacent senior faculty members whose innings are apparently over, and are therefore just dragging with their everyday monotonous work life, in some way. Bedi³ (2014), suggests that working facilities and workload of teachers should be as per the norms. He further laments on the present despicable state of educational system of India and elucidates, “Faculty constitutes the single most critical factor in pursuit of academic excellence. Salary differentials of unreasonable magnitude, low status of teaching and research, low investment in R&D, and non-challenging academic ambience in colleges, are, perhaps responsible for the talent not interested in teaching and research.”The education system of our country has become very colossal and advanced. It is not only the public sector that is playing the part, but recently the private sector has also come up. One author remarks that the nature of education system in India has become very intricate with its development in comparison to earlier times,⁴ this is particularly apparent in the higher education arena. Another state of affairs that recent years have witnessed is huge transition in the field of tertiary education in India.⁵ (1979).

Year	No. of Universities
1990-91	184
2010-11	556

Year	No. of students' enrollments
1990-91	4.9 million
2008-09	14.6 million

Table 1.1: Ernst and Young, 2011.

It is apparent from the figures above that the number of student enrollment has increased by a stupendous three times. So in a piecemeal fashion, India has emerged as a country with the third largest education system, standing next only to USA and China. Sharma⁵ (1979) opines, “So spectacular has been their growth (private sector) that it has literally transformed the educational landscape of the country from the one dotted by sparsely located colleges to the one booming with private campuses” The globalization of higher education is yet another growing trend. Many Indian students have been going abroad to get foreign degrees. Also many of the foreign institutions have opened their campuses in India. Yet another emerging feature of the current scenario is the sudden and successful rise of technical and professional institutions. For instance, the number of engineering institutions in the country has soared from a mere 38 in 1947 with the total 2500 seats to as many as 1500 with 583 lac seats in 2007 (Chappla⁶, 2013) More recently, there is an upsurge of unaided private institutions in the country owned by various business entities. A large number of private universities have as well come up accounting for 22.63% of the total universities during 2005-07 (Chaddha⁷, 2014.)The rise of private enterprise in higher education has undoubtedly helped address the need for expansion, as gross enrollment ratio (GER) has gone up from 6% in 1996 to 8% in 2010 (Sharma², 2014) The upsurge of private sector has aggravated the problem of equity and quality. The problem of unequal assess is evident from the glaring disparities between rural and urban areas, and across the diverse social strata, apart from other groups (Sharma⁵, 1979). A number of factors are responsible for the despicable plight of higher education in our country. To name a few: poor, inadequate and deficient infrastructure and equipments, lack of regular and qualified faculty, outdated, inflexible and irrelevant curriculum, monologues and boring pedagogy, deficient testing procedures, lack of quality research and innovation, bureaucratic controls and lack of professional and financial autonomy, lack of internal quality control and assessment, are the features that more veritably plague

the private sector than the public ones, therefore the blame for deteriorating higher education in the country lies on private sectors. It is not only India where such conditions are rampant, but largely and mostly all developing countries are experiencing the same state of affairs. In Bangladesh, for instance, some universities are allegedly selling certificate, easy to get degrees, substandard teaching, etc.⁸ (2012). In Africa, such universities are labeled as “briefcase universities”, providing degrees with no real value, while being a costly affair. In our country these infamous private institutions are notoriously called as “teaching shops” motivated more by “profit concerns” rather than “quality pedagogy.” Happenstance for the nation, myriad of such private institutions have either shut down or are on the verge of closure. (Times of India, May 28, 2012.)

2. Organizational commitment:

In the present study an effort is made to study the degree of organizational commitment between the teachers of public and private sectors. So now it is pertinent to unearth the nuances of organizational commitment. Organizational Commitment in modest terms could best be defined as the degree to which an employee identifies with a particular organization and its goals and wishes to maintain membership in the organization. Meyer and Allen⁹ (1991) suggest, “Organizational commitment is another aspect of work attitudes. Commitment shows the relationship between the individual and the organization. The stronger such relationship is, the higher the organizational commitment will be. It indicates a person’s feelings with regard to continuing his or her association with the organization, acceptance of the values and goals of the organization, and willingness to help the organization achieve its goals.” They have put forward a three factor model of organizational commitment constituting the affective commitment, continuous commitment and normative commitment. More recently, a bunch of scholars; Keiningham et al¹⁰ (2015) have improvised on the extant three factor model and proposed a five factor theory, introducing two extra genres of commitment, comprising of habitual commitment and forced commitment, which are contradictory in spirit. Although the theory is apt for consumption settings, but recently its presence is apparent in other areas as well. They remark that people get habituated to a job- the routine, the processes, the cognitive schemas associated with a job could make people develop a latent commitment towards their jobs- just as it might occur in consumption setting. But undoubtedly the most exhaustive study in the field of organizational commitment is done by Mowday, Steers and Porter (1972). Porter et al¹¹ (1979) define organizational commitment as an individual’s identification and involvement with an organization. Also factors such as age and organizational tenure are positively correlated with commitment, whereas level of education is negatively related (Angle and Perry¹² 1981, Mathieu and Zajac¹³, 1990.). It is postulated by one author about Meyer and Allen (1991) revelations regarding the mindsets of organizational commitment. Accordingly there are three mindsets which can characterize an employee’s commitment to the organization and based on this theory postulated a three component model, comprising of affective commitment, continuance commitment and normative commitment.¹⁴ (1991) While affective commitment includes the emotional attachment of the employee with the organization, continuance commitment as the name itself suggests, is the benefit the employee sees in continuing with the organization or as Becker¹⁵ (1960) suggests it is that the employee perceives the high cost of losing organizational membership, including economic costs (such as pension accruals) and social costs (friendship ties with coworkers) that would be incurred. Normative commitment is the degree of obligation the employee feels to continue in the present organization. The reasons for it could be numerous. For instance, the organization might have invested in the employee, feels he ought to stay in the organization to repay its debt.

Absenteeism and Turnover:

Absenteeism is the frequency of leave days an employee takes from her organization. The excuse for leave days could be either genuine or spurious. It is the spurious excuse that is of grave concern for the

organizations because that entails miniscule job satisfaction and at the same time negligent organizational commitment. Turnover is the rate at which the employees quit an organization. This could be the direct upshot of very little job satisfaction; however other factors could also result in its overwhelming rates. Porter et al¹¹ (1979) opine that organizational commitment is the strongest attitudinal determinant of voluntary turnover. Thus the factor of organizational commitment plays a significant role in the higher instances of presenteeism¹⁶ (2000) and conversely lower absenteeism and retention rates.

Research methodology

A fifteen itemed questionnaire measuring the level of organizational commitment developed by Mowday, Porter and Steers¹⁷ is employed. For parsimonious reasons and to annul the “survey – fatigue” syndrome only the positive statements of Mowday et al were included while the negatively phrased items were eliminated. Consequently the number of items in the organizational commitment scale is reduced to just nine. The items are graded on a seven point scale beginning from strongly disagree, slightly disagree, moderately disagree, neither agree nor disagree, moderately agree, slightly agree, strongly agree.

Hypothesis : The hypothesis proposed is as follows:

H₀: There is no significant difference in the level of organizational commitment among teachers of public and private colleges.

H₁: There is significant difference in the level of organizational commitment among teachers of public and private colleges.

Student’s t-test is used to find out differences in level of organizational commitment.

Analysis:

The table below discusses the mean and standard deviation of the construct organizational commitment (Moday et al; 1972).

1.2: Mean and standard deviation for organizational commitment.

Mean	St. Deviation	N
36.3767	11.0522	300

As per the revelations of table 1.3 below, it is opined that the mean value of private sector teachers is 32.41 while that of public sector teachers is 40.34 , and so the t-value 6.608 is greater than the table value of 1.645 leads to the rejection of null hypothesis and the consequent acceptance of the alternate one and eventually the conclusion that there exists a significant difference between the level of organizational commitment among teachers of public and private sector educational institutions is rendered valid. Since the mean value of public sector teachers is greater than their private sector counterparts regarding this construct, so it could be concluded that public sector teachers experience greater degrees of organizational commitment than their private sector counterparts.

Table 1.3: Mean differences in organizational commitment between public and private higher educational faculties.

	sectors	No.	Mean	SD	SE	t	Df	Sig.(2-tailed)
	Public	150	40.34	13.14	1.07			
	Private	150	32.41	6.58	0.54			

*Significance level 0.05.

Interpretation:

There exists significant difference in the level of organizational commitment between the teachers of public and private sectors.

In a study conducted by Wright and Rorbaugh¹⁸ (2001), it is revealed that the affective component of organizational commitment, is an important and reliable predictor of absenteeism, turnover, productivity, and organizational citizenship behavior. So it could be safely concluded that since public sector teachers have greater degrees of organizational commitment, so they have lesser instances of absenteeism and turnover and hence greater organizational citizenship behavior.

Suggestions:

As previously mentioned, work stress is negatively correlated with organizational commitment. The Mowday and Porter (1972) inventory reveals higher instances of organizational commitment in public sector teachers than their private sector counterparts. It could also be deduced that since organizational commitment is a positive phenomenon while work stress is a negative one, therefore teachers of private sector possessing lesser instances of organizational commitment could conversely be proclaimed to undergo higher degrees of work stress, lesser job satisfaction and therefore higher instances of workplace absenteeism and turnover, compared to their government sector counterparts. The public sector teachers are therefore more motivated at their workplace; also they have higher degrees of job satisfaction and reduced intention to quit, (Wright and Rourbaugh, 2001)¹⁸. The aforementioned are correlates of organizational commitment. It is important to deliberate that while stress stalls organizational commitment, motivation encourages it. Therefore every possible endeavor should be made to encourage motivation; this is possible by giving positive reinforcement to the performance of the teachers, developing a more rigorous work culture which is more conducive to rewarding the hard work the teachers put in. Keeping in mind the expectancy theory, and equity theory of motivation, we realize that it is important for the administration to attach a level of reward for the work the teachers put in, and recognize the importance the teachers attach to that piece of reward, in brief the reward should be a coveted one, for instance higher salary or promotion, or perks and perquisites and scope for pursuing their professional interests in some reputed varsity abroad. If such be the rewards then it will give some meaning to the job of the teachers of the higher educational private sector. Also certain degree of job security should also be provided to the teachers of the private sectors, the newbie like assistant professors should be trained in skills and abilities required to deal with a rapidly changing environment, for the strong middle cadre in the form of associate professor, the threats to job security are in the form of the newer status requiring longer span to master, old knowledge may become obsolete, and then energy levels may plateau. So the same could be insured by providing training in the latest developments in the concerned subjects and the new trends and methods that have evolved with time. Job satisfaction could be increased by job enrichment and thereby increasing the skill variety of the job, also by increasing the task significance of the job; or the cognition of how much the job of teaching has an impact on the lives of students, verily positively, and by increasing job autonomy or the extent to which the job of teaching, in the present case allows the teacher to exercise choice and discretion at their work. Also frequent feedbacks about the performance of teachers provide information on how well the teacher is performing in the classroom, could also have the effect of increasing the job satisfaction he elicits from his work. (Hackman and Oldham, 1976)¹⁹. These measures would eventually reduce the intention to quit the organization of the private sector teachers and thereby increase the levels of organizational commitment.

References:

1. Murthy, R.S. (1977). Student Modernity. M.Phil Dissertation (unpublished), Punjab University: Chandigarh, 12-25.
2. Sharma, S.L. (2014). Quality of Education: Public and Private. In S.L.Sharms, B.S. Ghuman,S. Prakash, Higher Education in India. (pp: 21-34). New Delhi: Rawat Publications.
3. Bedi, S.C. (2014).Technical Education in India. In S.L. Sharma, B.S. Ghuman, S.Prakash, Higher Education in India (pp:129-138).New Delhi: Rawat Publications.
4. Singh, R. (2013). Equity concerns in Enrollment. Education Times: The Times of India, New Delhi, May 13.

5. Sharma, S.L., (1979). Modernizing Effects of University Education. New Delhi: Allied Publishers, 2-8.
- Sharma, S.L., (2004). Rethinking Quality Parameters in Higher Education. University News, 42, 1-5.
6. Chappla, H. (2013). Greek Tragedy: Plot Weakens. Times of India. August 2013.
7. Chadda, G.K. (2014). Quality of India's Workforce: Education holds the key. In S.L.Sharma, B.S. Ghuman, S. Prakash, Higher Education in India. (pp:103-128).New Delhi: Rawat Publications.
8. Mazumdar, Q.H. (2012). Private Higher Education in Bangladesh: Quality or Profitability? Daily News, Dhaka, 12 January.
9. Meyer, J.P., & Allen, N.J. (1991). A three-component conceptualization of organizational commitment. *Human Resource Management Review*, 1, 61-89.
10. Keiningham, T.L.; Fremer, C.M.; Aksoy, L; Buoye, A; & Mittal, V. (2015). A Five Component Customer Commitment Model: Implications for Repurchase Intentions in Goods and Services Industries. *Journal of Service Research*. 18(4),1-18.
11. Mowday, R, Steers, R.M., &Porter, L.W.(1979). The measurement of organizational commitment. *Journal of Vocational Behavior*,14(2),224-247.
12. Angle, H.L., &Perry, J.L., (1981). An empirical assessment of organizational commitment and organizational effectiveness. *Administrative science quarterly*, 26, 1-14.
13. Mathieu,I,& Zajac, D. (1996). A review and meta-analysis of the antecedants, correlates and consequences of organizational commitment: some methodological considerations. *Journal of Applied Psychology*,69,372-378.
14. Cooper, C.L., Robertson, I. T., &Arnold, J. (1991/1996). *Work Psychology:vol.1, Understanding human behavior in the workplace*. Delhi, India: Macmillan publications.
15. Becker, H.S., (1960). Notes on the concept of commitment. *American Journal of Spociology*, 66,32-40.
16. Chary, S.N. (2000). *Production and Operations Management*. New Delhi: Mc Graw Hill Publications, 12-28.
17. Bateman, T, & Strassers, S. (1984). A longitudinal analysis of antecedents of organizational commitment. *Academy of Management Journal*,27,95-112.
18. Wright,B.E., & Rohrbaugh, J. (2001). Retrieved October 11, 2014, from Antecedents and Correlates of Organizational Commitment.
19. Hackman, J.R. & Oldham, G.R. (1976). Motivation through the design of work. *Organizational Behavior and Human Performance*,16,250-279.

Appendix:

Mowday and Steers' Organizational Commitment scale

1. I am willing to put in a great deal of effort beyond than normally expected in order to help this organization be successful.
 1. Strongly disagree
 2. Moderately disagree
 3. Slightly disagree
 4. Neither agree nor disagree
 5. Slightly agree
 6. Moderately agree
 7. Strongly agree
2. I talk up this organization to my friends as a great organization to work for.
 1. Strongly disagree
 2. Moderately disagree
 3. Slightly disagree
 4. Neither agree nor disagree
 5. Slightly agree
 6. Moderately agree
 7. Strongly agree

3. I would accept almost any type of job assignment in order to keep working for this organization.
 1. Strongly disagree
 2. Moderately disagree
 3. Slightly disagree
 4. Neither agree nor disagree
 5. Slightly agree
 6. Moderately agree
 7. Strongly agree
4. I find that my values and the organization's values are very similar.
 1. Strongly disagree
 2. Moderately disagree
 3. Slightly disagree
 4. Neither agree nor disagree
 5. Slightly agree
 6. Moderately agree
 7. Strongly agree
5. I am proud to tell others that I am part of this organization.
 1. Strongly disagree
 2. Moderately disagree
 3. Slightly disagree
 4. Neither agree nor disagree
 5. Slightly agree
 6. Moderately agree
 7. Strongly agree
6. This organization really inspires the very best in me in the way of job performance.
 1. Strongly disagree
 2. Moderately disagree
 3. Slightly disagree
 4. Neither agree nor disagree
 5. Slightly agree
 6. Moderately agree
 7. Strongly agree
7. I am extremely glad that I chose this organization to work for over others I was considering at the time I joined.
 1. Strongly disagree
 2. Moderately disagree
 3. Slightly disagree

- 4. Neither agree nor disagree
 - 5. Slightly agree
 - 6. Moderately agree
 - 7. Strongly agree
8. I really care about the fate of this organization.
- 1. Strongly disagree
 - 2. Moderately disagree
 - 3. Slightly disagree
 - 4. Neither agree nor disagree
 - 5. Slightly agree
 - 6. Moderately agree
 - 7. Strongly agree
9. For me this is the best of all possible organizations for which to work.
- 1. Strongly disagree
 - 2. Moderately disagree
 - 3. Slightly disagree
 - 4. Neither agree nor disagree
 - 5. Slightly agree
 - 6. Moderately agree
 - 7. Strongly agree



IDENTIFICATION AND CHARACTERIZATION OF EXTRA CELLULAR RED PIGMENT PRODUCING *NEISSERIASPPIS* ISOLATED FROM SOIL SAMPLE.

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Abstract

The novel red pigmented *Neisseria spp* were isolated from the soil sample on Cysteine Trypticase agar medium. The red pigment production from *Neisseriaspp* were carried out by submerged fermentation in which rice bran were used as a substrate. The extraction of red pigment was carried out by acidified methanol and were dried and used in powder form. The red pigment shows antibacterial activity against some fungi such as *Candida spp*, *Aspergillus spp* and *Trichoderma spp* and some bacteria such as *Escherichiacoli* and *pseudomonasaurogenosa*. The extracted red pigment were applied for coloring of the cloths.

Keywords:

Neisseria spp, red pigment, antifungal and antibacterial activity, clothing coloring.

Introduction:

The new found awareness in human safety and environmental conservation has fresh enthusiasm for natural sources of colors. Natural colorants or dyes derived from flora and fauna are believed to safe and non-toxic, non-carcinogenic and biodegradable in nature. The deep red anthraquinones produced by plants and animals are used as a pigments in paints, crimson ink, cosmetics and food colors as the present trends throughout the world is shifting towards the use of ecofriendly and biodegradable commodities, the demand for natural colorants is increasing day by day to stop natural pigments are sourced from ores, insects, plants, and microbes. Among microbes bacteria have high potential to produce diverse colored pigments. For the production of pigments various growth medium can be used, but they has high cost i.e. why we have to use agricultural waste for the production of pigments which can decrease fermentation cost and increases production of red pigment.

Materials and Methods

a) Sample collection and Isolation of red pigmented bacteria Soil samples were collected from Kopargaon (M.S) fish market. samples were collected with sterile spatula about 10g of soil were obtained from a depth of 4-5 cm. Bacteria present in the soil were isolated by serial dilution and spread plate method on cysteine Trypticase agar medium plates and incubated for an 24 hrs. at 25°C.

b) Identification of the red pigment producing bacteria

Isolated Red pigment producing bacterium was plated on cysteine Trypticase agar medium plates and allowed to grow for 7 days and purified them as per Bergeys Manual of Determinative Bacteriology (Holt et al., 1994).

c) Red Pigment production and extraction

For the production of red pigment, isolated strain were grown in 250 ml Erlenmeyer flasks containing rice bran as a substrate for Fermentation and was carried out at 25°C for 7-14 days under stationary condition. After 14 days bacteria organism was harvested by centrifuging at 6,000 rpm for 10 mins. The supernatant was discarded and the pellet was resuspended in acidified ethanol. The mixture was vortexed and the suspension was centrifuged at 6000 rpm for 10 mins the extracted pigment was dried and it was powdered.

Applications of *Neisseria* red pigment

- I. Antimicrobial activity of red pigment Well diffusion assay method was used for the detection of antimicrobial activity against different species of fungi such as *Candida spp*, *Aspergillus spp* and *Trichoderma spp*. Gram negative bacteria such as *Escherichiacoli*, *Pseudomonas spp*.
- II. Coloring of the cloth
- III. RESULTS : (a) Isolation and identification of red pigment bacteria



Plate I: isolation of red pigmented bacteria

Table I: Morphological study of red pigment bacteria.

Size (cm)	Shape	Color	Margin	Texture	Gram's nature	Motility
0.2	Circular	Pink	Entire	Mucoid	Gram negative cocci	Non-motile

Table II :Biochemical Tests:

Sr.no	Biochemical tests	Results
1	Lactose utilisation	-
2	Glucose utilisation	+
3	Xylose utilisation	+
4	Catalase test	+
5	Indoor and methyl red test	-
6	V-P and Citrate utilisation test	-

(b) Production and extraction of red pigment by submerged fermentation:

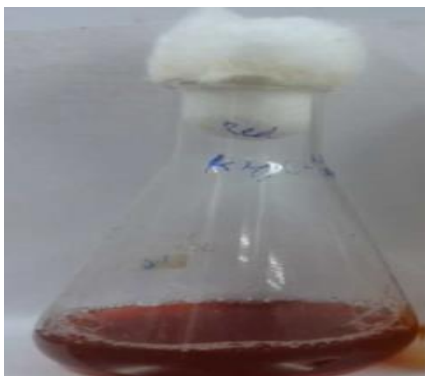


Figure I : Production and extraction of red pigment

Application:

Table Iii : Extracted red pigment shows antifungal and antibacterial activity.

Microbialspeciesname	zone of inhibition (cm)
<i>Candidaspecies</i>	0.4
<i>Aspergillusspecies</i>	0.6
<i>Trichodermaspecies</i>	0.4
<i>Escherichiacoli</i>	0.2
<i>Pseudomonasaurogenosa</i>	0.2

Extracted extracellular pigment was used for dyeing the cloth. These microbial pigments can also be used for coloring.



Figure II : Dyeing of clothes

Conclusion:

Colorants are used in a vast majority industries from clothing and textiles. Most of the synthetic colorants are harmful to the environment and are difficult to biodegrade. There is an increasing interest involving microorganisms as an alternate source of synthetic colorants. The pigments produced were extracted with methanol and were tested for the presence of microbes in the pigments. The extracted pigment was applied for dyeing fabric. The results showed that the fabric can uptake the dye after 24 hrs of soaking. In future the present study can be implemented to replace the synthetic colorants used in textile and dyeing industries. This aims to reduce the toxic effects of synthetic colorants in aquatic ecosystems.

Referencs:

1. Duffose, L., 2009. Pigments, Microbial, Encyclopedia Microbiol. 4: 457-471.
2. Fabre, C. E., G.Goma and Blanc, P. J. 1993. Production and Food Applications of the red pigments of *Monascus ruber*. J. Food Sci. 58.
3. E, Reichenbach H 1980 A simple test for flexirubin-type pigments. FEMS Microbiol Lett 8:87-91
4. Gillis M and Logan N A 2005 Genus IV. *Chromobacterium* Bergonzini 1881, 153AL. In: Brenner DJ, Krieg N, Staley JT, Garrity GM(eds.). *Bergey's manual of systematic bacteriology*, 2nd edn, vol 2, part C. Springer, New York, pp 824-827
5. Unagul P., Wongsap P., Kittakoop P., Intamas S., Srikiti-Kulchai P., Tanticharoen M. 2005 Production of red pigments by the insect pathogenic fungus *Cordyceps unilateralis* BCC 1869, J Ind Microbiol Biotechnol, 32: 135-140 3.
6. Stackebrandt, E., Koch, C., Gvozdiak, O. & Schumann, P. 1995 Taxonomic dissection of the genus *Micrococcus*: *Kocuria* gen. nov., *Nesterenkonia* gen. nov., *Kytococcus Dermacoccus* gen. nov., nov., and *Micrococcus* Cohn 1872 gen. emend, Int J Syst Bacteriol, 45,n 682 692. 4.
7. Ong, A. S. H., and Tee, E. S. 1992 Natural sources of Carotenoids from plants and oils, Methods Enzymol, 213, 142-167 5.
8. Pfander, H. 1992; Carotenoids: An Overview, Methods Enzymol, 213,3-13.
9. Moss, M. O., 2002. Bacterial pigments, Microbiologist. 10-12.



THEME OF SOCIO-POLITICAL CONSCIOUSNESS AND POLITICAL TURBULENCE IN NAYANTARASAHGAL'S A SITUATION IN NEW DELHI

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Abstract

This paper aims to attempt the analysis of Socio-Political Consciousness and Political turbulence in Nayantara Sahgal novel A Situation in New Delhi and which also deals with the problems of women in the patriarchal society. A Situation in New Delhi is indeed representative of the situation in the whole of India. Public spirited attitudes and socially conscious idealists have been pushed out by the unscrupulous, self-seeking and power-hungry politicians. Leaders of Shivraj's stature have been reduced to ciphers. The spirit of Shivraj, however, survives and continues to inspire the general public and sensitive individuals who are willing to serve the people with a sense of mission and in a spirit of dedication.

Introduction

A Situation in New Delhi, based on fact. Its main character, Shivraj (never actually met in the book), is clearly a roman-a-clef of India's first Prime Minister, Jawaharlal Nehru. Sahgal is, in fact, the niece of Nehru. The novel commences with an announcement of Shivraj's death in the English press. Michael Calvert an English biographer (based on Nehru's biographer, Michael Brecher) and former president of India is moved enough by his friend's death to return to India and write Shivraj's biography. It is at this point that the reader can make certain assumptions about what is to follow. We are either about to embark on a retrospective journey of Shivraj's India through Calvert's eyes, or we are to see modern India (circa 1964) in the aftermath of Shivraj. It is in fact the latter, though not in the way we first imagined.

Mrs. Sahgal's use of history in this novel is constructive and idealistic. "There were eras and characters in history in whom public and private issues met and became one." If Shivraj provided the example for this idea in the past, Devi and her two friends stand up to it in the present. As a political novelist, Nayantara Sahgal is concerned with examining her country in the light of India's political and social changes during the post-war period. In *A Situation in New Delhi*, she attempts to do this in 165 pages. This is ambitious, and not completely successful.

At this early point in the novel, the focus shifts from Calvert to Devi, Shivraj's sister. She is the Education Minister in the cabinet of the new Prime Minister (Nehru's sister, Vijaya Pandit, was a minister in the post-Nehru Shastri government). Devi feels politically impotent in the period following her brother's death and is seen to question the direction her country is taking. Her son, Rishad, a student at Delhi University, also seeing stagnation in the new government and its policies, is involved in a covert terrorist group whose aim is to undermine the social order through random acts of violence and terrorism. Their aim seems to be to create a

new society from the ashes of the old. Before this central plot gathers momentum there is a feeling of ennui from the character of Devi that permeates the novel until this point. It is not until the activities of Rishad become clearer that we begin to feel a sense of involvement with the characters and their actions. At one third of the way through a 165 page novel, this takes far too long.

The “situation” in New Delhi is essentially the student unrest at Delhi University. A small group of students, clandestinely led by Rishad, is involved in acts of violence against the University in general and the Vice-Chancellor of the University, Usman Ali, in particular. Usman recognizes that part of the reason for the student unrest at the university is that every job requires a degree-thus there is outrage if any student is expelled or denied a place in a university. More importantly, from Rishad’s point of view, there are gross injustices in India which are fuelled to a great extent by the caste system:

Within the socio-religious framework of India, strong divisive influences such as caste, the status of untouchability, and linguistic chauvinism operate. The influence of caste is a strong element in the novel. The character of Pinky, and the preparation for her arranged marriage, exemplifies, and to an extent satirizes, the caste system. Rishad suggests that, despite Shivraj, equality can never be attained in India while this system exists:

They would never banish the contrasts, never in ten thou-

Sand years build an equal society. How could they, when they

Were products of the rot themselves, of caste, of vested interests and stinking old ideas? (P-67)

Usman also recognizes the problems of a caste system. He points to Shivraj’s “pedigree”—Shivraj (and Nehru) was of the Brahman caste and Usman suggests that this background must have ultimately influenced every political act that Shivraj had undertaken. Although this novel was first published in 1977 and should be seen to an extent as a reflection of this time, problems of caste are still an issue in India. This brings in Nayantara Sahgal’s own life and circumstances as relevant while considering her novels. All her childhood was spent in Anand Bhavan at Allahabad with her parents, her maternal uncle, Jawaharlal Nehru and her cousin, Indira Gandhi. She grew up during the national movement. The family was so deeply involved in the freedom struggle that the political and the personal were inseparable in such an environment and it left a deep impression on her mind. Mrs. Sahgal clearly states that.

...the political situation is the background of all my books. I

notice that nobody else in India, at least writing in English, has used the technique of having a political situation—a specific

political situation as the backdrop of every single novel. There have been novels of political situation, isolated ones, but I have developed this as a genre, as a whole style of political novel, which uses political background but tells a story of human life against that ...”. (P-10)

Sahgal suggests that India is a country in constant revolution. She also suggests that there are “good” and “bad” revolutions. The passive revolution of Shivraj is contrasted with the violent revolution of Rishad. It is when **Usman** assumes the mantle of revolutionary leadership left vacant by Shivraj that there is an indication of hope for the future. Rishad’s tragic death suggests a movement that is doomed from the start—doomed because of its clandestine nature. The suggestion is that if a revolution is to be successful, it must be a popular groundswell led by a charismatic leader in the style of Gandhi or Nehru.

Sahgal shows us a country caught between two worlds—the ancient and the modern. Michael Calvert describes India as a “staggeringly old country” “old and settled and structured when Britons were painting

their bodies blue.” (107). The tribal fanaticism of Pinky’s arranged wedding is contrasted by the worldly cynicism of the guests at her engagement party. Rishad describes India as being caught between “ancient myth and industrial present.” The technological changes brought out by the policies of Nehru, and the assimilation of socialist principles cannot eradicate three thousand years of culture. This is why the revolution of Rishad must fail. Only that revolution which can work within the cultural framework of India and its social history can have any chance of leading its people to a greater equality. This is ultimately Sahgal’s message.

Hence, *Situation in New Delhi*, NayantaraSahgal affirms: “the whole novel began with my curiosity and interested in the Naxalites who were just then, quite a force. This is in 1971 I am speaking of when I made a visit to Calcutta.” The Naxalite movement and its influence on the students of the University of Delhi and other young people plays an important role together with the personal drama of Devi, the education minister, Usman Ali, the Vice-Chancellor, Michael Calvert, an English writer and Rishad, the brilliant young son of Devi. The political and personal themes interact on each other by bringing out the inter-relation between the characters and the situations.

Along with the activities of the Naxalite movement, Sahgal also introduces the problem of student unrest and indiscipline that sprung out of the unrealistic and non-feasible policies and programmes of government. Her repeated warnings in her previous novels about violence becoming a Leviathan to the administration through constant provocation are presented here objectively as episodes. This novel also forewarns that in order to tackle this violence, the authoritarian Government will seize the opportunity to lead the country towards dictatorship.

Dictatorship in India has tried to hide its malevolent appearance behind the façade of demarcate socialism, according to NayantaraSahgal. The political set up remains tense due to the mishandling of the high-ups in the Government after the death of Shivraj, the charismatic leader of the nation.

A follower of non-violence as a positive force in forestalling all political deadlocks, NayantaraSahgal has painted Shivraj on the model of her uncle, Pt. Nehru, the epitome of democratic thoughts. The novel is nothing if not idolatory resurrected Shivraj, the magician, the lion-hearted, worshipped by everybody, in every corner of the world, for whom an Englishman weeps unashamedly and a Muslim pledges devotion until death. A gigantic figure in the realm of politics, indeed! and yet, with all this adding up to a string of hyperbolic epithets, hardly a human character, suitable for dominating the reader’s mind.

The novelist herself, ironically, has become the victim of the personality cult and if she disapproves the votaries of political figures who are steeped in fanaticism, her description of Shivraj’s motive in politics and his relations with his sister, merit no better judgment. He wanted to live long enough “for free institutions to become part of the soil.” (93) How mature and experienced a politician was Shivraj? He trusted the present Mineral and Metals Minister, took him in as a compromise to avoid a rupture in the party and also “because he thought this one was all right, good material for training.” (93) And all this proved to be quite the wrong judgement because this is the very man, who according to Devi is her most potent enemy and biased against all democratic functioning.

Shivraj’s artificiality weakens the whole basis of characterization in this novel. Being too near the material and having too strong feelings about it, the novelist loses the objectivity, lucidity and clear-headedness that are so important in portraying characters as these. For they are public property and in a sense, prisoners of their own popular periods. Shivraj does not only show his inability to come out as a charismatic personality, his spiritual presence reduces Devi to no better a position than that of a Devadasi.

A woman like Devi, possessing all the romantic and practical qualities needed to project a fully developed personality does little better than attending various parties, attending to her cosmopolitan lovers and carrying on a shallow, bantering relationship with her only son Rishad. When Michael asks Devi “What outlet is there’ for instance, for Rishad?” (P-92). She replies “I don’t know. What would you do in his place?” (P-93)

The naivete of a mature woman like her is inexcusable to say the least, and she is the education minister. As an education minister, she forgets about the violent uprising of the students in the university in which the Vice-Chancellor nearly loses an eye and rises next morning complaining about the airconditioner, talking loftily about its symbolic significance. In normal circumstances, her phone would be ringing half the night and she would be on her toes, anxious and distressed, instead of asking her son over a leisurely breakfast: “can you tell me something about it?” (P-19)

At the crucial cabinet meeting over Usman Ali’s report, Devi, “the woman who knows how to exercise her mind and who has been trained by Shivraj with strong discipline” (P-129) utters three sentences with the wrong implication and “wanted to put her face down on her arms and weep.” (130) Why indeed? For the simple reason that she is a puppet who is beautiful enough to grace Shivraj’s gatherings and who takes pride in the fact that Shivraj “urged me, like a command, to ‘be happy’.” (P-87) She, on her own, does not contribute a single political thought, all are echoes of Shivraj. When Usman Ali refuses to accept the Vice-Chancellorship, her only plea, like a damsel in distress is “I need your help.” When Usman Ali urges her to leave her job and come out with him, indecision gnaws her mind:

But it is peculiar at forty-four to find yourself stripped of your fabulous past and your limitless future. Suddenly you’re nothing. Even what I have of my present in the way of a reputation-something that people recognize and respect will be blotted out the day I walk out of this house. (P-162)

In spite of all her tall talk, Devi is a typical, domesticated Indian woman, who needs a crutch always to lean on. When Shivraj dies, she needs Usman body And soul, who makes love to her as she lies on her bed, mourning for her husband Ishwar. As soon as Michael arrives, he realizes that need, especially after Rishad’s death, and he cannot get away, for “to remove himself from Devi when she needed him would be like tearing flesh.” (164). Even Ram Murthi runs her life because she recognizes her inexperience to shift the important from the trivial. After all, a minister is a responsible person, representing the interests of her/his countrymen in adult, intellectual gatherings but our Devi, poor thing, knows how to shimmer in white or talk tiredly of the glorious past and, of course, about Shivraj. Even in her love affairs she is neither honest nor mature, nor selfish. Ishwar’s bed is still warm when Usman Ali occupies it. When Michael asks her about her lovers, she gives an answer ambiguous enough “which didn’t quite seem to answer the question.” (50) She must have sensed the agony of Nadira, but imperiously brushes it aside and makes Usman Ali cheat Nadira by saying “I am not Devi’s lover”(136) and bringing in bitterness in his married life.

The novelist portrays the cabinet members in *ASituationinNewDelhi* like Summer Singh, who profess to be radical but are far removed from the millions of their country. They have nothing in common with the people even in general. Their political aspirations even do not leave alone a way of life. Devi feels isolated among these men of hackneyed phrases and empty talk. Michael Calvert who revisits India after Shivraj’s death points out his own suspicion regarding the true reasons of his death. He realizes that Shivraj had lost the will to live at the collapse of the value system, he had tried to stabilize into a way of life. But this radicalism of the politicians is alien and sterile. It yields no result. It spares even the young discontented because of its inaction. Rishad, Devi’s young son, joins a Naxalite movement in his desire for social change. There is nothing in common between the radical ministers of the cabinet and the huge masses of men living on the

fringe of society, not even realizing that they are human beings. Rishad's own sense of identification with them is not complete and the movement lapses into disorganized violence when Naren is no longer able to guide it.

The young people are involved in their own crusade. It is led by a desire to find purpose and meaning in life like Rishad. They are charmed by the instant success that violence has brought to them. They have their own code of behaviour for violence. It had be clean, cold and disciplined, unaided by motive, by drugs or mental aberration. They want to build an Indian utopia for the poor and downtrodden, without realization that violence even if it spelt action was in the long run self defeating, for the panic and fear it creates.

It is incapable of positive action. They also, like the ruling party, attempt a break with the past, a break which Usman thinks can not take place. The past could not be destroyed. Sooner or later it flows back. In spite of its accusers it does not prevent people from learning new things. The only kind of communism acceptable to him is a native Indian communism with its roots in the village and its inspiration drawn from the Indian heritage. Clinging to Shivraj or Nehru or Gandhi serves no honest purpose for a society in need of change. Usman feels the futility of this attitude. Indians found the Swaraj (attainment of freedom) as a terminus but this was not so. Revolutions did not end, they simply continued. They did not get congealed in their tracks or follow beaten tracks. The people had to be willing to change not once but time again. Usman tells Devi:

There never was another way. Besides, do you realize It's the only way most people in this country understand And will give their allegiance. (P-10)

For Nayantara Sahgal non-violence is a far more comprehensive attitude than merely a political weapon. It is an active and a powerful force. It may have been ineffectively used on occasion i.e., by a misuse of fast, and the like, but it remains a potent force if used in an organized way. Usman represents Sahgal's view. He embraces hostility in order to overcome it and:

He did not belong to the breed that needed power in Order to do things.....Usman hankered for a village past, for another form of government, one that didn't would build down, with maximum power to the small community. How else, in India, would exhausted resources, human and natural ever recover their strength(P-11)

In *ASituationinNewDelhi* the focus is on political attitudes. Here the conflict of goals which is a central conflict of contemporary society is presented in a different manners. There are two types of people-one group is ruthlessly driven by the progressive urge and the second group is possessed by humanistic considerations. The people in power treat even progress as a means and not an end. Usman and Rishad, men of different generations and different temperaments, are both men of imagination and involvement. Both are conscious of the need for change and the importance of human awareness and participation in this process through their choice of method is different. The whole issue has come to revolve on the values involved rather on emotions. The new ministers swear by progress and believe in class-division:

They were for the poor and the small against the rich and the Big and as proud of it as if they had discovered social justice all by themselves. (P-21)

But they have no ideas, no imagination and what is worse, no involvement. They are not even individuals but a group. Devi feels completely isolated from the new privilege around the cabinet table, but unable to break away from the party. Usman works openly against them and goes out to build a new future on trust and faith and active participation. He makes it a personal crusade. Rishad also feels concerned and joins the Naxalite movement in his desire to do something about the situation. He and his companions realize that it was difficult even to reach the workers. He also realizes that violence could shock and create panic and chaos.

Power could become an end in itself-an aimless terror. He is able to assess the situation but does not feel the full impact till Suvarnapriya, the girl he had thought of, provides a perspective to his views. She made him feel the need for involvement which brings home that revolution begins with oneself not with others.

In *A Situation in New Delhi* the novelist has attempted an analysis of the political situation in its totality. It goes further than any of her earlier novels in its concern for reasons and solutions. It has neither social nor personal problems. It is a novel full of political ideas. It is nowhere connected with novelist's own experience of politics; but the story is set in the mid-fifties. In fact the political happenings of two decades have been telescoped into less than half the time. The novelist shows her concern not with Devi or Rishad but with the meaning of revolution. She suggests ways for bringing true revolution.

Sahgal starts the novel with news of Shivraj's death and proceeds to deal with the political situation arising out of it. His own followers and partymen are eager to abandon his policies and commit themselves to the idea of progress. But these men are mediocres and unrealistic in their approach to the political problems. They are men who had never done anything with their hands. They are more concerned with the idea of progress than with progress itself. Devi, widowed sister of Shivraj, is included in the union cabinet as a mark of respect to the departed leader, though she finds herself isolated.

She feels that the political situation has fully changed. It has lost the sense of direction which was there in her brother's regime. She even finds changes in her own son, Rishad. She herself has a solution but she is helpless. Usman blames the Hindu apathy and resistance to fresh ideas while Rishad puts forth another view. He feels that the older generation is simply not interested in change. He joins the Naxalite movement to get the public ready for violence. He fails to realize that a revolution in order to be meaningful has to involve the people and begin with oneself. He also does not realize that violence like power can become an end in itself. This is what happens when their leader Naren while hiding gets badly wounded and his long illness makes his group to lose the sense of direction. It is Usman who has to see what has gone wrong. He realizes that revolutions never ends and they continue as usual:

Revolutions, if they had any meaning, meant putting oneself into the crucible of change. Revolutions went on. They did not get congealed in their tracks or follow beaten tracks. (P-25)

Usman has the courage to do what most people in power are unable to do. He resigns. But this does not mean that he accepts defeat, on the contrary he frees himself from the position of power to provide direction to the student's agitation. What had been true for him and his generation may not be true for the next. He understands the gravity of the situation and plans to act accordingly:

Individual penance for individual salvation, never Mind what happened to the word or your neighbor. It was not his particular way, but it was a way. That Was how progress and change might be brought about here, by touching the individual readiness for hardship, the personal desire for sacrifice.(P-26)

The character of Shivraj is meant to be based on the character of JawaharLal Nehru, the novelist's uncle. His idealism and his faith in human values, later his sense of frustration at the turn events had taken is true enough. But perhaps it is not possible to project a character faithfully once a given situation is changed to suit the demands of writing a novel. The similarity ends here and in any case Shivraj is already dead when the novel opens. The novelist presents many personalities of the cotemporary political world in their eccentricities and obsessions. She also portrays them in their preference for certain definite political stands.

It is a purely political novel where the different concepts of revolution are examined. NayantaraSahgal considers her novels to be political in content and in her view each of the novels more or less reflect the social

and political era we are passing through. The use of political genre is the main aspects of her novels, the other being the exploration of the religious theme and the problems of women in contemporary society.

Rishad in *A Situation in New Delhi* is unhappy and dissatisfied with the world around him but he is unable to pinpoint the cause for this. He begins to realize it only when he feels involved with Skinny. Skinny is different, absorbed in her dancing and her studies in contrast to Pinky, who is busy with her bleaching sessions. But while Rishad is groping for a way and Devi is hoping to convince her colleagues, it is Usman who is truly and deeply involved in the larger issue of life and rejects the idea of progress which bypasses human value.

Despite of, Sahgal describes a different kind of incompatibility through the delineation of the relationship between Usman Ali, the Vice-Chancellor of Delhi University and his wife Nadira. Usman needs a friendship not only with the body but also with mind of a woman. But unfortunately Nadira is not with him in his friendships and loyalties, in the passions of his mind and, heart, in central concern. He feels that she is durable as a 'mistress material', but 'problematic as a wife' For him, she becomes a mere body without a mind. As Nadira is a voluptuous and languorous woman who longs only for the physical side of the marriage she becomes a mere body without a mind for Usman. In a fit of disappointment, Usman thus blames himself,

"There was a peculiar humiliation in not being able to convey your truth, your essential personality to the person who lived under your roof, shared your bed, saw you in all your unguarded nakedness every single day: the person who had more evidence to condemn you than any other had, but who also had glimpses into your striving, your efforts at bravery.... Yet really the failure was his Wherever he might have succeeded, with Nadira he had failed. May be she had erected an Islamic fortress around her, imprisoned herself, a princess in a tower.

In Devi, Usman can find what he needs in a woman, intelligence and receptivity, to ideas. But Devi is duty-bounded to Shivraj her brother, and she uses the men in her life only for her personal survival. It is once again with Nadira that Usman tries to establish the right relationship as she, like Jit in *Storm in Chandigarh*, has the redeeming feature of having a will to understand, even if understanding is not yet there. Though she stays away from him for sometimes, finally reconciles with him and returns to him

Conclusion

In almost every novel Nayantara Sahgal has a central woman character who gradually moves towards on awareness of her emotional needs and reflects the writer's own life and sensibility like Kusum, Rashmi, Saroj and Simrit. In *A Situation in New Delhi* it is Skinny Jaipal and not Devi who is in direct line to Simrit, Skinny is the new woman whose awareness of herself is not at all self-conscious. She has a passion for the act of living and involves herself fully in whatever she undertakes-in her study of history as a subject, in her learning of the art of dancing and also in destroying her own and her mother's possessions. She is supremely confident and superior on the stage and equally natural in her behaviour when she accompanies Rishad to Pinky's party. She has the audacity of innocence with which she combines certain conventionally of behaviour when it comes to taking a lift with Rishad.

The knowledge that she is in love with Rishad descends upon her suddenly and naturally. Not so Devi who has allowed herself to be hedged in by her widowhood. Devi does not come to life inspite of the writer's repeated attempts to give her vitality. She is too uncommitted to emerge as an individual and is, at forty-four, deprived of both her past and future. She has lived too long in the glory of her illustrious brother's charismatic hold on people and now when she is on her own she finds herself isolated and lonely. Her marriage with Ishwar has left her with only reality the birth of their son Rishad. And her sexual relationships with both

Usman and Michael are temporary are based on pretensions which she does not acknowledge. She does not have the courage to defy convention or liberate herself from her fast.

References:

1. Barry, Peter. *Beginning theory*. Manchester, and New York: Manchester University Press. 1995.
2. Dhawan, R.K. *Indian Women Novelists*. New Delhi: Prestige Books. 1991
3. Guerin, Wilfred. L. et. al. *A Handbook of Critical Approaches to Literature*. New York and Oxford: Oxford University Press. 2005.
4. Rao, A.V. Krishna. *Nayantara Sahgal*. Madras: M Seshachalam & Co. 1976.
5. Roy, Anuradha. *Feminist Consciousness in Indian Women Writers*. New Delhi: Prestige Books. 1999.
6. Sahgal, Nayantara. *Situation in New Delhi*. Delhi: Hind Pocket Books (originally published London :Chatto and Windus. 1969)
7. Gupta, G.S. Balarama. *Studies in Indian Fiction in English*. Gulbarga: Jiwe Publications. 1987.



SOME CHALLENGES AND REWARDS IN RESEARCH ON AUTOBIOGRAPHIES- A STUDY

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The philosophy of research in its core is pedagogic as well as innovative in technique and application. The high end of research is acquisition of knowledge and the other end of it comprises of application of the resources and impartial perception of the primary source material on hand.

Research on Autobiographies:

In writing an autobiography, the impact of contemporary society and personal forces have lion's share, that guides an autobiographer to inspire and motivate in coining the inner self for a verdict from public self from the memory of his own self. Hence research is often associated with the written and unwritten motives behind a self narrative such as autobiographies in literature. Research is focussed and aimed at finding the real self of an author in between the inner self and public self. This bridging of the gap between inner self and public self is to be filled by the researcher, presenting an innovative and intelligent multitasking of collaborating the questionnaires, interviews and primary and first hand research sources. Hence a researcher begins with a number of certainties and uncertainties while overhauling entire data in a self narrative in midst of perplexities and comes out with a conclusion relating to the textual thematic analysis.

Division of Methodology:

Division of methodology, comprises of two aspects, namely core point analysis and accessory point analysis that activates the essential thematic structure as a pointer to reinvent ideas that thread together the major and vital events and their connectivity in an autobiographical narrative. Autobiography is a journey in to the past, visualising past on the memory lines about a past life in the present context. Autobiography is a confession of truth and a courageous act towards perfection. The researcher draws basically a logical argument and draws inferences according to the needs analysis. The documentation of important papers makes preservation of primary concepts secure. The restructuring of background, paves way to subjective experiences, moving to objective narrations, and evolution of the self. On another hand, he cannot overlook his task of allotting due significance to the hidden meaning and message of the autobiographies.

Restructuring of Data or source material:

The research on autobiographies comprises of collection of available information in print which is primary in nature. Books by the same author serves as a. Secondary source and offers clues. For example, novels such as *English teacher* and *Swamy and his friends* by R.K.Narayan offers autobiographical elements when the researcher goes through *My Days, Memoir*, an autobiography. Source material sometimes do exist in a different source such as on line journals can also be collected and used to make a comparative collaboration. Major or minor developments in the genre and changes in the recent trends can be discussed, not overlooking and ignoring the contemporary usefulness of the data. The judgement and objective analysis of the problems relating to chronological and historical bifurcation of second hand sources and needs analysis takes active pursuit of studying and relocating inputs of collected data. The focus on T.V. interviews and face book in the internet, or electronic media can be taken only as a collaborative evidence in autobiographic

narratives. Literary Research owes its indebtedness to internet which offers its due share to online libraries and journals as a substitute and key to easy access.

CHALLENGES

- The following challenges do occur in the path of research on autobiographies.
- Ambiguity of the author in the formation of argument Scattered arguments in the text.
- A thorough reading and collection of material in the study of primary and vast secondary sources.
- Significant psychological changes found by the researcher in the presentation of ideas of the author in a text.
- Ideas away from reality in an autobiography, which is taken up for research.
- When the author overlooks contemporary elements.
- When there are certain events and elements in a text which are not supported by secondary sources.
- When any kind of trauma is vividly elaborated in a text in an objective manner with- out connectivity .
- When there is an event portrayed subjectively which raises controversy in secondary source such as books by the same author.

REWARDS

The researcher has limited and important primary issues to rely up on. .Autobiographical narrative is often a real life search for truth by the author himself. Hence the researcher himself travels unconsciously along with the author and satiates the emotional search for inner self and comes to conclusions in research as well as his own self. The researcher finds the gaps in between facts and fiction and begins the interrogation of truth in real life perspective.

. The researcher visualises the whole life path of the autobiographer and the silent transformation of autobiographer with the passage of time in the backdrop of narrated past time to the present time of narration, from an subjective self to an objective self and how the evolution of the self taken its due course .. The foremost objective of the researcher is a righteous probing in to the hidden meaning of the text and ultimately, all the research data is filtered and processed to find these unknown frontiers. To conclude this memorable study on autobiographies, as a seeker after the truth, the researcher stands as a witness and spectator. And finally the researcher gains a thrilling and lifetime unique experience at the end

REFERENCES

1. usdorf Georges. *Conditions and Limits of Autobiography*. University of North Carolina Press. 1988. <web .Google books>
2. Olney. James. *Metaphors of Self the Meaning of Autobiography*, Princeton University Press, New Jersey: 1972. Print.
3. Pascal. Roy. *Design and Truth in Autobiography*, Harvard University Press, Cambridge, U.S.A.: 1960. Print.



**UNPRINCESS ARE REALLY PRINCESS AND VIRGINITY IS INVISIBLE IN
MANJULAPADMANABHAN'S
UNPRINCESS AND THREE VIRGINS AND OTHERSTORIES**

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Abstract:-

Generally we think 'Princess' is special, beautiful and well-liked girl but Padmanabhan portrays her 'Princess' in the disguise of 'Unprincess.' Here unprincess are common girls, they live common-life but when they get chance then they perform abnormally and become 'Princess' in the name of 'Unprincess.' 'Three Virgins and Other Stories' is a classic collection of ten long, interesting and narrative stories. Padmanabhan shows us different shades of life. We make a routine and law of our life but sometime we are unable to understand the world and we try to adjust with it.

Key-Words :- Virginity, Unprincess, Discriminations.

Introduction:-

Unprincess and Three Virgins and Other Stories are well-known books by renowned author Manjula Padmanabhan. She was born in 1953. She is well known as a journalist, illustrator, cartoonist, fiction writer, children books writer, television as well as stage writer. Unprincess and Three Virgins and Other Stories directly deal with our day to day life. In Unprincess Manjula gives the important and main roles to common girls. They are protagonists. Three Virgins is an autobiographical story. Manjula openly and freely shares her physical experience here. In Unprincess writer gave information about three brave girls who are really heroines but they act everywhere as common girls.

Characterization:-

In 'The Giant and The Unprincess' we meet Kavita, a ten years old school-girl. There is general routine in her life but suddenly a change came and she faced the problem bravely. When she was returning from the school by school-bus, her bus was kidnapped by a Giant. Actually all the road is blocked by the Giant and he tries to catch the people. So everyone was running here and there. When he caught the school-bus, on which Kavita seated. He tries to shake the bus

“Then the Giant set down the front of the bus and tipped up the rear. proceeded to peel its top off.”(Unprincess page no. 04)

All were frightened even conductor and bus-driver were seriously disturbed. Just they were talking about their duties. Immediately Kavita came front when Giant almost removed the top of bus. She bravely started the communication with the Giant. He also shocked. It was totally new for him. But Kavita continued her questions and answers. She requested to the Giant please take me and let the other students go their home. He agreed. Then he took her with him to his house. Kavita saw his house and surprised it was normal house. Giant went to get fresh. When he came, he was just a boy. In fact, he was..... a boy.” (Unprincess, page no. 22) Both of them discussed frankly and became friends. Kavita understood in our life so many events happen, sometimes we think it is major or difficult problem. Firstly we seem it like this but when we try to solve that time we realize it was not really difficult as we thought.

In 'Sweet Fantasy' Manjula Padmanabhan described true situation of modern generation. Here unprincess is Sayoni and she is taken in the world of dreams by the President of Sweet Fantasy, a multinational agency for the distribution of dreams. President requested to Sayoni, they need her help. They are passing through Crisis, Good Dreams are being transformed into bad. "You cannot imagine how many wonderful dreams have suffered this fate! Some have turned to alcohol, Some have turned to drugs. Some have turned to television. It's a disaster." "Most people are too tired or too sleepy It's just like going to the cinema, except in this case the actors, the scenery, the script and the soundtrack all come from the viewers." (Unprincess, page no 40-41)

It is the real condition of our life of our life. We are too busy. We changed totally our life-style. Set it as we want. We are trying to see the dreams too, as we wish. So there is no charm in our life though we have all modern facilities. Day by day we lose happiness, satisfaction and delight. Nightmare becoming slowly-slowly large and there is no scope for good dreams. Nightmare is here the symbol of bad thoughts unhappiness and frustration. It is dangerous. Sayoni encountered with nightmare, she tamed it, made its size small. She says in our life we need both good as well as bad dreams but there must be limitation. Then our life really would be enjoyable.

Our third and last unprincess is Urmila, she meets us in 'Urmila The Ultimate.' "When Urmila was born, she was so exceptionally ugly that five nurses fainted" (Unprincess page no. 59) The friends and relatives who came to meet newborn baby they went saying no words when they saw Urmila. Firstly her father was upset but her mother was kind. Her both grandfathers feigned deafness. When she was growing up everyone used to avoid her. She was sharp and healthy child. At the age of four she became expert at Chess. When she was almost five years old her parents were thinking about school. Her father took the appointment of Headmistress. Urmila was so happy. They arrived to meet Mrs. Whattawiggly Patel, Headmistress of the school, it was first visit as soon as Mrs. Patel saw Urmila. "Her multi-tiered hairpiece flew straight up into the air. Her bright-orange silk sari unraveled to the floor....." (Unprincess, page no. 69) Then they met a peanut-vendor called Sultan Ali. He advised them, don't be upset. Your girl is so ugly. You should send her to the Minister of Defence. You can take the benefit of her ugliness to destroy the foes of our nation. Urmila's parents thought too much and finally they reached to the office of Ministry of Defence. They discussed with The General about Mass Horrification. Senior Generals accepted the proposal. They made a plan to send Urmila at battlefield by wearing a mask. Now Urmila is their Ultimate Weapon. Urmila defeated the foes and became the real heroine of her nation. Urmila used her ugliness to serve the nation. Her curse was now turned into the blessings.

'Three Virgins and Other Stories' is a classic collection of Manjula Padmanabhan. There are ten interesting and narrative long stories. In 'Teaser' we meet Rakesh. He is a representative of that class who gets satisfaction by teasing women. He easily finds his target lady in the bus or at any place. He knows very well, how should he go near his target? and get the physical touch too. "In his experience, the ideal was between the ages of 16 and 23.... Over confident targets tended to respond in silly ways." (Three Virgins and Other Stories, page no. 04) He never misses any opportunity. Just for it he travels by bus and train. But very interestingly Padmanabhan describes that how he becomes victim self and a lady teases him. Seducer became here Seducee.

Next is 'A Government of India Undertaking.' Padmanabhan wanted a balloon so she called a balloon seller but he didn't listen. Author followed the balloon seller but he vanished. There was a board 'Bureau of Reincarnation and Transmigration of Souls A Government of India Undertaking.' Author went into the building. There was already much crowd like any government office. Manjula proceeded, she asked about the project to the employees but no one could give her satisfactorily answers. "why not change it right now, I

want to be rich. I want to be famous. I want to be absolutely indolent.” (Three Virgins and Other Stories, page no.23) But employee was giving just reasons to be unable to do this. He was talking about procedure and limitation of the office. She was unable to find Transmigration Department because the Assistant Registrar said that Department was situated on the seventh floor, actually the building had only sixth floor. He informed there is secret password for that. Gopal a peon came with her to show the way. He gave the information about the procedure, staff and how they make mistakes while changing the souls of people. Staff also takes bribe. Manjula was thinking after her soul they would give her healthy body to other. As a formality she completed every step. Now she didn't want to change the life. She thought she was cheated. But she was very happy that she continued her present life. We think about our future but forget that our present is also very good and enjoyable.

Mandodari is the protagonist of 'The Other Woman.' She tells us her side. She meets Basra Dott, a famous television anchor. Basra takes Mandodari's interview. Mandodari talked freely but she cannot speak Eng. correctly "This is my heart." (Three Virgin and Other Stories, page no.59) In male dominated society, women have to face many problems **'Males on account of his edge over women in social, cultural and biological realms enjoys the power equations in his favour and thus'** (Dr. Dashrath Gatt). Here we get another side of our great epic about which generally it is spoken with prejudice. We declare them wrong without understanding the facts.

'Khajuraho' depends upon personal visit of Manjula to Khajuraho. Carol, Robert Delaney and Rajesh these are characters here. Rajesh is a guide. Carol directly asked about his personal life, she wanted to know the effect of the pornography on his sexual life and she found his personal life is not satisfied.

In Hot Death, Cold Soup Manjula Padmanabhan focused on 'Sati.' Sally, wife of Subhash called the writer, her husband died and she is going to commit Sati (Satty). Manjula got shock but she prepared to leave. When she met to Sally that time she realized that Sally thought, it is not easy to live alone to a lady in India. Her husband's relatives may not permit to live her, as she wants. So it is best to commit 'Sati.' Writer cleared that committing 'Sati' is now a crime. It is not good for our society. She took much effort to convince to Sally and lastly she got success. **Dr. Dashrath Gatt says 'Padmanabhan presents a world where the females have no identity, no voice and no standing of their own.'**

'Exile' is the story of Rashmi, her husband Siddhangshu and her sister Lakshmi. They are space travellers. They have to go in the space for 12 years. Firstly they think it is the banishment, but they chat that when they return after 12 years then they will miss it. They complete their mission meanwhile Siddhangshu is kidnapped by Raveena, a giantess. But her brothers help Siddhangshu and lastly Rashmi and Lakshmi make him free then they return. Next one is **'The Strength of Small Things'** Manjula Padmanabhan here gives two examples to demonstrate the importance and strength of small things in our life.

"You have a train to catch at four thirty, you start packing at three-thirty, and at quarter to four, You're all done. That's when you remember that you've forgotten to take your ticket. So you go to the big wooden almirah in the corner, the kind in which all importance things are kept locked away, and you insert the little key in the key-hole with the worn edges and – the key refuses to turn." (Three Virgins and Other Stories, page no.171) Actually key is very small thing. But it saves your very much time. You can easily open a lock with its key. Unfortunately if you bend key or damage even a single edge of key then you have to break the lock and that time you have to take much effort. Meanwhile you waste your valuable time too. You miss your train or plane and it happens in this story. Another incident, writer explains. Here we meet a young man, tall, handsome, studied in USA. He obeys his mother. He marries a wealthy girl. Takes dowry, flats and car too. Lastly his mother and he make plan to kill his wife and pretend to it is an accident "my mother's plan was that

we would put some sleeping powder in my wife's cup of coffee at night, lock her and the baby into the bedroom and set fire to the room.”(Three Virgins and Other Stories page no.179)But when they set fire and he prepares to go out of India but his plane tickets he had put in his wife suitcase. Then he tries to open the door of room, he could not, because due to the heat it melted. He tries hard but does not succeed. The smoke spreads everywhere in the apartment, his neighbours came, firstly they call, ring the door-bell and finally break his main door. They catch him and his mother red-handed while committing the crime. The baby and his wife are saved. He is sent to jail.**In our life just we think about major and large thing but we forget the importance and strength of small things. Our life becomes large with the help of these small things.**

‘Stains’ focuses on the gender and colour discriminations. Even today we give very insulting treatment to ladies in their special period. Saraha a black African – American woman gets this treatment from Indian Mrs. Kumar. When Mrs. Kumar sees there is blood – stain on the bed sheet of Saraha, she directly orders to wash that bed sheet, not with daily cloths and openly but in the corner. She does not give a new detergent-cake too. “Wash now,” She said.....“There was an antique cake of laundry soap congealed into a tin soap dish on the rim of the sink. See-there is soap” (Three Virgins and other Series, page no.187-188)According to white American like Africans, Indians are also black though Indians make difference between them and African-Americans. Here Deepak Kumar (Saraha calls him ‘Deep’) represents this class.“He looked at her. “You are not just Saraha, my girlfriend. You’re also a- an American black, you have your history and your separate destiny. If I took you back with me to India, people would stare at you, they would stare at your hair and your different race and my own relatives would reject you. Reject choice of you-even though we’re almost the same colour.” (Three Virgins and Other Stories, page no.205)**Manjula Padmanabhan indirectly implies gender discrimination, colours, race discriminations. These are stains which we could not wash so far.**In ‘Feast’ ‘excess’ theme is interwoven. Andrew Morton is vampire here. Only for money he kills so many persons, and destroys their dead-bodies.“In his suitcase, he had a small electric saw with which he sliced up the driver’s body.”“He waited till after midnight to go on a long slow walk, carrying the sealable bags in his backpack and emptying a few of them into garbage dumps as he passed them.” (Three Virgins and Other Stories, page no.218)**We are killing others to get us more and more. There is no limit for our lust. So we are becoming vampire.**

Traditionally we think ‘virgin’ means that lady, who is pure and not engaged in sexual intercourse. But when Manjula’s cousin asked the meaning of virgin that time she replied.“It means a lady whose son turns into God,” I said at once.“What?” She asked, looking confused. (Three Virgin and Other Stories, page no.229)When Manjula was completing B.A she wanted to take that experience. She asked her friend about this. Her friend introduced Manjula with her younger brother ‘Gai.’ “I told him I was interested in finding a one-time –only sexual partner.” (Three Virgin and Other Stories, page no.230)Then they exchanged their numbers. Manjula told him, she would find appropriate place and time. She prepared each and everything properly. She wished to enjoy this experience and understand the change in her body. “I preferred silence ,I said No distractions. I had disconnected the telephone.....”(Three Virgin and Other Stories, page no.232)When they got busy then she realized there is not any pain actually she and Gai lost their identities, they just became two different bodies and adjusting each other. She never met Gai again.After that she got engaged in paintings.Ork was her close friend in college and they were in touch. They used to talk, go to dinner. Manjula was not interested in marriage But she thought, they should have an affair. Firstly Ork rejected her proposal.“If we had an affair, we’d end up getting married and I’d lose you as a friend. That’s I don’t want”(Three Virgin and Other Stories, page no.239)Then he went to London for work but they kept in touch through letters and cards.Several years later they met again. His first marriage was not successful, he remarried with divorcee and now he was happy.Padmanabhan tells us about her another friend ‘Om’.Although she knew him from college life yet they met after so many years. She was attracted to Om. They used to share

their ideas. Manjula and Om were coming by car that time directly she asked “Would you like to sleep with me?” (Three Virgins and Other Stories, page no.246) “It was like a medical procedure, a brief storm after which we sat up, ... We didn’t meet again...” (Three Virgins and Other Stories, page no.247) After many years they again started to talk on phone. He referred that incident and saying she was her first. “ His first lover. He had been a virgin .” “Virginitiy is invisible. It has no mass or atomic number. It has little to do with membranes or bloodied sheet or pain. It means nothing to those who do not seek truth.” (Three Virgins and Other Stories, page no.249,250)

Manjula explains here virginitiy with her own experiences. She lastly says virginitiy is invisible.

Conclusion:-

Manjula Padmanabhan have coined here a word ‘**Unprincess.**’ Straightly she didn’t describe her heroines as ‘Princess.’ This is a traditional way. She depicted her brave, intelligent and patriot heroines under the name of ‘Unprincess.’ These are very common girls according to traditional thinking , but they play crucial roles and become uncommon, ‘Unprincess’ in the language of Manjula.

In ‘Three Virgins and Other Stories ’Manjula unraveled different views of life. How we promote gender and colour discriminations even today? She wrote very effectively here. With her own experiences she says **Virginitiy is not just a stage of our life. It is invisible. There is not a particular measurement for Virginitiy.**

References:-

1. Padmanabhan, Manjula. *Unprincess*. Puffin by Penguin Books India, 1st Edition .2005.
2. Padmanabhan, Manjula. *Three Virgins and Other Stories*. Zubaan, New Delhi. 2013.
3. Manjula Padmanabhan Playwright, Journalist and a children book author by AnjuBatra.
4. Gatt, Dr. Dashrath. *Gender- Divide and feminine subversion in Manjula Padmanabhan Light Out*. Acadmic research Journal. Vol-2 (II) Dec.2014 PP-271-276



10.

ISOLATION AND IDENTIFICATION OF ALKALIPHILIC BACILLUS SPECIES FROM LONAR LAKE FOR PRODUCTION OF L –ASPARGINASE**Patil Shivraj. B*.¹ and Shinde Vinod. A.²**¹ Department of Microbiology, Yeshwant College, Nanded - 431602, Maharashtra, India.² Department of Microbiology, Shankarrao Chavan Mahavidyalaya, Ardhapur, Nanded, Maharashtra, India.

Abstract: *Enzymes are programmed to carry out one special task. Like a key in a lock each enzyme fits together with one specific substrate modifying it in one proper way. Microbial enzymes are preferred over plant or animal enzymes due to their economic production, consistency, ease of process modification and optimization. They are relatively more stable than corresponding enzymes derived from plants or animals. Further, they provide a greater diversity of catalytic activities. The majority of enzymes currently used in industry are of microbial origin. Some reports are available on the production of L-asparaginase from bacteria, fungi and animal sources.*

Bacterial L-asparaginase is amidohydrolases that act on L-asparagine and produce L-aspartate and ammonia. These enzymes have been used in treatment of lymphoblastic leukaemia. In the present study, The water samples from Lonar Lake a Alkaline Crater Lake Present in Dist. Buldhana Maharashtra, India was used for isolation of bacteria as potential producer of L-asparaginase using a phenol red indicator and M9 growth medium. Ten isolates were identified with classical biochemical tests and BioLog Instrument, Mumbai and found that out of the Ten isolates One belong to Bacillus species, a novel strain, producing largest zone of hydrolysis of asparagines (5%) as nitrogen source was selected for further kinetic studies of the enzyme L-asparaginase.

Keywords: *L-asparaginase, Bacillus species, amidohydrolases, lymphoblastic leukaemia*

Introduction:

Enzyme is programmed to carry out one special task. Like a key in a lock each enzyme fits together with one specific substrate modifying it in one proper way. Microbial enzymes are preferred over plant or animal enzymes due to their economic production, consistency, ease of process modification and optimization. They are relatively more stable than corresponding enzymes derived from plants or animals. Further, they provide a greater diversity of catalytic activities. The majority of enzymes currently used in industry are of microbial origin. Some reports are available on the production of L-asparaginase from bacteria, fungi and animal sources.

L-asparaginase (L-asparagine aminohydrolase, EC3.5.1.1), the enzyme which converts L-asparagine to L-aspartic Acid and ammonia, has been used as a chemotherapeutic agent (Gulati R. *et al*; 1997) L-Asparaginase has its application in food industry also. It helps in reducing the content of acrylamide in baked food products by hydrolysing the L-asparagine. The enzyme L-asparaginase has attracted much attention in the past decades because of its antineoplastic activity. More attention has been given to isolate L-asparaginase from microorganism hence; studies are continued and focused on abatement of immune reactivity either by modifying the L asparaginase or by exploring the exotic environment L-Asparaginases. It produced

extracellular is advantageous and preferred over intracellular type because of higher accumulation of protein (Sahu *et al.*, 2007).

Bacterial Isolates were used by some researchers for production of L-asparaginase and they have found some bacteria i.e. *Pseudomonas aeruginosa*, *Erwinia caratovora*, *Bacillus sp*, *Corynebacterium glutamicum*, *Pseudomonas stutzeri* and *E. coli*. The isolates showed efficient activity of L-asparaginase. (Kamplé *etal*; 2006) Although a much study on L-asparaginase was done the bacteria isolated from alkaline conditions are not studied efficiently so in the present study we have attempted to study the bacteria isolated from alkaline crater Lonar Lake for production of L-asparaginase.

Material & Methodology :

Collection of soil samples:

The soil & water samples are collected from Lonar crater lake (Tambekar *et al.*, 2010). The soil samples are collected in sterile plastic zipper (polythene) bags by digging the lake shore 5-10 cm deep from different sites around the lake & rhizospheric soil of some inhabitant plants also collected with sterile spatula (Joshi *etal.*, 2007; Watanabe and Hayano, 1993; Chilcott and Wigley, 1993). The pH & temperature of the lake water was recorded in 2015 (Data Not Published In this paper). Water sample I and II are collected in sterile water sampling bottles from different sites around the shore. Both soil & water samples are kept in an icepack cabinet maintained at temperature below 100C.

Isolation of Bacterial species

The collected soil samples from lake shore & from rhizosphere of inhabitant plants were serially diluted using sterile distilled water. Then diluted soil sample & water sample were added in M9 broth medium (R. Gulati *et al*; 1996) of pH 7, 9.5 & 11 separately within 6 hrs of sampling and enriched by incubating them at optimum temperature for 24 to 48 hrs in a rotary shaker at 120 rpm at 300C at Research lab, Department of Microbiology, Yeshwant Mahavidyalaya, Nanded, Maharashtra, India.

After incubation the enriched samples were streaked on M9 agar medium, Horikoshi media II agar plates (Horikoshi, K.; 1996, R. Gulati *et al*; 1996) of pH 7, 9.5, 11 and incubated at optimum temperature i.e. 30⁰C for 18 to 24 hrs. The isolated colonies observed after incubation and colony characters were recorded. Then colonies were sub-cultured on to respective media slants of respective pH.

Identification of Bacterial species

The sub-cultured cultures on slants were used for identification of cultures using screening for L-Asparaginase production (Data Not Published In this paper), biochemical analysis using Bergey's manual determinative bacteriology and BioLog[®] Microbial Identification software. (Beregy, 1994).

Results and Discussion

Forty five cultures were isolated from Lonar lake. Out of these isolates most isolates were identified as Bacillus species by performing different biochemical tests of the isolates and were confirmed by using Bergey's manual of determinative bacteriology (Beregy, 1994) table 1 & Biolog[®] (table.2 Show's one of identified isolate confirmed by Biolog). Out of these isolates Ten isolates showed growth in pH range 7 to 11 and in temperature range 10 to 45°C. So, the selected ten isolates were screened for L-Asparaginase production using M9 agar medium plate containing phenol red indicator of L-Asparagine hydrolysis (Data Not Published In this paper). These isolates were selected and confirmed again by BioLog Microbial Identification software as Bacillus species. From the above result it was confirmed that out of forty five bacterial isolates from Lonar lake ten isolates were alkaliphilic Bacillus species identified by classical biochemical tests and BioLog[®] Analysis are capable of producing L-Asparaginase enzyme (Data Not Published In this paper) & will be used for production of L-Asparaginase enzyme.

Table 1: Identification of the bacterial isolates:

Sr. No	Test	Bacterial isolates									
		C 05	C 06	C13	C14	C18	C21	C25	C29	C30	C42
1	Endospore	Centra 1	Centra 1	Centra 1	Centra 1	Centra 1	Centra 1	Centra 1	Centra 1	Centra 1	Centra 1
2	Gram nature	+	+	+	+	+	+	+	+	+	+
3	Catalase	+	+	+	+	+	+	+	+	+	+
4	Oxidase	+	+	+	+	+	+	+	+	+	+
5	Amylase	+	+	+	+	+	+	+	+	+	+
6	Gelatinase	+	+	+	+	+	+	+	+	+	+
7	Urease	+	-	+	-	+	+	-	+	-	+
8	Indole	-	-	-	-	-	-	-	-	-	-
9	Methyl Red	+	+	+	+	+	+	+	+	+	+
10	VP	-	-	-	-	-	-	-	-	-	-
11	Citrate	+	+	+	+	+	+	+	+	+	+
12	Glucose	+	+	+	+	+	+	+	+	+	+
13	Xylose	+	+	+	+	+	+	+	+	+	+
14	Mannitol	+	+	+	+	+	+	+	+	+	+
15	Lecithinas e	-	-	-	-	-	-	-	-	-	-
16	Growth at 45°C	+	+	+	+	+	+	+	+	+	+
17	Growth at 65°C	-	-	-	-	-	-	-	-	-	-

Table:2 Identification of isolate by Biolog Microbial Identification Software.

Biolog ID DB	GEN-III_2.7.1.40.15G
Result	Species ID: Bacillus megaterium
Comment	
Notice	

Rank	PROB	SIM	DIST	Organism Type	Species
1	1.000	0.603	5.800	GP-Rod-SB	Bacillus megaterium
2	0.000	0.000	11.983	GP-Rod-SB	Bacillus macauensis
3	0.000	0.000	12.407	GP-Rod-SB	Bacillus cereus/thuringiensis
4	0.000	0.000	12.440	GP-Rod-SB	Bacillus pseudomycooides/cereus

Key: <x: positive, x: negative, <x-: mismatched positive, x+: mismatched negative, {x: borderline, -x: less than A1 well

Well Color Values												
Plate	1	2	3	4	5	6	7	8	9	10	11	12
A	0	{ 75+	{ 75	{ 75	{ 75	{ 75	0	{ 75	{ 75	< 250	< 250	< 250
B	{ 75	{ 75	{ 75	{ 75	{ 75	{ 75	{ 75	{ 75	{ 75	< 250	< 250	< 250
C	< 250	{ 75	{ 75	{ 75	{ 75	{ 75	{ 75	{ 75	{ 75	< 250	0	0
D	{ 75	{ 75	{ 75	{ 75	{ 75	< 250 -	< 250	0	{ 75	0	0	0
E	< 250	{ 75	{ 75	{ 75	< 250	{ 75	< 250	< 250 -	< 250 -	0	< 250	0
F	< 250	< 250	0	{ 75	< 250	< 250 -	{ 75	{ 75	{ 75	0	0	0
G	{ 75	{ 75	{ 75	{ 75 +	< 250	{ 75	{ 75	< 250	{ 75	< 250	< 250	< 250
H	< 250	{ 75	{ 75	{ 75	{ 75	{ 75	{ 75	{ 75	< 250	< 250	{ 75	0

References:

1. Bergey, D.H., Holt, J.G., Krieg, N.R., Sneath, P.H.A. (1994), In: Breed, R.S., Murray, E.G.D., Smith, N.R. (Eds.) Bergey s manual of determinative bacteriology, 9th edn. Williams and Wilkins, Baltimore.
2. Chilcott C.N., and Wigley, P.J. 1993. Isolation and toxicity of Bacillus thuringiensis from soil and insect habitats in New Zealand. J. Inverteb. Path. 61: 244-247.
3. Gulati R., Saxena R.K. and Gupta R. (1997), "A rapid plate assay for screening L-asparaginase producing microorganisms", Lett. Appl. Microbiol., Vol. 24, pp. 23- 26.
4. Horikoshi, K., 1996. Alkaliphiles- from an industrial point of view. FEMS Microbiol. Rev. 18: 259-270
5. Joshi, A.A., Kanekar, P.P., Kelkar, A.S., Shouche, Y.S., Wani, A.A., Borgave, S.B., Sarnaik, (2007), Cultivable bacterial diversity of Alkaline Lonar Lake, India. *Microb. Ecol.*, 55: 163-172.
6. Kample V.P., Srinivas Rao R., Borkar P.S., Khobragade C.N. and Dawane B.S. (2006), "Purification of L-asparaginase from a bacteria Erwinia carotovora and effect of a dihydropyrimidine derivative on some of its kinetic parameters", Ind. J. Biochem. Biophys., Vol. 43, pp. 391-394
7. Sahu M.K., Poorani E., Sivakumar K., Thangaradjou T. and Kannan L. (2007), "Partial purification and anti-leukemic activity of L-asparaginase enzyme of the actinomycetes strain LA 29 isolated from the estuarine fish, Mugil cephalus (Linn.)", J. Environ. Biol. ISSN 0254-8704, Vol. 28(3), 645-650.

8. Tambekar, D. H., A.L. Pawar and Dudhane M. N. 2010. Lonar Lake water: Past and Present. Nat. Environ. Poll. Technol. 9(2): 217-221.
9. Watanabe, K., and Hayano, K. 1993. Distribution and identification of proteolytic Bacillus spp. in paddy field soil under rice cultivation. Can. J. Microbiol. 39: 674-680.



11.

IONIC REGULATIONS IN THE LEAVES OF *ELEUSINE CORACANA* GROWING UNDER SALT STRESS**Sonali Santosh Kadam**R.P.Gogate College of Arts and Science And
R.V.Jogalekar College of Commerce,Ratnagiri**Abstract**

All plants are subjected to a multitude of stresses throughout their life cycle. Most often the plants get adapted to the stresses. In present studies, *Eleusine coracana*, one of the Konkan crop grown under salt stress conditions is taken into consideration. Effect of salt stresses on certain ionic regulations such as Calcium (Ca^{++}), Sodium (Na^+), Magnesium (Mg^{++}), Potassium (K^+), Chloride (Cl^-) has been studied. When the plants were irrigated with NaCl at a concentration of 80mM, the Ca^{++} levels increased by 40 %, Na^+ content increased with increasing concentrations of salt, showed a lower level of Cl^- when plants were raised salt stress, at 30mM salt stress there is about 11% increase in K^+ content than in control while Mg^{++} content was doubled in the leaves of the Dapoli-3 at a concentration of 30mM NaCl.

Key words:-Salt stress, ionic regulations, 30mM , 80mM, Calcium (Ca^{++}), Magnesium(Mg^{++}), Sodium (Na^+), Potassium (K^+), Chloride (Cl^-)

Introduction

Plants responds separately to the different natural stresses in their life cycle. The plants tries to adjust itself to tolerate the stresses. Most often the plant responds positively to the stresses to show better results and yields. Depending on the species of plant and the source of stress, plant will respond in different ways. According to Vadim Volkov and Mary J. Beilby (2017), ion transport is the crucial starting point that determines salinity tolerance in plants. Transport via membranes is mediated mostly by the ion channels and transporters, which ensure selective passage of specific ions. Definitely the salt stress affects the metabolism of plants and most certainly the crop plants as the life span of the crop plants is limited, the responses very rapidly to any stresses the comes across. Two varieties of *Eleusine coracana* viz, Dapoli-3 and HR-374 were grown with 8mM, 30mM, 80mM and 150mM salt concentrated solutions and change in ionic regulation has been studied by comparing it with control that is irrigated with normal water.

Material and Methods

Regents a) Nitric acid b) Perchloric acid

The mature leaves were harvested randomly from the plants. They were washed thoroughly and blotted dry. The leaves, stem and root were cut into small pieces, weighted and kept in the ovan for drying at 80°C. Dried one gram plant material viz. leaf, stem as well as root were separately acid digested in a mixture of nitric acid and perchloric acid. The acid digest was then filtered through Whatman No. 1 paper and the volume was adjusted. The clean extract of the sample were then used to determine inorganic constituents. Sodium, potassium and calcium were estimated by using a flame photometer, while magnesium was estimated by using atomic absorption spectrophotometer.

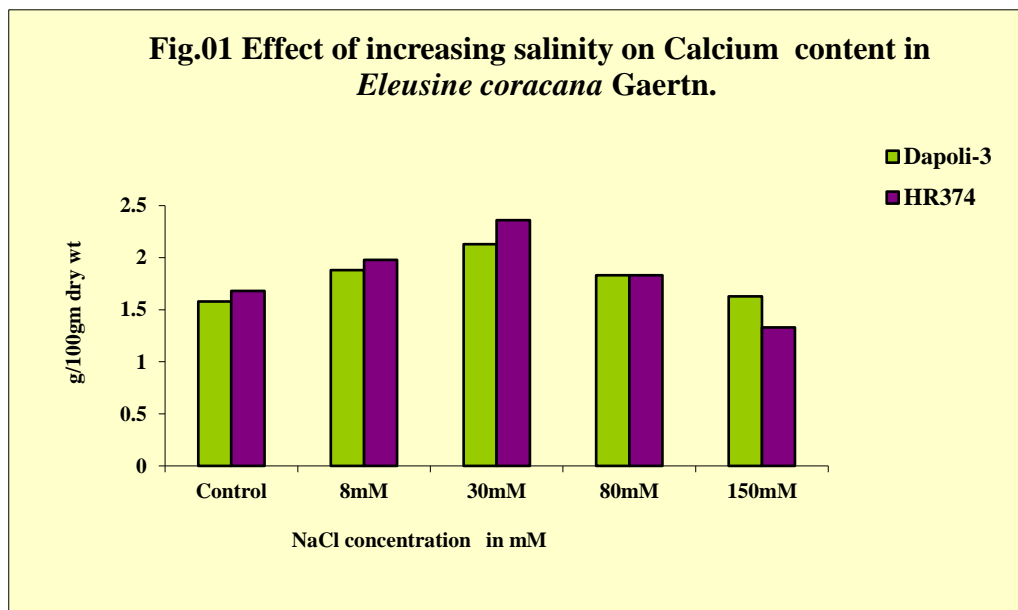
Chlorides were estimated by the method of Volhard (1956). In this method chloride was extracted from ashes of plant material using hot water and dilute nitric acid. Dissolved chlorides were precipitated with known amount of standard silver nitrate. Amount of chlorides were estimated by titrimetric method of estimating the non-utilized silver nitrate. The concentration of chlorides in plant material was calculated using the formula 1 mg of 0.1 N AgNO₃ = 3.55 mg Cl.

Results and discussions

Calcium (Ca⁺⁺)

Calcium, a divalent cation is the component of cell wall and has role in signal transduction pathways. It acts as an activator for several enzymes. The crop was grown under different salinity and the calcium was analyzed in different parts, leaf, stem and root of both the cultivars, Dapoli-3 and HR-374. The results obtained are represented graphically (figure 01). These results indicate that the calcium levels in the leaves of treated plants were maintained more or less at the same level as that of the control plants. When the plants were irrigated with NaCl at a concentration of 80mM, the calcium levels increased by 40 % over that of the levels of calcium in the control plants. However, HR 374 variety when grown under high salt stress showed a decrease in the calcium content by 21 %.

Strognov (1964), while discussing the physiological basis of salt tolerance of plants noted that Ca⁺⁺ uptake is affected by salinity. Meiri (1971) observed a reduction in Ca⁺⁺ in bean plants due to NaCl and Na₂SO₄ salinization. Chavan and Karadge (1980) have reported decreased level of Ca⁺⁺ in peanut. There are different reports where decrease in Ca⁺⁺ uptake under saline conditions in different plants. (Guggenheim and Waisel, 1977; Paliwal and Maliwal, 1980; Starck and Kozinka, 1980; Divate and Pandye, 1981; Kawasaki *et al.*, 1983; Imamul Huq and Larhar, 1983 b; Crammer *et al.*, 1987; Surez and Grieve, 1988; Onkware, 1993; Patil *et al.*, 1989; Padole, 1991; Kulkarni and Karadge, 1991). However, there are reports of increasing Ca⁺⁺ contents in some plant species under saline conditions (Karadge and Chavan, 1983; Lal and Bharadwaj, 1984; Kulkarni and Karadge, 1991). Recently Khan *et al.*, (1997) reported decrease in Ca⁺⁺ content in alfalfa plants when grown in salinity.

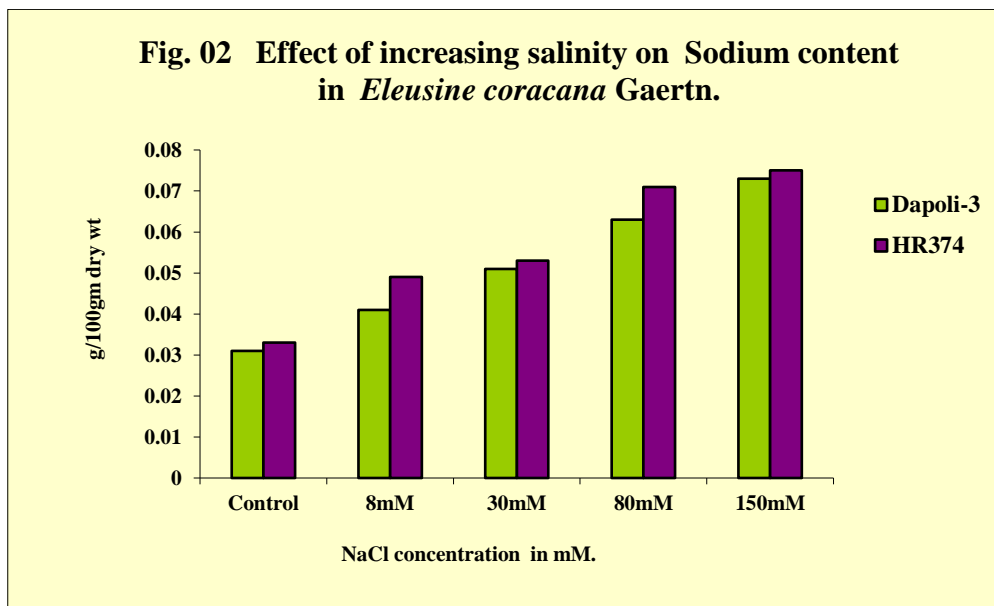


It is established fact that Na^+ and Ca^{++} have common site of entry and are antagonistic. However recently Sahoo and Sahu (1994) have reported that, there is no adverse effect of NaCl stress in excised rice leaves. According to Bernstein and Hayward (1958) a degree of physiological balance between Na^+ and Ca^{++} must be present in toxicity as high concentration of Na^{++} alone is avoided. Generally, it is assumed that improved status of Ca^{++} in salinised plants might be exerting an influence on the enzymes ultimately improving the salt resistance of the plants. Mengel, K. Y, E. A. Kirkby. (2000) and Mengel, K. y E. A. Kirkby. (2008) have reported that Ca plays important biochemical functions and supports many metabolic processes, and also they activate several enzymatic systems, contributing to the proper development of plants. Ca^{2+} channels may have a role in turgor regulation in response to salt and hyper-osmotic stresses, Allen and Sanders, (1997); DeWald *et al.*, (2001); Xiong *et al.*, (2002), in nastic movements Kim *et al.*, (1996), in gravitropic movements of roots, Fasano *et al.*, (2002) and pulvini, Perera *et al.*, (1999), in stomatal closure, Staxe Ân *et al.*, (1999); Blatt, (2000a, b); Ng *et al.*, (2001b); Schroeder *et al.*, (2001) and in pollen tube elongation, Malho Ân *et al.*, (1998); Rudd and Franklin-Tong (2001),

It is evident from the results that, the level of Ca^{++} in leaf is disturbed in crop plants in both the cultivars when grown under 80mM and 150mM salt stress. However, the degree of disturbance is more in leaf part of Dapoli-3 when grown under higher saline condition indicating its susceptibility against saline environment.

Sodium (Na^+)

The sodium ions are transported and they accumulated in the leaves of the plants. As a result when plants were irrigated with NaCl, the sodium content increased with increasing concentrations of salt. When plants were irrigated with 150mM NaCl the sodium content in the leaves of these plants were more than double. Figure 02.



Rains (1972) suggested role of sodium in maintaining favourable water balance. However, in glycophytes especially in crop plants, higher concentration of sodium is toxic causing specific ion toxicity by interfering with several metabolic pathways like, osmoregulation, stomatal behaviour and assimilation capacity. Mass and Hoffman (1977), Greenway and Munns (1980), Kawaski *et al.*, (1983) observed rapid increase in sodium

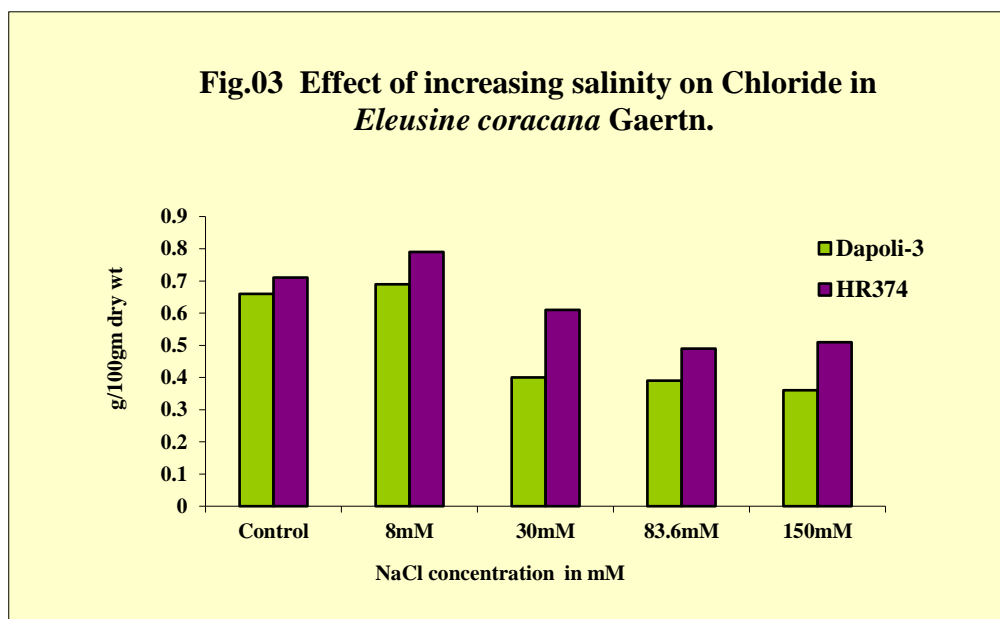
content in stem and root and a gradual increase in leaves. Mahmood and Malik (1987) have made similar observations. Cramer *et al.*, (1987) when studying salt tolerance in *Atriplex rhagodioides* reported sodium influx increased proportionately with increasing salinity. Peiris *et al.*, (1994) while studying a role of leaf in partitioning of Na^+ and Cl^- ions in NaCl treated rice plants reported that, more Na^+ was present in the sheath than in the blades of both the varieties. Lal and Bhardwaj (1984) while studying effect of salinity on mineral composition and ionic balance in field pea (*Pisum sativum* Linn. var. Arvensis) reported increase in the contents of phosphorus, calcium and chloride. Nigwekar (1988), in his study on horsegram, under salt-stress condition reported more Na^+ accumulation in root than in leaves. Present study has also indicated more accumulation of sodium in root parts of the crop under higher salinity. Cramer *et al.*, (1987) studied influx of Na^+ , K^+ and Ca^{++} in root of salt stressed cotton seedlings and reported proportionate increase in influx of Na^+ to increasing salinity. Sharma (1995) reported at the highest salinity level, Na^+ and Cl^- concentrations in the leaves increased and caused severe degree of injury and reduction in *Vicia faba* L.

Khan *et al.*, (1997) reported more accumulations of Na^+ in alfalfa plants when grown under 65 and 100 ml NaCl. Venkatesan *et al.*, (1997) while studying salinity effect on mineral nutrition of *Ipomoea pes-caprae* Sweet, reported more accumulation of sodium in leaf, stem and root parts of cultivars, when grown under 600 mM NaCl treatment. Dua (1998) showed that tolerant genotype in chickpea (*Cicer arietinum* L.) accumulated sodium and chloride in root and shoot parts when grown under salinized condition. Under some conditions, a high Na^+ concentration in stem may be beneficial in helping the plant to maintain its turgor, since the ions are sequestered in the vacuole and can thus reduce the toxicity of Na^+ (Munns, R.; Tester, M. 2008)

In the present investigation it was observed that there was greater accumulation of sodium in all parts of both the cultivars when grown under increasing salinity.

Chloride (Cl^-)

Chloride is the major constituent in different parts of crop plants when grown under saline condition. There is accumulation of chloride whenever there is sodium uptake by the root system. To understand the chloride balance analysis was carried out in both the cultivars, Dapoli-3 and HR-374 and the results obtained for accumulation in leaves are represented in Figure 03.



Accumulation of chloride, in crop species grown in saline conditions has been reported by several workers (Iyengar, 1980; Pandey and Ganapathy, 1984; Lal and Bhardwaj, 1984; Farida Begum, 1972; Baset and Jahan ara, 1989; Sharma, 1995; Peiris *et al.*, 1994; Jeschke *et al.*, 1992). Petoline and Leone (1980) noted that in *Phaseolus vulgaris* the chloride content increases linearly with an increase in salt content of the soil. A correlation between the accumulation of Cl⁻ and leaf injury has been observed by many workers. (Ernst and Feldermann, 1975; Storey, 1995). Nigwekar (1988) reported increase in chloride content in horse gram under increasing salinity. Sahu and Gupta (1999) reported three fold increase in chloride content in mung bean when grown under higher salinity, (10 ds M⁺). Venkateshan *et al.*, (1997) reported increase in chloride level in *Ipomoea pes-carpae* variety when grown under saline stress. Datta *et al.*, (1995) reported increase in chloride content in barley when grown under chloride and sulphate salinity. Khan *et al.*, (1997) showed that, in alfalfa plant, there is increase in chloride level when grown under 100 mM NaCl. Dua (1998) showed two fold accumulations in root part and three fold in shoot part in chickpea when grown under higher salinity. Evidence supporting the Cl⁻ requirement for photosynthesis was obtained by Warburg and Luttgens, (1946). According to Philip J White and Martin R. Broadley (2001), Cl⁻ movement within the soil is largely determined by water flows. Chlorine is an essential micronutrient for higher plants. It is present mainly as Cl⁻. Chloride is a major osmotically active solute in the vacuole and is involved in both turgor- and osmoregulation Mengel, K. Y., Kirkby E. A. (2000) And Mengel, K. Y., Kirkby E. A. (2008).

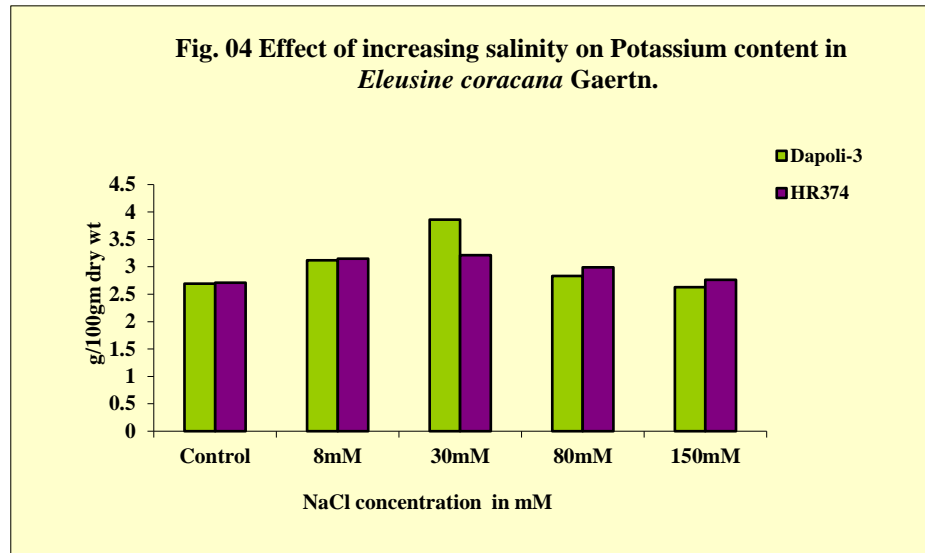
The chloride content decreased in leaves of plants grown under high salt concentration and level of chloride was more or less same in leaves of plants grown in 8mM NaCl.

Present investigation showed that the uptake and accumulation of chloride by the roots is more but the transport of these ions is not very efficient since the leaves showed a lower level of chlorides when plants were raised in high concentrations of sodium chloride.

Potassium (K⁺)

There was a slight increase in the potassium content in the leaves of the plants when grown in higher concentration of salt. (Figure 04). At 30mM salt stress there is about 11% increase in potassium content than in control. The graph denotes that, there is no significant difference in potassium content with increasing salinity.

The adverse effect of NaCl salinity on K⁺ nutrition are well documented (Dahiya and Singh, 1976; Guillen *et al.*, 1978 Laszlo and Kuiper, 1979; Chavan and Karadge, 1980; Lai and Bhardwaj *et al.*, 1987; Cramer *et al.*, 1987; Nigwekar, 1988; Patil *et al.*, 1989; Gorham, 1990; Peiris *et al.*, 1994; Jeschke *et al.*, 1992; Sharma, 1995).

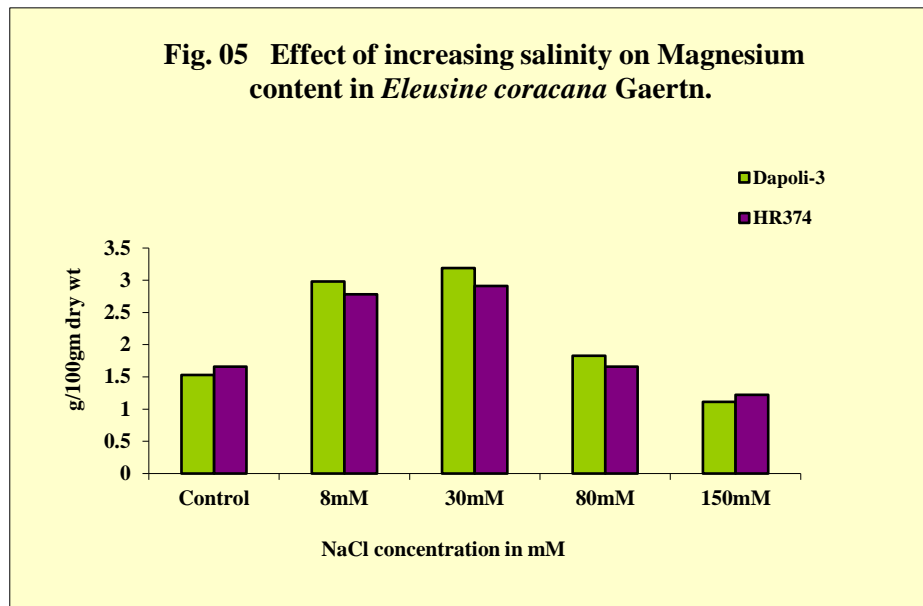


Kawasaki *et al.*, (1983) observed that high concentration of NaCl inhibited potassium accumulation in beans. Jeschke *et al.*, (1992) while studying effect of NaCl salinity of flows and partitioning of C, N, and mineral ions in whole plants of white Lupin, *Lupinus albus*, showed K⁺ transport in phloem was less in saline conditions. Tester and Davenport (2003) indicate that many plants can tolerate salt stress by excluding Na⁺ from the stem, or at least from the leaves, and maintaining high levels of K⁺.

Magnesium (Mg⁺⁺)

Magnesium is an integral part of the chlorophyll molecule, which plays a major role in crop productivity. The results are depicted in figure 05. The trend of accumulation of ions indicate that at lower concentrations of salt treatment there is accumulation of ions. The magnesium content was doubled in the leaves of the cultivar Dapoli-3 when irrigated with NaCl at a concentration of 30mM. At the same concentration HR-374 variety had a increased level of more than one and a half times than control. However, this level decreased by 25 % when the plants were raised in a salt concentration of 150mM.

Though some workers have investigated the role of magnesium in salt tolerance (Guillen *et al.*, 1978; Kokate, 1984 Kulkarni and Karadge, 1991) however, the information available is inadequate. Although salinity is known to affect the ion composition in various plant species. Several other workers have reported decreased Mg⁺⁺ uptake due to salinity. (Rahaman *et al.*, 1972; Guggenheim and Waisel, 1977; Laszlo and Kuiper, 1979; Paliwal and Maliwal, 1980; Kawasaki *et al.*, 1983; Lal and Bharadwaj, 1984; Surez and Grieve, 1988; Padole, 1991). Nigwekar (1988) reported lowering of Mg⁺⁺ level in the stem while leaves and root, the Mg⁺⁺ contents record increased under saline condition.



In the present investigation, increase in Mg^{++} content is observed in leaf and stem under high salt stress. Khan *et al.*, (1997) reported decrease in Mg^{++} content in Alfalfa plant under higher salinity. However, Dua (1998) reported increase in Mg^{++} content in shoot part of chickpea when grown under higher salinity, but he reported decrease in Mg^{++} content in root part in the same plant under higher salinity. Hermans C, Verbruggen N. (2005) stated that Mg plays a central role in plant chlorophyll biosynthesis and carbon fixation as a cofactor of a series of enzymes involved in carbon metabolism.

It is evident from the results that, there is significant increase in Mg^{++} content in the leaf in both the cultivars, Dapoli-3 and HR- 374 when grown under 8mM and 30mM salt stress indicating more accumulation of Mg^{++} in the leaf part. Our results under chlorophyll estimation have also indicated enhanced levels of chlorophyll in both the cultivars when grown under 8mM and 30mM salt stress. It clearly indicates that, there is a positive correlation between Mg^{++} content and the chlorophyll content in the leaf when grown under moderate saline stress condition.

References

- Allen J. A, Chambers J. L, and Stine M (1994)** Prospects for increasing salt tolerance of forest trees: a review. *Tree Physiology* 14, 843-853.
- Allen GJ, Sanders D. (1997)** Vacuolar ion channels in higher plants. *Advances in Botanical Research* 25: 217±252.
- Baset Q. A and Jahanara Arju (1989)** Variation in concentrations of potassium, sodium and chlorophyll pigments in leaf segments of two rice varieties differing in sensitivity to salinity. **Bernstein L.H.E and Hayward (1958)**, *Physiology of salt tolerance, Ann.Rev.Plant Physio.,2:25-46*
- Blatt MR. 2000a.** Cellular signaling and volume control in stomatal movements in plants. *Annual Review of Cell and Developmental Biology* 16: 221±241.
- Blatt MR. 2000b.** Ca^{2+} signalling and control of guard-cell volume in stomatal movements. *Current Opinion in Plant Biology* 3: 196±204.
- Chavan P.D and Karadge B. A (1980)** Influence of salinity on mineral nutrition of peanut (*Arachis hypogea* L). *Plant Soil*, 54:5-13.
- Cramer, Lynch J, Lauchli A and Epstein E (1987)** Influx of Na^+ , K^+ and Ca^{++} into roots of salt stressed Cotton seedlings; Effects Of Supplemental Ca^{2+} *Plant Physiol.*, 88: 510-516
- Dahiya S. S and Singh M (1976)** Effect of Salinity, Alkalinity and Iron application on availability of Iron, Maganese, Phosphorus and Sodium in Pea (*Pisum sativum*) *Crop. Plant Soil*, 44: 697-702

- Datta K. S, Kumar Ashok, Varma S. K and Angrish R (1995)** Delimitation of salt tolerance in Barley on the basis of water relations and ion distribution under chloride and sulphate salinity Indian J. Plant Physiol, Vol Xxxviii, No 3. 253-256
- DeWald DB, Torabinejad J, Jones CA, Shope JC, Cangelosi AR, Thompson JE, Prestwich GD, Hama H.(2001).**Rapid accumulation of phosphatidylinositol 4,5- bisphosphate and inositol 1,4,5trisphosphate correlates with calcium mobilization in salt- stressed Arabidopsis Plant Physiology 126: 759±769
- Divate M. R and Pandey R. M (1981)** Salt tolerance in Grapes: Effects of salinity on mineral composition of plants, Plant Physiol, 24(4): 3621-3625
- Dua R. P (1998)** Salinity tolerance in Chick Pea (*Cicer arietinum* L.), Indian J. Plant Physiol, Vol. 3 No. 2, 102-106.
- Ernst W and Feldermann D (1975)** Effects of deicing salts (NaCl) on the mineral status of lime trees, Z Pflanzener Naehr Bodenkd., 6: 629-640
- Farida Begum, Karmoker J. L, Fattah Q. A and Maniruzzaman A. F. M (1972)** The effect of salinity on germination and its Cl- accumulation in germinating seeds of *Triticum aestivum* L. Cv.Akber, Plant Cell Physiol., 33(7): 1009-1014.
- Fasano JM, Massa GD, Gilroy S. (2002).** Ionic signaling in plant responses to gravity and touch. Journal of Plant Growth Regulation 21: 71±8
- Gorham J (1990)** Salt tolerance in triticeae K/Na discrimination in synthetic hexaploid wheats. J. Exp. Bot. 41(226): 623-627.
- Greenway H. and Munns R. (1980)** Mechanism of salt tolerance in non-halophytes Annu. Rev. Plant Physiol., 31: 149-190
- Guggenheim J And Waisel V (1977)** Effect of salinity, temperature and nitrogen fertilization on growth and composition of Rhodes Grass(*Chloris gayana* Kunth.), Plant Soil., 47: 431- 440.
- Guillen M. G, Caro M, Fernandes F. G and Cerda A (1978)** Foliar composition of Citrus seedlings irrigated with saline waters, Commun. Sci. Plants Anal., 9: 595-606.
- Hermans C, Verbruggen N.(2005)** Physiological characterization of Mg deficiency in *Arabidopsis thaliana*. J Exp Bot 2005; 56:2153-61; PMID:15983014; <http://dx.doi.org/10.1093/jxb/eri215>
- Imamul Haq S M and Larher F (1983b)** Osmoregulation in higher plants: Effect of NaCl salinity on non-nodulated *Phaseolus aureus* LI Growth and mineral content. New Phytol., 93: 203-208.
- Iyengar E.R.R, Pandya, J.B. and Patolia J. S. (1980)** Evaluation of cotton varieties to salinity stress. Indian J. Plant Physiol. 21:113-117.
- Jeschke, Olaf Wolf and Hartung W (1992).** Effect of NaCl salinity of flows and partitioning of C, N and mineral ions in whole plants of white lupin (*Lupinus albus* L.) J. of Expt. Bot. 42: 251- 777.
- Kawasaki T, Akiba T and Moritsugu M (1983)** Effect of high concentrations of sodium chloride and polyethyleneglycol on the growth and ion absorption in plants. Plant n Soil,75: 75-86.
- Karadge B. A and Chavan P. D (1983)** Physiological studies in salinity tolerance of *Sesbania aculeata* Poir. Biol Plant 25: 412-418.
- Khan M. G, Silberbush M and Lips S. H (1997)** Effect of nitrogen nutrition on growth and mineral status of Alfafa plants in saline condition., Indian J. Plant Physiol.2 (4):274- 283.
- Kim HY, Cote Â GG, Crain RC. (1996).** Inositol 1,4,5-trisphosphate may mediate closure of K⁺ channels by light and darkness in Samanea saman motor cells. Planta 198: 279±287
- Kokate P. S (1984)** An aspect of physiological studies in Rice. Ph. D. Thesis, Shivaji University, Kolhapur, India.
- Kulkarni H and Karadge A. A (1991)** Growth and mineral nutrition of Moth Bean (*Phaseolus aconitifolius* Jacq.) under saline conditions. Indian Plant Physiol 34(1) 14-24.
- Lal R. K and Bharadwaj S. N (1984)** Studies on nitrogen metabolism of salinity stressed field Pea (*Pisum sativum* L.). Indian J. Plant Physiol., 10: 165-169
- Lal R. K and Bharadwaj S. N (1987)** Studies on nitrogen metabolism of salinity stressed field pea (*Pisum sativum* L var. Arvensis). Indian J. Plant Physiol., 27: 351-354.

- Laszlo S and Kuiper Y. P. J. E (1979)** The effect of salinity on growth cation content, Na⁺ uptake and translocation in salt sensitive and salt tolerant, *Plantago* species. *Physiol. Plant.* 47: 95-99
- Maas E. V and Hoffman G. J (1977)** Crop salt tolerance current assessment asce; *J Inig And Drainage Div.* 103: 115-134.
- Mahmood K and Malik K. A (1987)** Salt tolerance studies on *Atriplex Rhagodioides* F. Muell. *Environ Exp. Bot.*, 27(1): 119-125.
- Malho Â R. (1998)**; Role of 1,4,5-inositol triphosphate-induced Ca²⁺ release in pollen tube orientation. *Sexual Plant Reproduction* 11: 231±235.
- Mangal K and Kirkby E. A (1980)** Principles of Plant nutrition. International Potash Institute, Bern, Switzerland.
- Mengel, K.y E.A. Kirkby. 2000.** Principles of plant nutrition. Basel Switzerland: International Potash Institute
- Meiri A, Kamburoff J and Poijakoff Mayber A (1971)** Response of Bean plants to sodium chloride and sodium sulphate salinization. *Ann. Bot.*, 35: 837-847.
- Munns ,R.; Tester, M.(2008)** Mechanisms of salinity tolerance. *Annual Review of Plant Biology*, v. 59, n. 1, p. 651-681, 2008
- Ng CK-Y, McAinsh MR, Gray JE, Hunt L, Leckie CP, Mills L, Hetherington AM. (2001b)**, Calcium-based signalling systems in guard cells. *New Phytologist* 151: 109±120.
- Nigwekar A. S (1988)** Physiological studies in Horse gram (*Dilichos biflorus* L.) Ph.D. thesis, Shivaji University, Kolhapur, India.
- Onkware, 1993; Onkware A. O (1993)** The germination, growth and grain production of salt stressed Finger Millet (*Eleusine coracana* L) *Garern. Ind. J. Pl. Phy.*, 36(2): 77-81.
- Patil B. C, Gururaja Rao M. R, Ramakrishna Parama V. R and Voshwanath D. P (1989)** Relative Salt tolerance of Safflower genotypes based on yield , Nitrogen, 3
- Padole V R (1991)** Effect of irrigation of saline and sodic water on uptake of nutrients and yield of Wheat grown under salt affected condition. *Pak. Res. J.*, 15 (2).
- Paliwal K. V and Maliwal G. L (1980)** Growth and nutrient uptake relationships of some crops in saline substrate *Ann. Arid. Zone* 19: 251-257.
- Pandey, Ruchira and Ganapathy P. S (1984)** Effects of sodium chloride stress on callus cultures of *Cicer arietinum* cultivar Bg203 growth ion accumulation. *J. Exp. Bot.*, 35 (157): 1194-1199.
- Petoline J. F and Leone A (1980)** Saline aerosol some effects on the physiology of *Phaseolus vulgaris* (Cultivar Topcrop) *Phytopathology* 70: 229-232.
- Perera IY, Heilmann, Boss WF. 1999.** Transient and sustained increases in inositol 1,4,5- trisphosphate precede the differential growth response in gravistimulated maize pulvini. *Proceedings of the National Academy of Sciences of the USA* 96: 5838±5843.
- Peiris B. D, Wanigasurya S. C and Fernando M. H. S (1994)** The role of leaf in partitioning of Sodium and Chloride ions in NaCl treated rice (*Oryza sativa* L.) plants. *Ind. J. Pl. Physiol.* 37(1): 35-36
- Pérez-Pérez, E., A. Nava, C. González, M. Marin, L. Sandoval, A.M. Casassa-Adrón, J. Philip J White and Martin R. Broadley (2001)** *Annals of Botany* 88: 967-988, 2001
- Philip J White and Martin R. Broadley (2001)**, Chloride in Soils and its Uptake and Movement within the Plant: A Review, *Annals of Botany* 88: 967-988, 2001 doi:10.1006/anbo.2001.1540, available online at <http://www.idealibrary.com> on
- Rahman A, EI-Shourbagy E. I and EI-Monayeri M. O (1972)** Salinity effects on carbohydrates and ion contents in some desert fodder plants. *Bull Fac. rainfall and soil fertility gradients in Ghana. Plant Ecology* 145:167-173
- Rains D. W (1972)** Salt transport by plants in relation to salinity. *Annu. Rev. Plant Physiol*, 23: 367-388
- Rudd and Franklin-Tong 2001 Rudd JJ, Franklin-Tong VE. (2001).** Unravelling response- speci@city in Ca²⁺ signalling pathways in plant cells. *New Phytologist* 151: 7±33.
- Sahoo S. K and Sahu A. C (1994)** Ca²⁺ does not antagonize the adverse effect of NaCl stress in excised Rice leaves, *Ad. Plant Sci.*, 7:100-104
- Sharma S. K (1995)** Effect of salinity on growth performance and internal distribution of Na⁺, K⁺ and Cl⁻ in *Vicia faba* L. *Ind. J. Phy.*, 38(1): 69-72.

- Schroeder JI, Allen GJ, Hugouvieux V, Kwak JM, Waner D. 2001.** Guard cell signal transduction. Annual Review of Plant Physiology and Plant Molecular Biology 52:627±658
- Starck Z and Maria Kozinka (1980)** Effect of phyto hormones on absorption and distribution of ions in salt stressed Bean Plants, Acta Soc. Bot. Pol. 49(2):111-126.
- Strogonov B. P (1964),** Physiological basis of salt tolerance of plants Trans A. Polijakoff Mayber: A. M. Meyer Israel Program Sci. Transl. Jerusalem 1964. 279pp.
- Staxe Ân I, Pical C, Montgomery LT, Gray JE, Hetherington AM, McAinsh MR. (1999).** Abscisic acid induces oscillations in guard-cell cytosolic free calcium that involve phosphoinositide- specific phospholipase C. Proceedings of the National Academy of Sciences of the USA 96: 1779±1784.
- Storey R (1995)** Salt tolerance, ion relations and the effect of root medium on the response of citrus to salinity, Aust. J. Plant Physiol. 22: 101 -114.
- Suarez D. L and Grieve C. M (1988)** Predicting cation ratios in corn from saline solution composition. J. Expt. Bot. 39(202): 605-612.
- Tester, M., Davenport, R. (2003)** Na⁺ transport and Na⁺ tolerance in higher plants. Annals of Botany, v. 91, n. 5, p. 503-527, 2003
- Vadim Volkov and Mary J. Beilby (2017),** Salinity tolerance in plants: Mechanism and regulation of ion transport, Frontiers in Plant Science, December 2017, ISSN 1664-8714 ISBN 978-2-88945-369- 6 DOI 10.3389/978-2-88945-369-6
- Venkatesan A., K. P. Chellappan And V. Venkateswaralu (1997)** Salinity Stress in mineral nutrition and growth Of Ipomoea pes- caprae Sweet.
- Vilchez y., C. Fernández. (2008).** Effect of application of calcium sulfate and organic matter on the incidence of blossom end rot of guava (*Psidium guajava* L.). Rev. Fac. Agron. 25:507-524
- Warburg and Luttgens, (1946)** Photochemische Reduktion des Chinons in grünen Zellen und Granula. Biochimia 11: 321-322
- Xiong L, Schumaker KS, Zhu J-K. 2002.** Cell signaling during cold, drought, and salt stress. Plant Cell 14: S165±S183.



12.

TOTAL IRREGULARITY STRENGTH AND TRIANGULAR SNAKE GRAPH

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Udgir, Dist : Latur(Maharashtra)**Abstract**

An edge (A vertex) irregular total k -labeling of a graph G is such a labeling of the vertices and edges with integers $1, 2, \dots, k$ that the weights of any two different edges (vertices) are distinct, where the weight of an edge (a vertex) is the sum of the label of the edge (vertex) itself and the label of its incident vertices (edges). The minimum k , for which the graph G has an edge (a vertex) irregular total k -labeling, is called the total edge (vertex) irregularity strength of the graph G and is denoted by $tes(G)$ ($tvs(G)$). In this paper, the exact value of the total edge (vertex) irregularity strength of the triangular snake is determined.

1. INTRODUCTION

We consider only finite, simple and undirected graphs, without loops and multiple edges. Let $G = (V, E)$ be a graph with the vertex set V and the edge set E . A triangular cactus is a connected graph, all of whose blocks are triangles. A triangular snake is a triangular cactus whose block-cut point graph is a path. i.e. a triangular snake G_p with p triangles is obtained from a path v_0, v_1, \dots, v_p by joining v_i and v_{i+1} to a new vertex w_i , where $i = 0, 1, \dots, p-1$.

An edge irregular total k -labeling of a graph G is such a labeling of the vertices and edges with integers $1, 2, \dots, k$ that the weights of any two different edges are distinct, where the weight of an edge is the sum of the label of the edge itself and the labels of the two end vertices. The minimum k for which the graph G has an edge irregular total k -labeling, is called the total edge irregularity strength of the graph G and is denoted by $tes(G)$. Similarly, a vertex irregular k -labeling of a graph G is such a labeling of the vertices and edges with integers $1, 2, \dots, k$ that the weights of any two different vertices are distinct, where the weight of a vertex is the sum of the label of the vertex itself and the labels of its incident edges. The minimum k , for which the graph G has a vertex irregular total k -labeling, is called the total vertex irregularity strength of G and is denoted by $tvs(G)$.

The notions of the total edge irregularity strength and the total vertex irregularity strength were first introduced by Bača. et al [1] in a recent paper. They are invariants analogous to irregularity strength of a graph G [3, 4, 6, 8, 9]. In [1], Bača et al. put forward the lower bounds of $tes(G)$ and $tvs(G)$ in terms of the maximum degree Δ , minimum degree δ , $|E(G)|$ and $|V(G)|$, which may be stated as in Theorem 1.1 and 1.2.

Theorem 1.1: $tes(G) \geq \max \left\{ \left\lceil \frac{\Delta + 1}{2} \right\rceil, \left\lceil \frac{|E| + 2}{3} \right\rceil \right\}$

Theorem 1.2: $tvs(G) \geq \left\lceil \frac{|V(G)| + \delta}{\Delta + 1} \right\rceil$

Based on these theorems, Bača et al [1] determined the exact values of the total edge irregularity strength of path P_n , star S_n , wheel W_n , and friendship graph F_n and obtained the exact values of the total vertex irregularity strength of star S_n , complete graph K_n , cycle C_n and Prism D_n . Ivančo and Jendrol' [5] determined the total edge irregularity strength of any tree. Jendrol' et al [7] proved the exact values of the total edge irregularity strength of complete graphs and complete bipartite graphs. Miskuf and Jendrol' [10] determined the exact values of the total edge irregularity strength of $m \times n$ grids. Brandt et al [2] proved a conjecture about edge irregular total labeling. Tong Chunling et al [13] obtained the exact values of the total edge irregularity strength of some families of graphs including the generalized Petersen graph, Ladder, Mobius band etc.

2 MAIN RESULTS

In this paper, the exact value of the total edge (vertex) irregularity strength of the triangular snake is determined.

Theorem 2.1: $\text{tes}(G_p) = p + 1, p \geq 1.$

Proof: Let $G_p = (V, E)$ be a triangular snake with p triangles ($p \geq 1$) on n vertices and q edges defined on $V = V_1 \cup V_2$, where

$$V_1 = \{ v_i : 0 \leq i \leq p \} \text{ and } V_2 = \{ w_i : 0 \leq i \leq p-1 \}$$

and $E = E_1 \cup E_2 \cup E_3$ where

$$E_1 = \{ v_i v_{i+1} : 0 \leq i \leq p-1 \}$$

$$E_2 = \{ v_i w_i : 0 \leq i \leq p-1 \}$$

and $E_3 = \{ v_{i+1} w_i : 0 \leq i \leq p-1 \}$

Here $n = 2p + 1$, and $q = 3p$

Now let us construct a function f as follows

$$f(v_i) = i + 1, \quad 0 \leq i \leq p$$

$$f(w_i) = i + 2, \quad 0 \leq i \leq p-1$$

$$\text{and } f(v_i v_{i+1}) = i + 2, \quad 0 \leq i \leq p-1$$

$$f(v_i w_i) = i + 1, \quad 0 \leq i \leq p-1$$

$$f(v_{i+1} w_i) = i + 2, \quad 0 \leq i \leq p-1$$

Since $\text{wt}(v_i v_{i+1}) = f(v_i) + f(v_{i+1}) + f(v_i v_{i+1})$

$$= 3i + 5, \quad 0 \leq i \leq p-1$$

$$\text{wt}(v_i w_i) = f(v_i) + f(w_i) + f(v_i w_i)$$

and $\text{wt}(v_{i+1} w_i) = f(v_{i+1}) + f(w_i) + f(v_{i+1} w_i)$

$$= 3i + 4, \quad 0 \leq i \leq p-1$$

the weights of the edges of the triangular snake G_p with p triangles, under the labeling f constitute the set $\{4,5,\dots,3p+3\}$ and the function f is a mapping from $V \cup E$ into $\{1,2,\dots,p+1\}$. Clearly the total labeling f has the required properties of an edge irregular total labeling.

$$\therefore \text{tes}(G_p) \leq p + 1, \quad p \geq 1.$$

$$\begin{aligned} \text{But } \text{tes}(G_p) &\geq \text{Max} \left\{ \left\lceil \frac{\Delta + 1}{2} \right\rceil, \left\lceil \frac{|E| + 2}{3} \right\rceil \right\} \\ &\geq \text{Max} \left\{ \left\lceil \frac{5}{2} \right\rceil, \left\lceil \frac{3p + 2}{3} \right\rceil \right\} \\ &\geq \left\lceil p + \frac{2}{3} \right\rceil \\ &= p+1 \end{aligned}$$

Hence $\text{tes}(G_p) = p + 1, \quad p \geq 1.$

Theorem 2.2: $\text{tvs}(G_p) = p + 1, \quad p \geq 1.$
snake, with p ($p \geq 1$) triangles defined as in Theorem

Proof: Let G_p be a triangular

2.1. Let g be a function defined by

$$g(v_i) = i + 1, \quad 0 \leq i \leq p$$

$$g(w_i) = i + 1, \quad 0 \leq i \leq p - 1$$

and $g(v_i w_i) = 1, \quad 0 \leq i \leq p - 1$

$$g(v_{i+1} w_i) = 2, \quad 0 \leq i \leq p - 1$$

$$g(v_i v_{i+1}) = 1, \quad \text{if } i \text{ is even, } 0 \leq i \leq p-1$$

$$= p - 1, \quad \text{if } i \text{ is odd, } 0 \leq i \leq p - 1, \quad p \text{ is odd}$$

$$= p - 2, \quad \text{if } i \text{ is odd, } 0 \leq i \leq p - 3, \quad p \text{ is even}$$

$$= p - 1, \quad \text{if } i = p - 1, \quad p \text{ is even}$$

Since $\text{wt}(w_i) = g(w_i) + g(v_i w_i) + g(v_{i+1} w_i)$

$$= i + 4, \quad 0 \leq i \leq p - 1$$

$$\text{wt}(v_i) = g(v_i) + g(v_i w_i) + g(v_i v_{i+1}) + g(v_i w_{i-1}) + g(v_{i-1} v_i)$$

$$= p + i + 4, \quad \text{if } i \text{ is even, } p \text{ is odd}$$

$$= p + i + 3, \quad \text{if } i \text{ is odd, } p \text{ is even}$$

$$= p + i + 4, \text{ if } i \text{ is odd, } p \text{ is odd}$$

$$= p + i + 4, \text{ if } i = p - 1, p \text{ is even}$$

the weights of the vertices of the triangular snake G_p , with p triangles under the labeling g constitute the set $\{3, 4, \dots, 2p+3\}$ and the function g is a mapping from $V \cup E$ into $\{1, 2, \dots, p+1\}$. Clearly the total labeling g has the required properties of vertex irregular total labeling.

$$\therefore \text{tvs}(G_p) \leq p + 1,$$

But by Theorem 1.2, we have

$$\begin{aligned} \text{tvs}(G_p) &\geq \left\lfloor \frac{|V| + \delta}{\Delta + 1} \right\rfloor \\ &\geq \left\lfloor \frac{2p+3}{5} \right\rfloor \\ &\geq p+1 \end{aligned}$$

Hence $\text{tvs}(G_p) = p+1$, $p \geq 1$.

REFERENCES

- [1] **M. Bača, S. Jendrol', M. Miller and J. Ryan**, On irregular total labelings, *Discrete Mathematics*, 307 (2007) 1378 – 1388.
- [2] **S. Brandt, J. Miskuf and Rautenbach**, On a conjecture about edge irregular total labeling, *Journal of Graph Theory*, 57(4) (2008) 333-343.
- [3] **J. L. Baril, H. Keddouci and O. Togni**, The irregularity strength of circulant graphs, *Discrete Mathematics*, 304 (2005) 1-10.
- [4] **T. Bohman and D. Kravitz**, On irregularity strength of trees, *Journal of Graph Theory*, 45(4) (2004) 241-254.
- [5] **J. Ivanko and S. Jendrol'**, The total edge irregularity strength of trees, *Discussions Mathematical, Graph Theory*, 26(3)(2006), 449- 456.
- [6] **S. Jendrol' and M. T'Kac**, The irregularity strength of tK_p , *Discrete Mathematics*, 145 (1995) 301-305.
- [7] **S. Jendrol', J. Miskuf and R. Sotak**, Total edge irregularity strength of complete graphs and complete Bipartite graphs, *Electronic Notes in Discrete Mathematics* 2 (2007) 281 – 285.
- [8] **S. Jendrol', and V. Zoldak**, The irregularity strength of generalized Petersen graph, *Mathematics Slovaca*, 45(2) (1995) 107-113.

- [9] **A. Meissner, M. A. Nieronska. and K. J. Zwierzynski**, Computing an irregularity strength of selected graphs, *Electronics Notes in Discrete Mathematics*, 24 (2006) 137 – 144.
- [10] **J. Miskuf and S. Jendrol'**, On total irregularly strength of the grids, *Tatra Mountains Mathematical Publications*, 36 (2)(2007) 147-151.
- [11] **Tong Chunling, Lin Xiaohui, Yang Yuansheng and Wang Lipng**, Irregular total labelings of some families of graphs, *Indian J. pure appl. Math.*, 40(3) (June 2009)155-181.
- [12] **Xi Yue, Yang Yuansheng and Wang Liping**, On Harmonious Labeling of the double triangular snake, *Indian J. pure appl. Math.*,39(2)(April 2008)177-184.

