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Exploring the neural mechanisms of aversion to bitter gourd phytochemicals in insects using *Drosophila*Rusha Chakraborty^a, Tamanna Singh Thakur^b, Riti Chauhan^b, Zeba Manzar^b, Gaurav Das^a, Aniruddha Mitra^{b,c,*}^a National Centre for Cell Science, Pune, India^b School of Biological and Environmental Sciences, Shoolini University of Biotechnology and Management Sciences, Solan, India^c Department of Zoology, Sarojini Naidu College for Women, Kolkata, India

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ABSTRACT

Bitter gourd (*Momordica charantia* L.) has compounds that repel insect pests. Unlike conventional pesticides, these compounds are eco-friendly and beneficial for human health. However the mechanisms by which these compounds repel insects and affect their physiology remains poorly known. Here we used *Drosophila melanogaster* (Meigen) to address these issues. We tested a wild strain, and a laboratory bred Canton S strain. Bitter gourd extract reduced the viability of developing flies, but did not affect survival in adults. Flies avoided bitter gourd extract in a food choice assay, and consumed a significantly low amount of food mixed with bitter gourd – indicating that it acts as an antifeedant. Transgenic flies with impaired aversive taste sensitive neurons showed a reduced aversion towards bitter gourd extract showing that these compounds act through the bitter sensitive gustatory neurons. Finally, flies also retained the memory of consuming bitter gourd extract for at least 24 hours, suggesting an additional cognitive mechanism for long term aversion. Our study provides the first evidence of bitter gourd compounds acting as antifeedants and also as potent reinforcers of aversive memory in drosophilids. We suggest that flies can be used to understand the physiological and neural mechanisms underlying the mode of action of other such phyto-extracts with the goal of developing potent but less harmful pest control formulations.

Introduction

Globally, synthetic pesticides are the chemicals of choice to repel or kill insects (Oerke, 2006). These are cheap to produce at an industrial level and can be applied easily at a large scale. However, these chemical pesticides not only adversely affect human health and well being (Nicolopoulou-Stamati et al., 2016), but also disrupt the functioning of the ecosystem by harming or killing non-targeted species (Köhler and Triebkorn, 2013). Compounds derived from plants that act as biological pesticides, antifeedants or olfactory repellents (Simmonds, 2006) offer safer alternatives to conventional pesticides. Increasing concern about the risks from synthetic insecticides to the environment and human health has led to a major trend in current pest management strategies, which involves searching for less hazardous chemicals or biologically based products (Isman, 1994). Approximately around 10% of plant species known on earth have been estimated to have been examined to determine their chemical compositions, and out of more than 6500 plant species that have been screened, about 2500 species (from 235 families)

have been found to show an appreciable degree of pest control activity (Koul, 2016). Some plant derived insect antifeedants that may be used to repel insects also have beneficial effects on human health and are known for their medicinal properties. For example azadirachtin from the neem tree *Azadirachta indica* (Juss) has insecticidal and antifeedant activities (Mordue (Luntz) and Blackwell, 1993) and benefits human health as well (Roy and Araf, 2006; Tundis et al., 2014). Limonoids (triterpene derivatives) from the neem tree have been shown to have anti-cancer, anti-malarial and anti-microbial activities (Roy and Araf, 2006).

Bitter gourd (*Momordica charantia* L.) is a plant that has medicinal value to humans. It has been used in ethnomedicine and has been proposed as a source of anti-diabetic drugs and antioxidants (Virdi et al., 2003; Grover and Yadav, 2004; Kubola and Siriamornpun, 2008; Joseph and Jini, 2013; Desai and Tatke, 2015). It has triterpenes, terpenoids, phenolics and other compounds that act as antifeedants to insects, and the antifeedant or repellent activity has been tested against some lepidopteran pests (Yasui, 2002; Ling et al., 2008; Wardhani et al., 2015) and occasionally against coleopteran and dipteran pests

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Effect of next nearest neighbour interactions on compensation temperature in trilayered spin systems

Enakshi Guru & Sonali Saha 

Pages 642-650 | Received 21 Apr 2022, Accepted 22 Jun 2022, Published online: 06 Jul 2022

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ABSTRACT

In this paper we are communicating a Monte-Carlo based numerical study on the ABA type trilayered Ising spin system incorporating next nearest neighbour interactions. The ABA type system is of growing interest because of the existence of compensation temperature. The effect of next nearest neighbour interactions on compensation temperature and phase transition have been studied by focussing on thermal response of some thermodynamic quantities using the Metropolis algorithm. An effort

also made to understand the role of intralayer and interlayer interactions in controlling compensation temperature and critical temperature within such a system.

Q KEYWORDS: Trilayered Ising lattice Monte Carlo simulation Metropolis algorithm
compensation temperature critical temperature magnetisation coercive field

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COINCIDENCE POINT AND COMMON FIXED POINT RESULTS IN G -FUZZY METRIC SPACES INVOLVING IMPLICIT FUNCTION AND PROPERTY (E.A.)

KRISHNA KANTA SARKAR¹, KRISHNAPADA DAS² and ABHIJIT PRAMANIK³

Abstract: Property (E.A.) and common property (E.A.) relaxes the required containment of range of mappings to find coincidence point and common fixed point results in G -fuzzy metric spaces. In this paper we establish two coincidence and fixed point results involving property (E.A.) and implicit function. Some corollaries have been deduced for mappings with common property (E. A.). One of the corollary have been deduced by using Lebesgue integral. Our results are also supported by examples.

Key words: G -fuzzy metric, implicit function, property (E.A.), common property property (E. A.), weakly compatible mappings, coincidence point and fixed point.

AMS subject classification : 47H10, 54H25, 54E70.

1 Introduction:

The study of fixed point result was initiated by S. Banach [2] in the year 1922. The result of Banach is commonly known as Banach contraction principle. This result has been generalized in many directions by the researchers. Some of the researchers generalized the metric spaces and studied fixed point and coincidence point results. Metric spaces have been generalized to 2-metric spaces, b-metric spaces, D-metric spaces, G-metric spaces, probabilistic metric spaces, Menger spaces, fuzzy metric spaces, G -fuzzy metric spaces, S-metric spaces, S-Menger spaces and many more.

On the other hand some of the authors generalized or weakened contraction condition to get fixed point and coincidence point results. In 1976, G. Jungck [8] introduced one such concept which is known as commuting mappings. This was further generalized to compatible mappings, weakly compatible mappings, R-weakly compatible mappings etc. Some of the result dealing with these type of mappings may be seen in works like [3, 4, 17] and [20].

The evolution of fuzzy mathematics starts with the introduction of fuzzy set by L. A. Zadeh [23] in the year 1965 with a view to represent vagueness in every day life. There are many real life problems which have multiple objectives and it is very difficult to get a feasible solution that brings the optimum objective function. The richness of fuzzy mathematics leads us to apply and solve some of these problems.

In 1975, Kramosil and Michalek [12] introduced the notion of fuzzy metric spaces as a generalization of classical metric spaces. George and Veeramani [6] in 1994, modified the definition of fuzzy metric spaces of Kramosil and Michalek type with the help of t -norm to introduce Hausdorff topology in fuzzy metric spaces. Introduction of this new definition of fuzzy metric spaces gives a huge opportunity to prove new type of fixed point results

An exploratory study of the Gender spectrum using N-Gram analysis to show its distribution in latest edition of DDC through literary warrant

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ABSTRACT

Gender spectrum is a term which describes all the gender present in our society. It cannot establish the Gender, Male and Female as polar opposite. In 6th September, 2018 Supreme Court declares that Gay marriage is legal and it's natural. People have no control over it. Being a library professional a curiosity was there to study the Gender spectrum and it's expand in different classification system through literary warrant. N-gram analysis is used to see the frequency of terms used in literature and world cat database is used to see the literary warrant of selective concepts.

KEYWORDS: Gay, Gender spectrum, Lesbian, Ngram study, N-gram value, worldcat database etc.

1. INTRODUCTION

Gender spectrum is an umbrella term which includes all the genders present in our society. The word LGBTQIA is an acronym stands for Lesbian, Gay, Bisexual, Transgender, Queer, Intersex and Asexual. History of LGBT in India and abroad was very old. The main example is the *Kamasutra* written by Vatsyayana is an ancient Indian text which dedicates a complete chapter on homosexual behavior. *Arthashastra* is an example where different sexual practices were described with man or woman. From *Arthashastra* we came to know that Homosexuality was treated as a very minor offence at that time. After that from the writings of Al-Biruni, we came to know that Medieval Hindu society disapproved it while in Muslim society it was very common. In Mughal period Babur was a Mughal Emperor. He wrote *Baburnama*. It was his autobiography where he says about his infatuation with a teenage boy. ("LGBT history in India", 2020). Literature of Mughal periods tells us that homosexuality was a common practice at that time. After some time in the year 1757, the battle of Plassey was happened and the East India Company expanded their power in India. British Raj criminalized homosexuality based on "Buggery act 1533". The Indian Penal Code (IPC) is a criminal code which compiles a significant amount of criminal law with in a particular jurisdiction. The draft was first prepared by T.B. Macaulay in the year 1834. Finally, it came into operation in 1st January, 1862



Cloud Hosting of Koha Reflecting upon the Attitudinal Purview of the Users: A Case Study on the Faculty and students of Sarojini Naidu College for Women

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Bio-note of the author: Smt. Ankira Sanyal is currently working as a Librarian in Sarojini Naidu College for Women, affiliated to West Bengal State University, Barasat. She has completed her M.Phil. from Jadavpur University. She has published 7 articles in various national and International conferences.

Abstract:

Sarojini Naidu College for Women is a women's college located in Dumdum, Kolkata affiliated to West Bengal State University. In this college central library and departmental libraries are performing their roles for intellectual enhancement of their users. Central library is run by Librarian and library staffs whereas departmental libraries are running by respective departmental teachers. Most of the household activities of the Library like Acquisition, cataloguing, classification, serial control etc. are done by Central Library whereas Departmental libraries mainly perform circulation of printed books to their respective students only. Previously the central library of the college was run by traditional way of system. After some decades in the year 2010 Koha had been introduced here as local hosted. It was running till 2016. In the year 2017 cloud hosting of Koha had been introduced by the college authority. Now it is the time to see the effectiveness of cloud hosting.

Keywords: Open-source Library management software, user's attitude, local hosting, cloud hosting etc.



HISTORY OF TRANSFORMATION OF SILIGURI FROM UNION BOARD TO MUNICIPAL CORPORATION AND ITS URBAN DEVELOPMENT

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Abstract : Siliguri is the gateway to North-East India. It is not only of vital importance to the state of West Bengal but to India as a whole. The town is popularly known as the chicken neck of north-east India because its corridor establishes a connection between the rest of India and the north-eastern states. It also links hill stations such as Gangtok, Darjeeling, Kalimpong, Kurseong and Mirik and the northeast states with the rest of India. Siliguri town is bounded by international borders of Bangladesh, Bhutan, and Nepal. It is also connected with the traditional trade route of Sikkim, Bhutan, Nepal and Tibet. During the initial period of its growth, Siliguri attracted migrants from its hinterlands like Bihar, Uttar Pradesh and Assam and with the passing of time Siliguri acquired a cosmopolitan character. This indicates the rapid pace of urbanisation in Siliguri Urban Area. But in 1901, Siliguri was a tiny village of less than 800 populations. Siliguri was upgraded as a Municipal town with a population of 32,480 with the area of 15.54 sq. km in 1951 and it extended further to 41.90 sq. km in 1994 when it was incorporated to Siliguri Municipal Corporation. Meanwhile, Siliguri Municipality was established on 24th May, 1949 through a gazette notification under the Bengal Municipal Act of 1932. The purpose of this paper is to study the history of transformation of Siliguri town from Municipality to Municipal Corporation. The proposed study intends to find out the nature of political participation of various political parties to governing the Local-self Government in Siliguri Municipality. The present study is based on primary sources; mostly unpublished materials were consulted either in District Magistrate Office of Darjeeling, or Divisional Commissioner's Office in Jalpaiguri, or in West Bengal State Archive in Calcutta. Besides primary sources, several books, Memories, local journals, magazines, souvenirs, newspapers, historical journals, unpublished Ph. D thesis has been used to enrich the study.

IndexTerms - Siliguri, Chicken-neck, Urbanisation, Municipality, Corporation, Local-self Government, Municipal Corporation.

INTRODUCTION:

Siliguri is located in the plains of Himalayas and on the banks of the river Mahananda. The city is popularly known as the gateway of north east India because its corridor is connected with the north-eastern states to the rest of India.¹ (Basu and Saha, 2011) It was mere village with a population of 784 in 1901 and from where it has emerged as a town by reason of its importance as a centre of communication and transshipment. When the North Bengal State Railway was extended to Siliguri in 1878, the village was transferred from the Jalpaiguri district to Darjeeling. The Darjeeling Hill Railway on a different gauge was very soon completed and the cart road to Darjeeling was thereafter steadily improved. Siliguri thus became a transshipment point from the meter gauge railway to the narrow gauge railway and the Cart Road. Roads and railways were later opened out in the Terai and up the Teesta valley, thus increasing the business importance of Siliguri. Such administrative importance as Siliguri has secured is due to its position as a focus of communication² (Dash, 1947:263). The earlier writers, travellers, historians called Siliguri as Sannyasikata or Baikunthapur or Brattish Hazari. The word 'Siliguri' is comes from 'Sili' and 'guri'.³ According to Shailen Debnath 'Siliguri' means a stack of pebbles or stone. Siliguri region was called as 'Silkhaguri' until the 19th century, when it was under Baikunthapur forest and there was dense Dolka forest covering the area. The name 'Silkhaguri' was popularised by 'Rajbongshi' peoples. According to British records, the early name of the place 'Silchaguri', which morphed into 'Siliguri'.⁴ J. D. Hooker in his travelogue described "Siligoree stands on the verge of the Terai, that low malarious belt which skirts the base of the Himalaya."⁵ In the words of L.S.S. O' Malley Siliguri is "a tract of reeking moisture and rank of vegetation, it has always been



NOTIFIED SLUMS IN SILIGURI TOWN BEFORE 2011: GROWTH, NATURE AND CHARACTERISTICS

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Abstract: In today's world, slums and their existence are a reality in urban areas around the world. Rapid urbanization and urbanization of poverty are the main factors that result in millions of people living in poverty or informal settlements, often called slums. In terms of Urbanization process of India, slums have become an integral part of urban scenario. In India, rapid growth of slums is the result of rural-urban migration of the rural poor to the cities or towns in search of employment in the last few decades. They are widely used in metros, but are gradually appearing in other cities and towns in India. It adopted that areas notified as slums by municipalities or development agencies are treated as 'notified slums'. Siliguri is not only the fastest growing city in the state and country, but also the economic centre of the northeast Indian state. The city's high potential to absorb the immigrant population in the informal labour market is a result of the large number of slums in the Siliguri Municipal Corporation area. According to 2011 census data, the Siliguri metropolitan area had a total population of 5, 13,264 of which 34.34% were slum populations. The city has 154 notified slums and 33 non-notified slums. The primary objective of the study is to examine the relation between the pace of urbanisation, migration and growth of notified slum population in the Siliguri Municipal Corporation Area. This paper also attempts to analyse the nature and characteristics of notified slums in Siliguri Municipal Corporation Area. The present paper is done purely on the basis of oral history, and interview. The knowledgeable inhabitants of the slums were asked about the history of the slums, its development and about the people. Field work is also done in the slums. Besides primary data secondary data has also been used especially the Census data and data from the Siliguri Municipal Corporation. Following the objective of the study, the purposive reference technique has been adopted to collect the data regarding notified slums from the existing and retired officials of the Urban Poverty Alleviation Cell (U.P.A), Councillors and Community Organizers of Siliguri Municipal Corporation, officials of the Refugee Relief and Rehabilitation Department, Siliguri, Government of West Bengal.

IndexTerms -Urbanization, Notified-slum, Migration, Siliguri Municipal Corporation Area

the chameleon was estimated to 65 mm whereas the length of the scorpion was ca. 60 mm. The scorpion was carrying the lizard, already dead, by the head (Fig. 1). We infer that the scorpion captured and killed the hatchling lizard as it emerged, or soon after emergence, from near one of many nearby nests. There were fresh egg shells lying on the sand within a few centimeters of the scorpion and we observed several live hatchling *C. africanus* nearby around the same time (Fig. 2). The timing of *C. africanus* hatchling emergence normally occurs from August to September and immediately upon hatching they climb small branches of shrubs and blades of grass (Trapp 2007, Amphibien und Reptilien des griechischen Festlandes. Natur und Tier - Verlag, Münster, Germany. 279 pp.).

To our knowledge this is the first report of scorpions preying on *C. africanus*. We suspect predation rates on hatchling *C. africanus* are high, especially by an invertebrate predator like *A. gibbosus*, which is abundant and often observed during nocturnal searches for hatching chameleons. In fact, Trapp (2007, *op. cit.*) foreshadowed such an event with a photo of a hatchling *C. africanus* emerging from a nest with a scorpion nearby.

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EMOIA VERACUNDA (Tropical Emo Skink). REPRODUCTION. *Emoia veracunda* (Fig. 1) is a small, brown, diurnal, terrestrial species found in litter on the forest floor, from the north side of New Guinea Island from the Wau area to the Vogelkop Peninsula (Mys 1988. Bull. Inst. Roy. Sci. Nat. Belgique 58:127–183; Brown 1991. Mem. California Acad. Sci. 15:1–94). Little is known about the species reproductive ecology except that females produce clutches of two eggs (no months given; Brown 1991, *op. cit.*). Herein, I present additional information on the reproductive cycle of *E. veracunda* from a histological examination of gonads from museum specimens.

I examined 10 *E. veracunda* from multiple Papua New Guinea provinces that are deposited in the vertebrate collection of the Bishop Museum (BPBM), Honolulu, Hawaii, USA. The series consisted of four mature males (mean SVL: 38.3 mm ± 4.8 SD; range = 34–45 mm), five mature females (mean SVL: 41.2 mm ± 4.7 SD; range: 35–47 mm) and one unsexed subadult (29 mm SVL) collected between 1988 and 2011. Five specimens (BPBM 13465, 13466, 13472, 13474, 13475) were from East Sepik Province (4.3333°S, 143.2500°E; WGS 84; 8 m elev.), one (BPBM 13625) from Madang Province (5.1667°S, 145.3333°E; WGS 84; 86 m elev.), one (BPBM 11516) from Morobe Province (6.8333°S, 146.6666°E; WGS 84; 830 m elev.), one (BPBM 39669) from Northern (Oro) Province, (8.8980°S, 148.1892°E; WGS 84; 720 m elev.), and two (BPBM 13514, 23304) from West Sepik Province (3.7126°S, 141.6834°E; WGS 84; 550 m elev.).

Lizards were initially preserved with 10% neutral buffered formalin and later maintained in 70% ethanol. A slit was made on the abdomen, and a gonad was removed from each lizard. The gonads were embedded in paraffin, and sections were cut at 5 µm and stained by Harris hematoxylin followed by eosin counterstain. All histology slides were deposited at BPBM.

All mature males exhibited full spermiogenesis in which lumina of the seminiferous tubules were lined by rows of metamorphosing spermatids or sperm. Monthly distribution of mature males was: March (N = 1), May (N = 1), and September (N = 2), and the smallest mature male was 34 mm SVL from



FIG. 1. *Emoia veracunda* from the Torricelli Mountains, West Sepik Province, Papua New Guinea, May 2005.

September (BPBM 13475). The presence of males undergoing spermiogenesis at widely separated months (March and September) may suggest *E. veracunda* has a prolonged period of spermiogenesis although examination of additional males are needed to ascertain the monthly distribution of stages in the testis cycle. Males of the congener *E. nigra* are reproductively active throughout the year on American Samoa (Schwaner 1980. Occas. Pap. Mus. Nat. Hist. Univ. of Kansas 86:1–53).

One female (BPBM 13465) with two enlarged ovarian follicles (5 mm) and another female (BPBM 13514) with two oviductal eggs were present in specimens collected in September. Both of these gravid females measured 43 mm SVL. One larger female (BPBM 39669) from April, measuring 47 mm SVL, was not reproductively active (no yolk deposition) and may have been between clutches. Neither smaller females BPBM 13466 (38 mm SVL) nor BPBM 13472 (35 mm SVL) both from September exhibited yolk deposition and were considered to be nonreproductive.

This is the first information on body size for mature females and males of *E. veracunda* and months of reproductive activity. As was the case for males, additional *E. kordoana* females need to be examined to elucidate monthly distribution of stages in the ovarian cycle.

I thank Molly E. Hagemann for permission to examine *C. veracunda*, Nicholas Walvoord for facilitating the loan, and Fred Kraus for Fig. 1.

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HEMIDACTYLUS FLAVIVIRIDIS (Indian House Gecko). CANNIBALISM. *Hemidactylus flaviviridis* is a large bodied and widely distributed gecko occurring in northern, central and eastern India (Das et al. 2011. N.-W. J. Zool. 7: 98–104). Their diet normally includes various insects, but there are reports of saurophagy (Parves and Alam 2015. Herpetol. Bull. 132:28–29) and cannibalism in captivity and in the wild (Rao 1924. J. Bombay Nat. Hist. Soc. 30:228; Marathe et al. 2022. IRCF Rept. Amphib. 29:318–319). Here, I report two observations of cannibalism in wild *H. flaviviridis* from India.

The first observation was made at 2142 h on 22 October 2021 in a city park (22.63406°N, 88.43760°E; WGS 84; 9 m elev.)

PHOTO BY FRED
KRAUS.

in Kolkata, India. I observed an adult *H. flaviviridis* with a small conspecific juvenile in its mouth on a wall adjacent to a park.

The juvenile appeared to thoroughly subdued, and possibly dead, as it did not show any movement. It took 5–6 min for the adult to completely ingest the juvenile headfirst, and afterward it retreated behind a bamboo structure on the wall. The second observation occurred at 1825 h on 8 May 2022, on the floor inside a home (22.61638°N, 88.38908°E; WGS 84; 9 m elev.) in Kolkata, India. In this instance I saw a juvenile *H. flaviviridis* attacking a smaller conspecific, holding the smaller lizard by the left hind leg. The larger gecko made slight movements while holding the smaller gecko, with the latter biting the attacker's head behind the eye (video: <https://doi.org/10.5063/F1BG2MFD>). The attacking gecko repeatedly thrashed the smaller gecko on the floor until it no longer moved, it then readjusted its grip towards the head and swallowed headfirst. The entire event took 11–12 min to completely ingest the prey. To my knowledge, this is the first report of cannibalism in *H. flaviviridis* under natural conditions.

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HOLBROOKIA LACERATA (Plateau Spot-tailed Earless Lizard) and **HOLBROOKIA SUBCAUDALIS** (Tamaulipan Spot-tailed Earless Lizard). **BURYING BEHAVIOR.** *Holbrookia lacerata* and *H. subcaudalis* are phrynosomatid lizards that are documented to bury (Neuharth et al. 2018. *Herpetol. Rev.* 49:536–537), most likely for thermoregulation, predator avoidance, and to lay eggs (Axtell 1956. *Bull. Chicago Acad. Sci.* 10:163–179). Neuharth et al. (2018, *op. cit.*) only states that *Holbrookia* species bury, but did not describe their behavior in doing so. Herein, we describe the burying behavior for both species and propose explanations as to the difference in their two approaches of burying.

On the afternoon of 29 June 2021, at 1145 h, we observed an adult-sized, male *H. lacerata* (61 mm SVL) on sparsely vegetated ground between a dirt road and cotton field, near San Angelo, Tom Green County, Texas, USA (31.38180°N, 100.16092°W; WGS 84; 563 m elev.). We had surrounded the lizard and were ca. 2 m from it when it ran towards the base of a forb ca. 1 m away, which was growing in loosely packed sandy loam soil. Immediately upon reaching the forb the lizard began vigorously shaking its head side-to-side and dove head-first into the soil, simultaneously shimmying its body and tail side-to-side while using its legs to propel itself forward as it submerged itself under the loose soil. This process happened quickly and we estimate it required <2 s to become completely buried by ca. 2–3 mm of soil at its tail-end and ca. 10–20 mm underground towards the head. The burying trajectory was ca. 20° downward angle from the soil surface and once buried the *H. lacerata* was completely camouflaged exhibiting an effective anti-predation strategy, in this case to our group conducting lizard surveys. If we had not observed this behavior the lizard would not have been detectable by our visual survey techniques.

For a companion study to determine *Holbrookia* sp. detectability, we collected 17 *H. lacerata* from the same vicinity near San Angelo, Tom Green County, Texas, USA (31.39325°N, 100.24550°W; WGS 84; 563 m elev.) and 35 *H. subcaudalis* from the same vicinity near Agua Dulce, Nueces County, Texas, USA (27.71525°N, 97.85425°W; WGS 84; 39 m elev.). Each lizard was placed in individual 38 L aquaria equipped with 10 cm of sandy loam soil substrate, heat lamps, UV lights, and video monitoring cameras. While in captivity, all *H. lacerata* (N = 17)

TABLE 1. Comparison of time required to initiate burial behavior (s) and burial time (s) between *Holbrookia lacerata* (N = 17) and *H. subcaudalis* (N = 35) and between the head-first (escape flight) and tail-first (relaxed) burial behaviors, conducted in captive setting during August 2021. Means with the same capital letter are not different ($P > 0.05$) between species within the same treatment. Means with the same lower-case letter are not different ($P > 0.05$) between treatments within the same species.

| Burial strategy ^a | Initiate burial time (s) | Burial time (s) |
|--|-----------------------------------|-------------------|
| | Mean ± SE (range) | Mean ± SE (range) |
| <i>Holbrookia lacerata</i> ^b | | |
| Head first | 25.1 ± 0.6Aa ³ (22–32) | 2.2 ± 0.1Aa (2–3) |
| Tail first | – | 4.6 ± 0.2Ab (4–6) |
| <i>Holbrookia subcaudalis</i> ^b | | |
| Head first | 25.2 ± 0.5Aa (20–31) | 2.3 ± 0.1Aa (2–3) |
| Tail first | – | 4.8 ± 0.1Ab (4–6) |

^a Treatment effect was observed ($F_{1,100} = 496.5$, $P = 0.0001$), but not a species*treatment interaction ($F_{1,100} < 0.10$, $P > 0.75$).

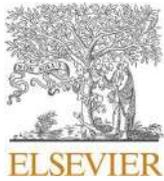
^b Species effect was not observed ($F_{1,100} < 2.20$, $P > 0.14$).

and *H. subcaudalis* (N = 35) were observed burying in the soil substrate via the head-first shimmy method described above if we attempted to hand-capture them for measurement purposes. However, in the absence of a potential predation threat (i.e., hand-capture), we observed daily burying behaviors by both species using a different burying strategy. When not pursued, individuals would first vigorously shake their tail and back legs on soft soil until its back half was submerged buried. This shimmying would continue and progress up the body towards the head until it buried itself under soil at a ca. 20–30° angle to the surface until its entire body was buried. The head would be the last body part to be covered. The caudal end of the lizard would be buried to a depth of 10–20 mm, while the anterior end would be near the soil surface, but still camouflaged by the surrounding soil particles. The entire process required 4–5 s.

To verify the reason for the difference in shimmy methods (i.e., headfirst versus tail-first) as burial behavior, we conducted outdoor experimental trials in August 2021 that consisted of a 2.5 m diameter × 1 m tall plastic tub, which contained 30 cm deep sandy loam soil substrate and a video monitoring camera. Lizards were placed individually into the outdoor tub at 0900 h and allowed an hour to acclimatize to the surroundings. At 1000 h, the same person would enter the tub and chase the lizard until the lizard would initiate burial behavior. The video camera recorded the behavioral process and time to initiate burial behavior, method of burial behavior, and time required to bury were noted. Lizards were allowed time to re-emerge to the surface on their own and their behavior was monitored via video camera.

We used a general linear model analysis of variance SAS Institute 1999. SAS/STAT Software, v9. SAS Institute, Inc., Cary, North Carolina) to test the main effects of species and burial method (i.e., headfirst or tail-first), and their interaction, on the time to initiate burial and burial time by species. Assumptions of homogeneity of variances among treatments and normality were verified. All means are reported ± 1 standard error.

Our laboratory experiment found that all *H. lacerata* and *H. subcaudalis* used one of the two burying techniques, either head-



Review article

A comprehensive review of various categories of face masks resistant to Covid-19

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ARTICLE INFO

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WHO
Mask
Pandemic

ABSTRACT

The science about the usage of face masks by the common public to avert COVID-19 transmission is proceeding swiftly. A primary route of transmission of COVID-19 is probably through small respiratory droplets, and it is transmissible from asymptomatic and pre-symptomatic individuals. According to the World Health Organization, wearing a mask in public can help reduce the transmission of the COVID-19 virus. Different categories and types of masks and their usage are reviewed in this work. In a nutshell, this review work elucidates the aspects of utilizing the various face masks along with all possibilities to fight against the ongoing pandemic of COVID-19.

1. Introduction

World Health Organization (WHO), announced on January 30, 2020, a Public Health Emergency of International Concern (PHEIC) in response to the emergence of a novel coronavirus in Wuhan, China. Later, on March 11, 2020, WHO announced COVID-19 to be a pandemic, it is the 2nd pandemic of the 21st century after the pandemic of 2009 caused by influenza A H1N1.^{1,2}

In the declaration by WHO on February 11, 2020, the Coronavirus disease (COVID-19) is caused by the virus named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2), which is genetically related to the coronavirus responsible for the SARS outbreak of 2003.³

As of August 29, 2020, more than 24.7 million cases have been reported across 188 countries and territories, causing more than 837,000 deaths with a recovering of 16.2 million people. In this case, proactive infection monitoring criteria have been executed in hospital set-ups.^{4,5}

To control the further outbreak of pandemic disease COVID-19 among people, WHO provided some guidelines and instructions to the general public to follow such as the continuous practice of hand hygiene, maintaining social distancing, wearing a mask in public, avoiding social gatherings and practising self-isolation and home quarantine. In addition, with the guidelines of WHO, the authorities also implemented some rules such as quarantine and testing of all travellers, closing and

regulating the city and country borders, along with massive testing for case detection by RT-PCR (reverse-transcription polymerase chain reaction) technique. Later, stay at home order, lockdowns, home isolation, cancellation of mass gatherings and prohibiting traveling were acquired to several degrees and at various time points in several countries to alleviate the threat of community transmission. It is unclear when the outbreak will end, and there are no known vaccines or antiviral therapies that are 100% effective against the coronavirus.^{3,5} Though there has been working on immunization and numerous vaccines have been created so far, none of them can guarantee 100% efficacy against SARS-CoV-2.^{6–8}

To handle the ongoing COVID-19 pandemic situation, the US Centers for Disease Control and Prevention (CDC) had recommended the public to put on face masks. Many Asian countries, which have had greater experience with new coronavirus infections, use public masks significantly more frequently. Face Masks have been recommended as a primary potent tool to control the COVID-19 outbreak in China.⁹ However, the World Health Organization (WHO) advises that face masks should only be worn by individuals caring for patients with suspected COVID-19 or those who are actively sneezing or coughing.¹⁰

Many governments around the world have introduced policies that recommend the wearing of masks to slow down the expanse of COVID-19. Mandatory use and enforcement vary globally. While several

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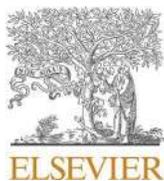
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Full length article

Exploring the neural mechanisms of aversion to bitter gourd phytochemicals in insects using *Drosophila*

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ARTICLE INFO

Keywords:

Antifeedant
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Drosophila model
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ABSTRACT

Bitter gourd (*Momordica charantia* L.) has compounds that repel insect pests. Unlike conventional pesticides, these compounds are eco-friendly and beneficial for human health. However the mechanisms by which these compounds repel insects and affect their physiology remains poorly known. Here we used *Drosophila melanogaster* (Meigen) to address these issues. We tested a wild strain, and a laboratory bred Canton S strain. Bitter gourd extract reduced the viability of developing flies, but did not affect survival in adults. Flies avoided bitter gourd extract in a food choice assay, and consumed a significantly low amount of food mixed with bitter gourd – indicating that it acts as an antifeedant. Transgenic flies with impaired aversive taste sensitive neurons showed a reduced aversion towards bitter gourd extract showing that these compounds act through the bitter sensitive gustatory neurons. Finally, flies also retained the memory of consuming bitter gourd extract for at least 24 hours, suggesting an additional cognitive mechanism for long term aversion. Our study provides the first evidence of bitter gourd compounds acting as antifeedants and also as potent reinforcers of aversive memory in drosophilids. We suggest that flies can be used to understand the physiological and neural mechanisms underlying the mode of action of other such phyto-extracts with the goal of developing potent but less harmful pest control formulations.

Introduction

Globally, synthetic pesticides are the chemicals of choice to repel or kill insects (Oerke, 2006). These are cheap to produce at an industrial level and can be applied easily at a large scale. However, these chemical pesticides not only adversely affect human health and well being (Nicolopoulou-Stamati et al., 2016), but also disrupt the functioning of the ecosystem by harming or killing non-targeted species (Köhler and Triebkorn, 2013). Compounds derived from plants that act as biological pesticides, antifeedants or olfactory repellents (Simmonds, 2006) offer safer alternatives to conventional pesticides. Increasing concern about the risks from synthetic insecticides to the environment and human health has led to a major trend in current pest management strategies, which involves searching for less hazardous chemicals or biologically based products (Isman, 1994). Approximately around 10% of plant species known on earth have been estimated to have been examined to determine their chemical compositions, and out of more than 6500 plant species that have been screened, about 2500 species (from 235 families)

have been found to show an appreciable degree of pest control activity (Koul, 2016). Some plant derived insect antifeedants that may be used to repel insects also have beneficial effects on human health and are known for their medicinal properties. For example azadirachtin from the neem tree *Azadirachta indica* (Juss) has insecticidal and antifeedant activities (Mordue (Luntz) and Blackwell, 1993) and benefits human health as well (Roy and Araf, 2006; Tundis et al., 2014). Limonoids (triterpene derivatives) from the neem tree have been shown to have anti-cancer, anti-malarial and anti-microbial activities (Roy and Araf, 2006).

Bitter gourd (*Momordica charantia* L.) is a plant that has medicinal value to humans. It has been used in ethnomedicine and has been proposed as a source of anti-diabetic drugs and antioxidants (Virdi et al., 2003; Grover and Yadav, 2004; Kubola and Siriamornpun, 2008; Joseph and Jini, 2013; Desai and Tatke, 2015). It has triterpenes, terpenoids, phenolics and other compounds that act as antifeedants to insects, and the antifeedant or repellent activity has been tested against some lepidopteran pests (Yasui, 2002; Ling et al., 2008; Wardhani et al., 2015) and occasionally against coleopteran and dipteran pests

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Hydrodynamic stability of tidal inlet system: A case study of Pichaboni inlet, Purba Medinipur, West Bengal, India

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Bar by-passing

ABSTRACT

The hydraulic geometry of tidal inlets, like, cross-sectional area, wetted perimeter and hydraulic gradient is controlled by the dynamics of tides and wave-induced littoral drift along coastlines, pushing materials into the inlet during the flood tide and flushing them out during the ebb tide. An inlet which maintains its hydraulic stability has its velocity so adjusted that it can flush out all the materials pushed into the inlet. The Pichaboni inlet situated along the Bay of Bengal coast, is a linear channel and the tidal inflow is restricted by a sluice gate. This paper investigates the impact of hydraulic geometry, morphological changes and tidal behaviour on the hydrodynamic stability of the Pichaboni inlet. The longitudinal profile shows a reverse gradient from sea to inland. The smallest cross-sectional area (throat cross-section, A_C) is located 672 m inland, which is slightly smaller than the cross-sectional area required to maintain the equilibrium flow velocity. Hence, the actual flow velocity through the throat cross-section is greater than that required for the equilibrium state, and the enlargement of the cross-section area may be caused by sediment scouring which decreases the flow velocity and leads to shoaling at the mouth. The dominant west to east longshore transportation brings a huge amount of sediment influx responsible for continuous sedimentation and the associated formation of spit at the inlet mouth. Any constriction at throat due to spit formation leads to accelerated flow velocity associated with scouring at the throat area and breaching of the spit. This results in the gradual shifting of the inlet mouth by the mechanism of bar by-passing. The economic importance of the main inlet channel and its adjacent intertidal basin necessitates evaluation of the long-term stability of the tidal inlet through analysis of hydraulic and sedimentary characteristics of the inlet.

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1. Introduction

A typical tidal inlet is a linkage between the open ocean and the bay system. Sometimes tidal inlets mark the mouths of streams, however, unlike estuaries these inlets have no direct connection with the inland sources of water. The distance up to which the tidal water penetrates upstream into the inlet varies for different inlets (Van de Kreeke and Brouwer, 2017). The nature of the tidal inlets can be attributed to the dynamics of the tide and wave-induced littoral drift along the coasts. The tidal characteristic plays a pivotal role in determining the stability of the inlets (Marani et al., 2004). The concept of stability can be defined by the hydraulic situation or sedimentary condition of the inlet. The equilibrium flow condition will be maintained if the outgoing velocity is sufficient to flush out the sediment load that is being pushed into the inlet during the flood tide (Serrano et al., 2013). The formation of flood and ebb tidal delta at the mouth of an

inlet is the result of the dual function of the sediment transport capacity of the tidal water during the high and low tidal situation. The materials carried by littoral drift is pushed into the main inlet channel during the flood tide and flushed out during the ebb tide. Sometimes these materials may be eventually lost into the deep sea with strong ebb current (Chaudhuri, 2012; Plink-Björklund, 2005; Tessier et al., 2012). If the flushing mechanism is not sufficient to flush out the incoming materials, the load partly remains inside and will be redistributed during the next tidal cycle. This mechanism gradually forms a well-defined flood or ebb tidal delta (Ridderinkhof et al., 2014; Elias and Van der Spek, 2006).

The hydrodynamic characteristics are determined by the cross-sectional area of a tidal inlet and also the nearshore circulation. The smallest cross-sectional area of an inlet is considered as the 'throat' cross-section. The flushing mechanism always depends on the geometric configuration of the throat of the inlet (Hume and Herdendorf, 1992). Effects of shoaling may reduce the throat cross-sectional area (A_C) which may thereby enhance the flow velocity. But there is a critical value of cross-section (A_{CR}) below

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Ahalya: The Retold Narrative of the Cursed Metamorphosis of an Unblemished Innocence

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Abstract:

Any piece of creative art; be it literature, poetry or painting assiduously eulogises the eternal subject position of the powerful males; whereas females remain at the backdrop as vague shadows or as the balancing consorts for flourishing lustre. Myths or epics are no exceptions to this prevalent trend. Women, too seem to have accepted this long patronisation without much debilitating contort. But the Postmodern narration of the old myths questions the very base of this uneven weaving and it also endeavours to recreate old stories into new mould. Kavita Kane, a renowned journalist and creative artist, has deliberately utilised those muted shadows from our magnificent epics, Ramayana and Mahabharata; and tried to narrate them with their personal account of unrequited passion and socio-political exploitation of unfathomable sufferings. Ahalya's Awakening is the hapless story of the princess of Kampilya, whose zeal for education, scholasticism and perseverance for being a 'rishika' rather than a mere sexual partner of her husband, Rishi Goutam, shocks everyone with her defiant rumination and intellectual succour. Yet, she was turned into stone for Indra's carnal seduction in the disguise of her husband. Her own story remained unheard, unsung and unreciprocated. She was back to the living form with the miraculous touches of King Rama; and renounces her husband for his undue curse. This novel, innovatively questions at the root of the patriarchal dynamics and interrogates into the principles of 'Nyay'(Justice) and 'Dharma' (Righteousness) according to parochial male supremacy. My endeavour in this paper, therefore, is to find justification in Ahalya's narrative and to reflect on her enigmatic mortification with palpable care and excruciating diligence.

Keywords: Gender, myth, mythopoesis, patriarchy, periphery etc.

Introduction:

Myths are invariably the stories of the unforgettable past sublimated through spoken or written narratives through generations leading to a corporeal or apotheosised society vexed with social chastisement and political perturbations. Myth, in every literature, is considered to be a codified norm providing ethical and moral assistance consolidated by culture, tradition, religion and ideological discourses. At the heart of those epics, there are some definite injustice fallen to the women, and the unmitigated *hamartia* and *hubris* of the heroic deeds causing drastic catastrophe at the end. Myth valorises war, valiant heroes, ennobled suffering of the heroines and denigrated catastrophe of villains who ultimately get punished at the end. Thus, morally they elevate us from good to noble, earth to ethereal, sublime to majestic. *Ramayana* and *Mahabharata*, two renowned epics of Hindu mythology has been inoculated in our psyche since our birth and we have been

an inquisitive study into the peripheral castigation and unrelenting societal exasperation as represented in ashapura devi's "izzat" and shashi despande's "the intrusion".

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An Inquisitive Study into the Peripheral Castigation and Unrelenting Societal Exasperation as Represented in Ashapura Devi's "Izzat" and Shashi Despande's "The Intrusion".

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Abstract:

Literature is an arena which reflects the socio-political perturbations mixed with realism and fantasy. Since time immemorial, representation of women through different lens of art and expression is a common practice that categorizes the manacles women are steeped into, or the nonessential 'otherization' that chastises them into accepting their status as the negative counterpart of the masculine virility. The pioneering authors and social activists like Mahasweta Devi, Ashapura Devi, Anita Desai, Rokeya Begum, Shashi Despande, Amrita Pritam, Arundhati Roy or Chitra Banerjee, have depicted their chores through various gazes of domestic rampage, marital despoilment, enforced prostitution, financial debasement, human trafficking and so on. In this paper, I have selected two short stories, one by Shashi Despande, titled as "The Intrusion" and another by Ashapura Devi, titled as "Izzat" for a detailed analysis into the perfunctory naïve obligations women are tirelessly subjected to. I wish to portray as well as make critical enquiry on the unprecedented cataclysm altering and transmuting the destiny of the women protagonists diminishing their aspiring desire for congenial cohabitation and venerable status as living individuals.

Keywords: Domestic violence, patriarchy, rape, subjugation, trauma etc.

1. Introduction:

Traditionally, the work of the women authors was undervalued because they strictly restrain their themes to the traditional rituals and norms, domestic surveillance and mostly limited to the regional languages. Proficiency in English was only found in educated, affluent and elite class women of society. The *Manu Samhita*, which is also considered the Hindu moral code of conduct, has portrayed virtuous women as devoted to their husbands or children. Their long-suffering for motherhood or womanhood was never cared for by the patriarchy. Ramabai, born in a learned but diligent Brahmin family, has studied Sanskrit with profound eagerness and raised her voice against the *amatani* tortuous lives of the Hindu women, the child brides and child widows who are

Inducing of Readers' Empathy through the Representation of History in Graphic Narratives with

Particular Reference to Orijit Sen's *The River of Stories*

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**Inducing of Readers' Empathy through the Representation of History in
Graphic Narratives with Particular Reference to Orijit Sen's *The River of
Stories***

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Abstract:

The present paper aims itself as an investigation whether a historical graphic narrative with the help of its engaging representation of history might be able to induce a reader's empathy or not. It attempts to highlight and explore the empathic details in Orijit Sen's historical graphic text, *The River of Stories*. Though it is a debatable issue whether every work of art should have an objective or not, the reader finds Sen's social and political purpose of making people aware of the details of the protest and its horrific and crude consequences against the construction of a dam on the river Narmada and the consequent inducing of empathy into them. Hence, heart-rending details of their protest and the adverse effects which induce readers' empathy are portrayed artistically and proficiently by Sen through the entire gamut of the story.

Keywords: *empathy; social-realism; history; aesthetic; experience; visual-narrative; interdisciplinary; humanity.*

Introduction:

In this age of post-modernism and technological development, there is an increasing trend to interpret art and literature from interdisciplinary perspectives. The widespread and



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Understanding Women's Dialect

Mina Dan

Abstract In the domain of linguistics one of the earliest writings as well as the most influential study on women's dialect is Jespersen (1922). Since then numerous studies in this domain are meticulously unveiling various aspects of women's dialect and in turn enriching the field of knowledge. The present paper, on the one hand, provides a glimpse of a few major issues and arguments of this domain in its three parts, viz. variation between men's and women's speech, understanding sex and gender and dialects vs. variation. On the other, it points to the differences between three categories of studies dealing with women's dialect, viz. those dealing with (i) unsubstantiated stereotypes, (ii) observed trends in language and (iii) encoded traits in language, along with examples and justifications, chiefly based on the existing literature of linguistics and gender studies.

Keywords woman's dialect, sexist language, gender based variation, folk linguistics, feminism, linguistic activism, sex, gender, norm, marginal.

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Women's Dialect: Some Observations

Udaya Kumar Chakraborty

Abstract In this electronic media dependent age, when we are thinking that we are mechanically using this world, when we are thinking that our attitude towards our neighbours and relatives are gradually becoming artificial, today's discussion again reveals a human face of our attitude.



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- [Gender, Dialect and Society in Japan - Purabi Gangopadhyay](#)

Understanding Women's Dialect

Mina Dan

Abstract In the domain of linguistics one of the earliest writings as well as the most influential study on women's dialect is Jespersen (1922). Since then numerous studies in this domain are meticulously unveiling various aspects of women's dialect and in turn enriching the field of knowledge. The present paper, on the one hand, provides a glimpse of a few major issues and arguments of this domain in its three parts, viz. variation between men's and women's speech, understanding sex and gender and dialects vs. variation. On the other, it points to the differences between three categories of studies dealing with women's dialect, viz. those dealing with (i) unsubstantiated stereotypes, (ii) observed trends in language and (iii) encoded traits in language, along with examples and justifications, chiefly based on the existing literature of linguistics and gender studies.

Keywords woman's dialect, sexist language, gender based variation, folk linguistics, feminism, linguistic activism, sex, gender, norm, marginal.

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Women's Dialect: Some Observations

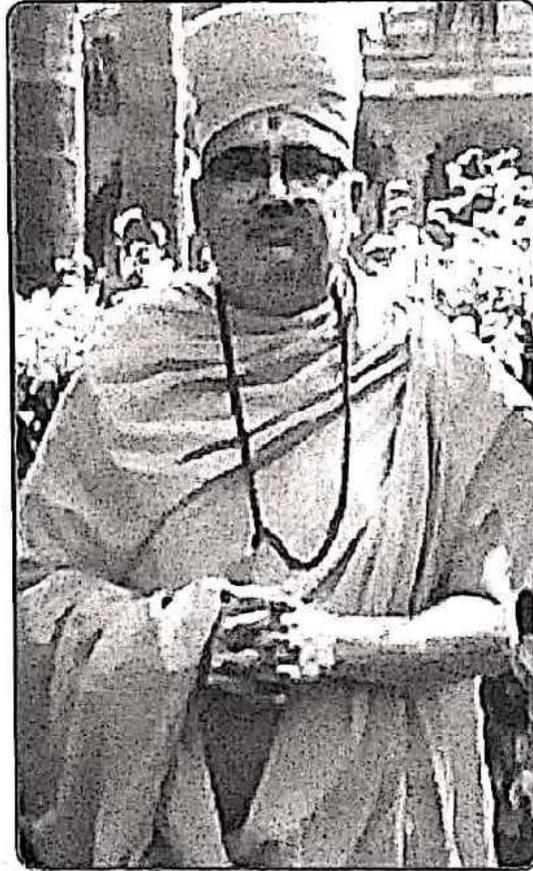
Udaya Kumar Chakraborty

Abstract In this electronic media dependent age, when we are thinking that we are mechanically using this world, when we are thinking that our attitude towards our neighbours and relatives are gradually becoming artificial, today's discussion again reveals a human face of our attitude.

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समालोचनायाः दर्पणे अभिज्ञानशाकुन्तलम् : वङ्किमचन्द्रस्य

रवीन्द्रनाथस्य च दृष्टिकोणतः

श्रीमती सविता मण्डल

संस्कृतसाहित्यस्य विपुलभाण्डारे कालिदासकृतेनाभिज्ञान-शाकुन्तलनाटकेन समालोचनभवनस्य सौभाग्यमर्जितम्। न केऽपि देशीयपण्डिताः संस्कृतभाषां साहित्यञ्च प्रति उत्सुकाः पाश्चात्यपण्डिताः वा संस्कृतसाहित्यसमालोचनायाः गौरवमर्जियितुं न समर्थाः। जार्मानपण्डितः योहान-भोलफगाड-फन-ग्येटेमहोदयः प्रथमं संस्कृतसाहित्यसमालोचनायाः गौरवमर्जितवान्। संस्कृतानभिज्ञः ग्येटेमहोदयः कालिदासकृतस्य अभिज्ञानशाकुन्तलस्य (१७८९ ख्रीष्टाब्द) इति आङ्गलभाषायाम् उइलियाम-जोनस्महोदयकृतस्यानुवादस्य जर्ज-फस्टरमहोदयकृतं जार्मानभाषान्तरं (१७९१ ख्रीः) पठित्वा अभिभूतः सन् यद् लिखितवान् दिव प्रथमसमालोचनारूपेण स्वीकृतो भवत्। रवीन्द्रनाथठाकुरमहोदयः यस्यांशविशेषस्य वङ्गानुवादं कृत्वा लिखितवान् -- “केश यदि तरुण वस्त्रेण खूलुं अत्रिणत वस्त्रेण खन, केश यदि मर्तुं अत्रिणत वस्त्रेण देशिते चात्र, तत्रे अकूलुनात्र तत्रे अत्रिणत” (कोऽपि यदि तरुणवयसः पुष्पं तथा परिणतवयसः फलं, कोऽपि यदि मत्य तथा स्वर्गमेकत्र द्रष्टुमिच्छति, तर्हि शकुन्तलायां प्राप्स्यति।)

वङ्गदर्शनमिति पत्रिकायां (वैशाखः, १२८२ बङ्गब्दः) वङ्किमचन्द्रमहोदयस्य ‘शकुन्तला, मिरादा एवं देसदिमोना’ इति प्रबन्धस्य प्रथमः प्रकाशः। वङ्किमचन्द्रमहोदयः ‘उत्तरचरितम्’ इति काव्यं “विद्यापतिः जयदेवश्चेति” काव्यद्वयं शिरोनामनि स्थापयित्वा समालोचनायाः परं तत्र चरित्रं स्थापयित्वा आलोच्यमानं प्रबन्धं विरचितवान्। उल्लिखिते प्रबन्धे एव तेन तुलनात्मिका समालोचनारीतिः गृहीता। ‘उत्तरचरितम्’ इति प्रबन्धे अनुकरणनाट्यक्रिययोः प्रसङ्गे यद्यपि शेक्सपीयरमहोदयस्य कथा आलोचिता तथापि सः आलोचनायाः विषयवस्तुरूपेण न गृहीतः। ‘उत्तरचरितम्’ ‘विद्यापतिः अत्रे जयदेव’ इति प्रबन्धद्वयं प्राच्यकवीनां तुलनात्मकसमालोचनया समृद्धं जातम्। किन्तु शकुन्तला, मिरान्दा एवं देसदिमोना इति प्रबन्धस्य शिरोनामनि शेक्सपीयरमहोदयस्य द्वयोः नायिकयोः नाम समुत्तिष्ठितम्। शकुन्तला प्राच्यकवेः कालिदासकृतस्य अभिज्ञानशाकुन्तलम् इति नाटकस्य नायिका। पाश्चात्यदेशीयकविना तथा नाट्यकारेण शाक्सपीयरमहोदयेन कृतयोः टेम्पेष्ट, ओथेलो इति नाटकयोः द्वे नायिके यथाक्रमं मिरान्दा देसदिमोना च। प्रकृतप्रस्तावे प्राच्यप्रतीच्ययोः इयं तुलनात्मकसमालोचना वङ्किमचन्द्रमहोदयस्य प्रथमः प्रयासः।

On the use of predictive approach in estimation of population mean under successive sampling scheme

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Abstract

In the present article, we focus attention on the implementation of predictive approach devised by D. Basu (1971) in two-occasion successive sampling scheme. In this study one regression-type estimator of a finite population mean with the help of information on one auxiliary variable has been developed under two-occasion successive sampling using predictive approach. The pre-eminence of the suggested methodology has been established over the contemporary ones through empirical studies carried over a real population and artificially generated population datasets, which presents the soundness and usefulness of

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Abstract

To develop wide bandgap materials for solar cells and other optoelectronic devices, undoped hydrogenated silicon oxide ($\text{SiO}_x\text{:H}$) thin films are prepared by conventional radio frequency plasma enhanced chemical vapor deposition (RF PECVD) method. The variation of carbon dioxide dilution (Y_c) on optoelectronic and structural properties are studied thoroughly by keeping silane and hydrogen gas flow fixed. Surface morphology of the $\text{SiO}_x\text{:H}$ films have been studied by Field Emission Scanning Electron Microscopy (FESEM) and Atomic Force Microscopy (AFM). Distinct silicon nanocrystallites of average diameter $\sim 3\text{--}6$ nm embedded uniformly in amorphous SiO_x network have been observed in high resolution Transmission Electron Microscopy (HRTEM). From Fourier Transform Infrared spectra (FTIR), it is observed that oxygen content (C_o) increases initially with Y_c and afterwards it decreases. Strong room temperature photoluminescence (PL) peak is obtained for the as-deposited films having lower oxygen content (C_o). The origin of room temperature PL spectra and its correlation with C_o can be explained by quantum confinement effect (QCE) theory.

Keywords: Nanocrystalline ▪ radio frequency plasma enhanced chemical vapor deposition ▪ scanning electron microscopy ▪ transmission electron microscopy ▪ atomic force microscopy

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The Forest of Enchantments: A Retold Saga in Mythopoesis

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Abstract:

Chitra Banerjee Divakaruni, the starring gem in South Asian Diasporic fiction, has evoked the essential goodness of human heart through the pathetic journey of exile and forced migration. But apart from her genius in Diasporic literature, she has also raised voices for those epic heroines who never got a chance to demand for their individuality in the original epic. To make us realise their importance, she has administered magical realism along with the crudity of pragmatism and heart-rending naturalism and purposefully woven the magical world through her imaginative narration and lucidity of incorporating an alternated reality full of charm and captivating allurements. Her creative forte represents a daring contradiction between the sensory and the illusory ways and worlds of experience engaging her literary personages supported by a harmonious coexistence of 'magical fantasy' by making the humdrum wondrous and the factually spectacular. Through the character of Sita, the emblem of ceaseless suffering, Divakaruni has tried to offer a tribute to this legendary soul, where she not only protests against her unlawful desertion, but also points to the troublesome sufferings of other benign victims like Kaushalya, Sumitra, Urmila, Sarama, Mandodari and Ahalya.

Keywords: Myth, Patriarchy, Psychoanalysis, Re-telling, victimization etc.

Introduction:

Myths are mostly glorious stories of the ancient past that solicit embalmed euphoria from mundane despondency. They depict a genre of unmitigated despair, inerrant sordidness and realistic descriptions of the everyday affair with non-realistic figurative use. According to Merriam-Webster Dictionary, "Myth is a usually traditional story of ostensibly historical events that serves to unfold part of the world view of a people or explain a practice, belief, or natural phenomenon"; whereas Cambridge Dictionary terms it as, "An ancient story or set of stories, especially explaining the early history of a group of people or about natural events and facts"; in an essay, "The Myths and Realities of Teaching Vocational Subjects in Tertiary Institutions in Nigeria" (2011), Otuaga, defines 'myth' as:

According to the Greek mythos, myth means story or word. Mythology is the study of myth. As stories (or narratives), myths articulate how characters undergo or enact an ordered sequence of events. The term myth has come to refer to a certain genre (or category) of stories that share characteristics that make this genre distinctly different from other genres of oral narratives, such as legends and folktales. Many definitions of myth repeat similar general aspects of the genre and may be summarized thus: Myths are symbolic tales of the distant past (often primordial times) that concern

COUPLED FIXED POINT RESULTS IN G -FUZZY METRIC SPACES FOR WEAKLY COMPATIBLE MAPPINGS

KRISHNAPADA DAS AND KRISHNA KANTA SARKAR

ABSTRACT. Coupled fixed point results have attracted much attention among the researchers in recent times specially in the field of fuzzy metric spaces. In this paper we established a coupled fixed point result for weakly compatible mappings in G -fuzzy metric spaces. We have deduced a corollary to our main theorem. Our result also supported by examples.

1. Introduction

The notion of coupled fixed point was introduced by Guo and Lakshmikantham in [18]. Recently in [3] Bhaskar and Lakshmikantham established some coupled fixed point result in partially ordered metric spaces. Today this line of research is getting more attention among the researchers of fixed point theory. One of the reasons for this attention is the application of this results, specially to the field of boundary value problems. The result of Bhaskar and Lakshmikantham [3] was generalized to coupled coincidence point results some of which may be seen in [24, 26, 32, 39]. Coupled fixed point results have also been studied to find fixed point results in probabilistic metric spaces, in cone metric spaces and G -metric spaces. Some more results of coupled fixed points may be noted in [4, 8, 9, 11, 15–17, 24, 35, 40].

Mustafa and Sims [28] introduced the notion of G -metric spaces in 2006. After this introduction, lots of results came out into the literature of fixed point theory. Some of the results may be seen in [2, 10, 16, 27, 31]. A generalization of G -metric space to G -Menger space was proposed by K. Das in his Ph. D. Thesis [12] in the year 2010. Also in 2010 Sun and Yang [38] introduced the notion of G -fuzzy metric spaces. This is a generalization of G -metric spaces introduced by Mustafa and Sims and fuzzy metric spaces also.

Jungck [21] introduced the notion of compatible mappings in 1986. Compatible mappings are generalization of commuting mappings and this is further generalized to weakly compatible mappings. Compatible and weakly compatible mappings have been used to find fixed point and coincidence point results in various spaces. Some of the references of use commuting mappings, compatible mappings and weakly compatible

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2010 Mathematics Subject Classification: 47H10, 54H25, 54E70.

Key words and phrases: G -fuzzy metric space, G -Cauchy sequence, weakly compatible mappings, coupled fixed point and Φ -function.

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Microfinance and Economic Development-The Indian Experience

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Abstract: Indian microfinance is huge industry to empower low income group and unorganised sector. Now a day microfinance is an alternative of viable business along with social development. At the same time the sector faces huge criticism and challenges from every stakeholders after the Andhra Pradesh crisis in 2010. After 2010, microfinance today is a highly regulated industry with the purpose, segment of clients, size of loans, and even price being regulated. As now it is regulated by the RBI, the political risks are also reduced. There are more than one way to provide a finance to poor people. Self Help Group (SHG) is a main component of microfinance. SHG mainly is a group culture to provide women a financial support or draw them into work force. SHG is a channel through which facility of microfinance reach to every door of marginalised sector. In this project, we want to established how microfinance helps poor peoples and how through SHG microfinance reach to every marginalised people. Our objective is to analyse impact of microfinance as a tool of Economic Development in India. In this project, we basically want to analyse performance of three types of microfinance institutions. These are-i) MFI (Microfinance Institutions) ii) SHG (Self Help Groups) and iii) JLG (Joint Liability Groups). Data are collected from RBI and NABARD. Our special focus is on SHG as SHG plays an important role in case of microfinance. In case of SHG, we are focusing on yearwise performance of SHG and SHG under NRLM (National Rural Livelihood Mission). Lastly, we calculate Average number of SHG Per state. In each cases, our time period is from 2010-11 to 2017-18, The details performance of these three types of institutions analysed graphically. We also run a correlation coefficient between performance of SHG and SHG under NRLM to judge whether NRLM is a successful mission or not.

Keywords-Microfinance, Self Help Groups, Joint Liability Groups

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I. INTRODUCTION

Microfinance is a general term to describe financial services to low-income individuals or to those who do not have access to typical banking services. It allows people to take on reasonable small business loans safely, and in a manner that is consistent with ethical lending practices. Microfinance, also called microcredit, is an idea to provide banking services to unemployed or low-income individuals or groups who otherwise would have no other access to financial services and financially push them up. Through group lendings, individual loans, micro savings or micro loans microfinance will help low income people and draw them under a financial system. Microfinance initially had a limited definition - the provision of microloans to poor entrepreneurs and small businesses lacking access to credit. The two main mechanisms for the delivery of financial services to such clients were: (1) relationship-based banking for individual entrepreneurs and small businesses; and (2) group-based models, where several entrepreneurs come together to apply for loans and other services as a group. Over time, microfinance has emerged as a larger movement whose object is "a world in which as everyone, especially the poor and socially marginalized people and households have access to a wide range of affordable, high quality financial products and services, including not just credit but also savings, insurance, payment services, and fund transfers.

In the late 1970s the concept of microfinance had evolved. Although, microfinance have a long history, we will concentrate mainly after the 20th century. Microfinance sector has grown rapidly over the past few decades. Nobel Laureate Muhammad Yunus is credited with laying the foundation of the modern MFIs with establishment of Grameen Bank, Bangladesh in 1976. Today it has evolved into a vibrant industry exhibiting a variety of business models. Microfinance Institutions (MFIs) in India exist as NGOs (registered as societies or trusts), Section 25 companies and Non-Banking Financial Companies (NBFCs). Commercial Banks, Regional Rural Banks (RRBs), cooperative societies and other large lenders have played an important role in providing refinance facility to MFIs. Banks have also leveraged the Self-Help Group (SHGs) channel to provide direct credit to group borrowers. In India microfinance mainly grow from the middle of 2009. As of March 2009, the MFIs in India reported a client base of 22.6 million with an outstanding portfolio of more than \$2



Variation of salinity in the Sundarbans Estuarine System during the Equinoctial Spring tidal phase of March 2011

MEENAKSHI CHATTERJEE^{1,2,*} , D SHANKAR³, V VIJITH^{3,5}, G K SEN^{2,6},
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The Sundarbans Estuarine System (SES), comprising the southernmost part of the Indian portion of the Ganga-Brahmaputra delta bordering the Bay of Bengal, is India's largest monsoonal, macro-tidal, delta-front estuarine system. The Sundarbans Estuarine Programme (SEP), covering six semi-diurnal tidal cycles during 18–21 March 2011 (the Equinoctial Spring Phase), was the first comprehensive observational programme in the SES. The 30 observation stations, spread over more than 3600 km², covered the seven inner estuaries of the SES: the Saptamukhi, Thakuran, Matla, Bidya, Gomdi, Harinbanga, and Raimangal. At all stations or time-series locations (TSLs), the water level was measured every 15 min and water samples were collected every hour for estimating salinity. We report the observed spatio-temporal variations of salinity in this paper. The mean salinity over the six tidal cycles decreased upstream and the mean range of salinity over a tidal cycle increased upstream. In addition to this along-channel variation, the mean salinity also varied zonally across the SES. Salinity was lowest in the eastern SES, with the lowest value occurring at the TSLs on the Raimangal. Though higher than at the Raimangal TSLs, the mean salinity was also low at Mahendranagar, the westernmost TSL located on the West Gully of the Saptamukhi. Salinity tended to be higher in the central part of the SES. CTD (conductivity–temperature–depth)

FIXED POINT RESULT IN S -MENGER SPACES

KRISHNA KANTA SARKAR¹, KRISHNAPADA DAS² and ABHIJIT PRAMANIK³

Abstract: The concept of S -metric spaces came to the literature in recent times. In this paper we introduce the concept of S -Menger space. Some important properties have been discussed and a fixed point theorem have been established. We deduced some corollaries to the main theorem and it is also supported by examples.

AMS subject classification : 47H10, 54H25, 54E70.

Key words: S -metric space, Menger space, S -Menger space, Cauchy sequence, fixed point, t -norm.

1. Introduction:

The study of contraction mapping and related problems hold an important place in the research of fixed point theory. S. Banach [2] initiated the study of fixed point theory in the year 1922. After that this result have been generalized and extended in many directions. Some authors tried to give some generalizations of metric spaces. For example : Gahler [6] introduced the concept of 2-metric spaces, Dhage [4] introduced the concept of D -metric spaces. In [12] Mustafa and Sims pointed out some difficulties of the structure of D -metric spaces and they introduced a new structure of generalized metric spaces which are known as G -metric spaces.

Recently Sedghi et al. [21] have introduced D^* -metric spaces as a probable generalization of D -metric spaces and prove some basic properties of D^* -metric spaces.

In 2012 Sedghi et al. [20] in another paper gave a generalization of G -metric spaces and D^* -metric spaces, which is known as S -metric spaces. In this paper they have given some basic properties of the spaces and some fixed point results. Some more recent results in S -metric spaces may be seen in [1, 3, 5, 7, 8, 11, 13, 14, 15, 18, 19, 22] and [24].

Probabilistic generalization of metric spaces were introduced by K. Menger [10] in 1942. In 1960 Schweizer and Sklar [16] had extended the idea to statistical metric spaces. After that with the help of t -norm probabilistic metric spaces had been generalized to Menger spaces.

In this paper, we introduce S -Menger spaces as a generalization of S -metric spaces and give some properties of the space. We prove a fixed point result and deduce some corollaries. We also give some examples to validate our result.

2. Definitions and Mathematical Preliminaries:

In this section we give some definitions and lemmas which are needed for our results.



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Cancer Stem Cells: It's Future Perspective by Defining its Radiation Sensitivity and Resistivity through Differentially Regulated Expression of Micro-RNAs

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Abstract

Stem cells are undifferentiated cells in the body that can self-renew, propagate differentiated cells, and proliferate extensively. They have the capacity and renewing themselves for indefinite periods. The consensus definition of a cancer stem cell arrived as a cell within a tumor that possesses the capacity to self-renew and to cause the heterogeneous lineages of cancer cells that comprise the tumor. The classical model of cancer formation, termed the stochastic model, defines tumor cells as biologically equivalent. Intrinsic factors, such as signaling pathways, levels of transcription factors, and extrinsic factors, result in varied and unpredictable behavior of the tumor cells. Conversely, the hierarchy model proposes that tumors are made up of biologically distinct types of cells with varying functions and behaviors. Tumor growth can only be initiated by a subset of cells known as cancer stem cells (CSCs). CSCs have a set of markers for detection and determination. Surface markers such as ESA, CD44+, are characterized in breast, ovarian, colon, prostate, pancreas or in head and neck cancer tissues while low CD24-, CD 45- found in breast or hepatocellular carcinomas. Micro RNAs (miRNAs) are involved in cancer pathogenesis by posttranscriptional regulation of gene expression. Specific miRNAs play a unique and important regulation role in characteristics of cancer stem cells. In further to find out full nature of the involvement of BCSCs in the molecular mechanisms of tumorigenesis or involvement of micro-RNAs (miRNAs) in the function of BCSCs microarray profiling of miRNAs of both ESA+CD44+CD24-low breast cancer stem cells and MCF7 cell lines were done (45). miRNA expression profiles of BCSCs and MCF-7 cells using a normalisation factor and clustering, identified differentially expressed 19 miRNAs that fell into two groups (fold change ≥ 4). Moreover, miR-301, miR-296, miR-21 and miR-373* have been reported to be expressed in human embryonic stem cells and other stem cells, indicating that these miRNAs may play a constitutive role in maintaining the biological characteristics of stem cells. A detailed understanding of miRNA mechanisms may also permit targeted therapeutic strategies based on miRNA inhibition or supplementation. The present review discuss all about the aspects of cancer stem cells and its identification through different surface markers and differentially expressed micro RNAs. The role of micro RNA up/down regulation is described in brief in this review with aim to take initiative for future onco-genomic research in implication of micro-RNA mediated CSC propagation in tumor metastasis.

Article Info

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Keywords

Cancer Stem Cell, MiRNA, surface markers, growth factors, lung carcinoma, breast carcinoma, hepatic cancer.

Impact of Covid 19 On Poor and Migrant Labourers of India

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Abstract: The internal migrant workers in India, despite being highly vulnerable in terms of physical and mental health, have remained the backbone of the Indian economy. The main idea of this paper is impact of covid 19 on poor and migrant labourers of India. This paper discussed some of the important issues regarding the effect of epidemics like Covid-19 on the migrant population and also a comprehensive analysis of Poverty of India. It mentioned what is the concept of migrant workers in India. We also analyse the rate of unemployment of different states of India. We can see that the unemployment rate of urban area is quite higher than rural area. Besides, this paper told about the number of migrants of different state of India and also showed a bar diagram in this context. Here we used two types of statistical tools. One is power regression and another is descriptive statistics. By the method of regression, we compare the scenario of poverty growth rate of both 2011 and 2021 with respect to population data of India's different states, where we can easily see that the growth rate of poverty is quite higher in 2021 than 2011. From this we can conclude that this pandemic has worsened the condition of migrants as well as poor people. On the other hand, descriptive statistics analysis said about the migrants of different states. After analysing those results, our conclusion is that the sudden outbreak of the covid-19 pandemic has adversely affected the society, economy and agriculture and thus have significantly challenge achieving the target of eradicating poverty in India.

Keywords-Migrant Labour, Economy, Poverty, Development, Covid 19

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I. INTRODUCTION:

Coronavirus, a special type of harmful virus. Scientists first identified a coronavirus in 1965. It causes common cold symptoms like fever, runny noses etc. Some of the coronaviruses infected animals, including bats, camels and cattle. But how did SARS-CoV-2, the new corona virus that causes covid-19, came into existence?

However, it remains unclear exactly how the virus came and rapidly spread to human beings. There are different viewpoints about origin of SARS-CoV-2. Experts said that SARS-CoV-2 originated in bats, though there is not sufficient evidence regarding this matter. Scientists suspect that Wuhan's open market is the 'Culprit' area from where the virus rapidly spread. The place is so congested where customers buy fresh meat and fish, including animals that are killed on the spot. Crowded conditions can let viruses from different animals swap genes. Wuhan, however, is home of the Wuhan Institute of Virology, a leading world center for research on coronavirus. So the possibility that the SARS2 virus had escaped from the lab could not be ruled out. Two reasonable scenarios of origin were on the table

The first cases of Covid 19 reported in December 2019 at Wuhan, a city in the Hubei province of China. Gradually SARS-CoV-2 spread both inside and outside China, it infected people who have no direct contact with each other. It started to spreading in US and around the globe. On 11th March 2020 World Health Organisation (WHO) declared covid-19 a pandemic that occurs when a disease that people aren't immune to spread across large regions. The most common way that this illness spreads is through close contact (within around 6 feet) with someone who has the infection. The disease is most contagious when a person's symptoms are more severe. However, it is possible for someone without symptoms unknowingly spread the virus. Few months later, the virus gradually becomes so deadly so that the death tolls increasing rapidly. Most of the countries have confirmed cases of covid 19 (It is important to note that covid-19 is new, and research is still ongoing. There may also be other ways that new coronavirus can spread).

However, India Reported the first confirmed case of the coronavirus infection on 30th January, 2020 in the State of Kerala. The affected had a travel history from Wuhan, China. Gradually, new cases were started being reported in multiple cities such as New Delhi, Maharashtra, Bengaluru, Hyderabad, Patna, West Bengal and so on. West Bengal has reported its first positive case of coronavirus as a student who returned from UK, tested positive. First death due to coronavirus in India was reported in Karnataka on 12 March, 2020.



Foraging Optimization Through Nectar Quality Prediction - Evolution of Feeding Strategy by Common Myna for *Butea monosperma* Lam.

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Abstract

Common Myna (*Acridotheres tristis*), the most abundant avian omnivore in the Indian Peninsula has a diverse food habit of consuming natural as well as human left over (HLO) foods. However, they have evolved a foraging optimization strategy of consuming nectar of Palash (*Butea monosperma*) from late winter to spring as primary food and other food types as secondary. Such food shifting did not alter their Protein - Lipid - Carbohydrate requirement. The study also reveals that birds have evolved strategies to identify better nectar variant of *Butea monosperma* plants and concentrate on those plants only while neglecting the less profitable one. Seasonal body weight comparison in humanized and natural habitat also correlates with their food choice. From the aforesaid observations it can be assumed that feeding optimization of Common Myna has definite link to its pre-breeding season preparation.

Keywords: Foraging Optimization; Nectar Quality; Common Myna; *Butea monosperma*; Breeding Strategy

Introduction

The Indian Myna or Common Myna (*Acridothera tristis*) is an extremely familiar, omnivorous and a hole-nester species [1]. They show high adaptability in both its natural habitat i.e. deciduous forest as well as anthropoid environment like cities, towns and other human settlements. Common Myna (CM henceforth) principally breeds from April to July, which might extend up to September [1,2]. During breeding season CM feeds mostly on insects, fruits as well as seeds [3]. Although, during late winter and spring which prevails between late February to March locally, in Indian subcontinental climate, CM feeds on nectar of Palas [3]. Around same time flowers burst open in great clusters of vermilion in February-March and are fertilized by CM and others yielding pod ripening from March to June [4]. CM has evolved to coincide its breeding with post flowering and by mid-April they lay their eggs, which is followed by incubation and brooding. In general, avian breed-

ing preparations usually include body weight gain and successful choosing and defending of better nesting sites through high competition. Also, defending nests from both intra and inter-specific competition and nest activity for incubating eggs all these behaviours are both time and energy consuming [5]. Therefore, pre-breeding season food choice must be highly profitable one so that feeding and foraging time can be remarkably reduced.

The nectar components of Palas have been analyzed and its pharmacological properties has been thoroughly investigated as well as documented by several workers [6-8]. Flowers with high sugar concentration of nectar has reportedly been noticed to be the first choice amongst nectarivorous birds [9]. Surprisingly, Sunbirds and Humming birds show concentration and temperature specific sugar intake [9], thus sugar composition plays a significant role in food choice.

THE CHALLENGES OF RESEARCH IN HYPNOSIS

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Abstract

Hypnosis has been vogue over a century in the field of therapeutic treatment throughout the globe and yet it has not received its due deserving importance for various factors, especially in India. For researchers, clinicians, practitioners and therapists, hypnosis has been a challenging proposition because of the very nature of the subject and its multifarious dimension.

In this document, the primary author, who is a practising hypnotherapist and a researcher outlines the challenges of using hypnosis as a research methodology and surveys existing literature on the relative advantages and disadvantages of having hypnosis as a research method. The document also stresses on the current focus on hypnosis research and the strides in future direction, especially with focus in neuroimaging which has revolutionised the landscape of the human brain and the functioning of the mind.

With more awareness and research opportunities, we are sure that strides in hypnosis research will be more far reaching and therapeutically available for future generations.

Keywords: *Research Design, neuroimaging, Intrinsic hypnosis, experimental hypnosis, hypnotisability, hypnotic amnesia, identity delusion.*

INTRODUCTION

There has been over a century of careful scientific study of hypnosis across the world. Researchers, typically in the fields of psychology & medicine, have been interested in finding out what hypnosis is, how it works, and how effective it is as a clinical treatment.

Most academicians concur that there was a general lack of direction and momentum that has been growing till the 1990s with the presence of eminent researchers like Andre´ M. Weitzenhoffer (1921–2004), Ernest R. Hilgard (1904–2001), Martin Orne (1927–2000), Theodore X. Barber (1927–2005), Kenneth S. Bowers (1937–1996), Nicholas P. Spanos (1942–1994), Theodore Sarbin (1911–2005), and William Coe (1930–2004)]. Primarily, they were closely associated with institutional research centres.

In the later period, hypnosis research was largely an individual effort. There was a general lack of organised ongoing collaboration and critical exchange between researchers leading to duplication of efforts and leaves difference in individual findings unresolved.

There was also a lack of new comprehensive theories after this period. This somehow represented itself as an impediment to the growth and integration of hypnosis to broader models of human cognition.

Cucurbit[7]uril Nanoencapsulation Reduces the Unpalatability of Bitter Phytochemicals

Zeba Manzar, Tanoy Dutta, Apurba Lal Koner,* and Aniruddha Mitra*

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ABSTRACT: It is a challenge to induce an organism to feed on an aversive compound, and this must be overcome to study the noxious effect of ingestion of a bitter compound on the physiology and behavior of the organism. We show that cucurbit[7]uril (CB7) nanoencapsulation significantly reduces the aversive nature of bitter phytochemicals (caffeine and strychnine) in *Drosophila melanogaster*, and thereby, flies can be induced to feed on phytochemicals that they normally avoid ingesting. This is the first demonstration of CB7-mediated delivery of aversive compounds into insects and can help in the study of the relation between bitterness and toxicity and open up new applications in studying insect physiology and pest control.

KEYWORDS: cucurbit[7]uril, CB7, supramolecular encapsulation, caffeine, strychnine, *Drosophila*, food choice

INTRODUCTION

Taste sensation can be qualitatively divided into five broad categories: sweet, bitter, salty, sour, and savory (or umami).^{1–3} In humans and other vertebrates, bitter sensation helps to detect potentially toxic molecules that induce aversive responses.⁴ This concept has been extended to denote bitter taste in other animals, including insects, that show aversive response to certain chemicals, especially in the context of feeding, and this may potentially help to protect them from ingesting harmful substances.⁵ It is commonly accepted that bitter taste must have evolved to avoid ingestion of toxic chemicals that may harm an organism.⁶ Because bitter compounds that we generally find in our food evolved as chemicals produced by plants to deter insect herbivory, it is believed that compounds perceived as more bitter have a more potent toxic effect on an animal consuming it, as compared to compounds that are perceived as less bitter,^{7,8} and evidence for this hypothesis has been obtained from a rodent model.⁶ However, this relation is not clear in insects, with conflicting and contradictory reports on the relation between the aversiveness and toxicity of different bitter compounds.^{7,9–13} A potential problem of these past studies is that the noxious effect of a compound was mostly tested in assays in which insects were compelled to feed on various aversive compounds, and because insects are known to avoid feeding on such compounds, they should suffer from starvation. This will affect their physiology and can interfere with the effect of the toxicity of the bitter substance present in food, thus making it difficult to introduce a noxious compound into the body of an organism through the gut via ingestion. To avoid this problem and tease apart the effect of starvation from the effect of noxiousness, there is a need to increase the palatability of a noxious compound by masking its bitter taste, whereby the organism will be induced to feed on such compounds.

Various bitterness masking approaches have been tried in pharmaceutical research. These include the use of (a)

cyclodextrins, (b) polysaccharides and other polymers, (c) surfactants and microemulsions, and (d) lipids and emulsions.¹⁴ Supramolecular encapsulation is one of the widely used techniques for reducing the aversiveness of bitter compounds. Cyclodextrins have been well explored for this purpose because of their excellent water solubility, suitably sized hydrophobic cavity, and nontoxicity.¹⁵ Another promising approach for masking the bitter taste of compounds is by supramolecular encapsulation by cucurbit[*n*]urils. Cucurbit[*n*]uril is a relatively new family of macrocyclic cage-like molecules with a broad range of potential applications (including drug delivery).^{16–21} These macrocycles behave as a molecular host, and a variety of smaller molecules can be encapsulated within their cavities. A desirable attribute of any supramolecular encapsulation mechanism is that the activity of the molecule being delivered should not be adversely affected because of administration through the delivery vehicle. The activity of various drugs delivered through supramolecular encapsulation in cucurbiturils has been found to have remained unchanged, showing that cucurbit[*n*]urils can act as efficient encapsulation and delivery agents.^{22–28} Recently, cucurbit[7]uril (or CB7) (Figure 1) has been used to conceal the bitter taste of denatonium benzoate, known to be the most bitter compound to humans, and has been evaluated in mice, where it was found that CB7 encapsulation can abolish the aversive response toward denatonium benzoate.²⁹ Hence, we selected CB7 as a candidate macrocycle for the nanoencapsulation of bitter phytochemicals to be introduced into an insect model system.

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■ Organic & Supramolecular Chemistry

Recent Advances of Indium(III) Chloride Catalyzed Reactions in Organic Synthesis

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This review summarizes recent advances of indium trichloride catalyzed synthesis of different organic compounds. It is obvious that InCl_3 co-ordinates with C–C and/or C-heteroatom multiple bonds and thereby makes them very prone to nucleophilic attack to form a new bond. This Lewis acid catalyst also activates oxiranes to produce aldehydes. Multicomponent synthesis including C–C bond formation reaction and con-

struction of N, O and S-containing heterocycles are discussed in organic solvents as well as in water. This article highlights recent developments and application of indium(III) chloride as a catalyst in organic synthesis from 2015 to 2020. The mechanism of few important reactions is discussed in detail which will be very useful for the readers.

1. Introduction

Indium(III) chloride is basically a strongest Lewis acid among the other group members and the decreasing order is $\text{InCl}_3 < \text{GaCl}_3 < \text{AlCl}_3 < \text{BCl}_3$. The popularity of this catalyst is recently increasing to the organic chemist due to its unique π -acidity, low cost, readily available, recyclability, water-tolerant and polar nature. Besides, use of InCl_3 as catalyst has many advantageous including high chemo- and regio-selectivity, compatibility with air and water, ease of handling, reaction in aqueous medium including other solvents and stability of the catalyst. Recently, indium trichloride was employed to access various heterocycles.^[1] It has also been used for different organic transformation like transthiacetalization of *O,O*-acetals,^[2] glycosyl bromide to methoxy glycosides with methanol,^[3] aldehydes to *gem*-diacetates,^[4] *N*-tosyl aziridines to azido amines with trimethylsilyl azide (TMSN_3)^[5] and isomerization of aryl epoxides to benzylic aldehydes or ketones.^[6] Multicomponent one-pot synthesis like α -amino phosphonates,^[7] α -amino nitriles,^[8] α -amino- γ -lactones^[9] has been observed employing catalytic amount of InCl_3 . Moreover, InCl_3 mediated construction of sugar fused *N*-aryltetrahydropyridine,^[10] antibacterial and antifungal agent 2-substituted aryl(indolyl)kojic acid derivatives,^[11] tetrahydropyridines,^[12] amidoalkyl naththols,^[13] chremenone- and quinoline- annulated imidazole derivatives^[14] and quinolines^[15] using microwave has been accomplished by the multicomponent reaction (MCR) strategy. InCl_3 supported on silica gel has been used for electrophilic amination of arenes with diethyl azodicarboxylate.^[16] Different name reactions such as hetero Diels-Alder reaction,^[17] Aza-Diels-Alder reaction,^[18] Biginelli reaction,^[19] Mukaiyama aldol reaction in water,^[20]

Michael reaction,^[21] Mukaiyama-Michael reaction,^[22] and double Mannich reaction^[23] has also been studied with indium(III) chloride. Azedolysis of α,β -epoxy carboxylic acid with NaN_3 ,^[24] Polymerization,^[25] cyclisation,^[26] ring opening reaction of chalcone epoxides with indole and pyrrole^[27] are the most important reactions in organic synthesis promoted by InCl_3 . On the basis of environmental consideration, InCl_3 alone and In/InCl_3 system applied in aqueous media for the synthesis of fused pyrimidines and pyrazoles^[28] and indium homoenolate (organoindium complex)^[29] respectively. Moreover, InCl_3 can be recycled after the synthesis of isatin *N*-ribonucleosides^[30] from *N*-phenylribosylamines and diethyl oxalate under microwave irradiation. Condensation reaction between different dialdehydes and pyrroles to synthesize various bis (dipyrromethanes),^[31] and preparation of 1,8-dioxo-decahydroacridines^[32] from aldehydes, 1,3-diketones with aromatic amines or ammonium acetate catalyzed by InCl_3 has a great inclusion in organic chemistry. Indium trichloride promoted addition reaction in the indole and pyrrole moiety with electron deficient alkenes,^[33] conjugate addition of alkynylsilanes to α,β -unsaturated ester to synthesize δ,γ -alkynyl esters,^[34] preparation of indium-containing ionic liquids^[35] and synthesis of 1,5- and 1,8-naphthyridines^[36] are observed in recent years. Thus, InCl_3 has been used as a versatile catalyst for the synthesis of different organic compounds in the field of medicinal, agricultural and fine chemical industry.

2. Aims and scope of the review

Given the tremendous impact of indium trichloride in this decade, many reviews have emerged in the last years, covering different aspects. Nowadays, five to six publications per year on In(III) chloride catalyzed organic reactions appear in the literature. This fast development of InCl_3 catalysis hampers efforts to summarize every new single transformation in one report. The last comprehensive review on InCl_3 catalysis in organic synthesis cover until 2012^[4] although other two reviews published in recent years on specific topic; one on

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'এবং মহায়া' বিশ্ববিদ্যালয় যজুরী আয়োগ (UGC-CARE List #2021) অনুমোদিত তালিকার
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এবং মহায়া

(বাংলা ভাষা, সাহিত্য ও গবেষণাধর্মী মাসিক পত্রিকা)

২৩ তম বর্ষ, ১৩৭ সংখ্যা, আগস্ট, ২০২১

সম্পাদক

ডা. মদনমোহন বোরা

কেক. প্রকাশক

গোবিন্দচাঁদ, মেদিনীপুর, পশ্চিমবঙ্গ

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এবং মহুয়া

(বাংলা ভাষা, সাহিত্য ও গবেষণাধর্মী মাসিক পত্রিকা)

২৩তম বর্ষ, ১৩৭ সংখ্যা

আগস্ট, ২০২১

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নিয়তিঃ কেন বাধ্যতে ? : অভিজ্ঞানশকুন্তলম্ সবিতা মণ্ডল

‘নিয়তি’ অদৃষ্ট, অজ্ঞেয় এক শক্তি, যার হাত থেকে কারো মুক্তি নেই। অসম্ভব ও অনিবার্য ক্রিয়ায় নিয়তি মানুষের জীবনকে শাসন করে। এ কথা আমরা বিশ্বাস করি। বিশ্বাস করতে বাধ্য হই, কারণ যে রহস্য মানুষের জীবনকে ঘিরে আছে, তা কখনোই পুরোপুরি উন্মোচিত হয় না। সেই রহস্য-পারাবারে দাঁড়িয়ে একটি প্রত্যয় আর সবকিছুকে ছাড়িয়ে উপরে উঠে আসে— ‘নিয়তিঃ কেন বাধ্যতে?’

মৃত্যু জীবনের অনিবার্য পরিণাম, কিন্তু তারপর! মৃত্যুর পরও কি মানুষের কোন অস্তিত্ব থাকে! ‘আত্মা’ বলে কি কিছু হয়! ‘দেবলোক’ বা ‘পরলোক’ বলে কি কিছু আছে! সংশয়ে-বিশ্বাসে মেশা জিজ্ঞাসা উপনিষদেদে যুগেই মানুষের মনে দানা বেঁধেছে। আজও তার হাত থেকে মানুষের মুক্তি ঘটেনি। কৃষিভিত্তিক সমাজে মানুষ দেখেছে, গাছ মরে গেলেও তার বীজ থেকে জন্ম নেয় নতুন গাছ। তখন বিশ্বাস করতে ইচ্ছা করে, মানুষের মৃত্যুর পর তার আত্মা বীজরূপে হয়ত নতুন দেহ ধারণ করে। এভাবেই মানুষের মনে জন্মান্তরবাদ বাসা বাঁধে। জন্মান্তরবাদ সম্পর্কে সবচেয়ে বেশি জিজ্ঞাসু করে তোলে ক্ষত্রিয়দের। যুদ্ধ-বিগ্রহে অকস্মাৎ প্রাণ হারাতে হত বলে তাদের মনেই মরণোত্তর জগৎ সম্পর্কে বেশি করে প্রশ্ন জাগতো। ব্রাহ্মণ্য সমাজ জন্মান্তরবাদের এই তত্ত্বটিকে আত্মস্বার্থে বিধাতার অভিপ্রায়ের সঙ্গে যুক্ত করে সকলের সমর্থনযোগ্য করে তোলে। অর্চিরেই জন্মান্তরবাদের সঙ্গে কর্মবাদের যোগ ঘটিয়ে মানুষের জীবনকে এক রহস্যময় তন্তুজালে বন্দী করে। মৃত্যুর পরে মানুষের জীবন অব্যাহতভাবে চলতে থাকে শুধু তাই নয়, সেই জীবনের সুখ-দুঃখ আনন্দ-বেদনা, তার কৃতকর্মের ভিত্তিতে গড়ে ওঠে। এই বিশ্বাসের একটি সান্ত্বনার ভিত্তি হল এই যে, মানুষ নিজেই নিজের ভাগ্যবিধাতা। যে যেমন কর্ম করবে, সে তেমন ফল ভোগ করবে। কার্যমনোবাক্যে অন্ত্যজ মানুষ যদি উচ্চবর্গীয়দের সেবা করে, তবে সেই পুণ্যফলে পরজন্মে নিজের মন মতো জন্ম লাভ করতে পারবে।

কিন্তু বাস্তবে দেখা গেল, কর্ম ও কর্মফলের মধ্যে বিস্তর ব্যবধান। সৎ ও আদর্শ জীবনযাপন সত্ত্বেও অকারণ পীড়ায় সাধারণ মানুষকে পীড়িত হতে হয়। অপরদিকে অসৎ জীবনযাপন করেও অনেকের আর্থিক স্বচ্ছন্দ্যে ও আনন্দে জীবন কাটে। তখন ব্রাহ্মণ্য সমাজ জন্মান্তরবাদ ও কর্মফলবাদকে ভিত্তি করে তৃতীয় একটি তত্ত্বের আবির্ভাব ঘটান— সেটিই নিয়তিবাদ নামে পরিচিত। এতে বলা হল, আপাত সৎ মানুষও

Minimization of Handoff Failure Probability for Next-Generation Wireless Systems

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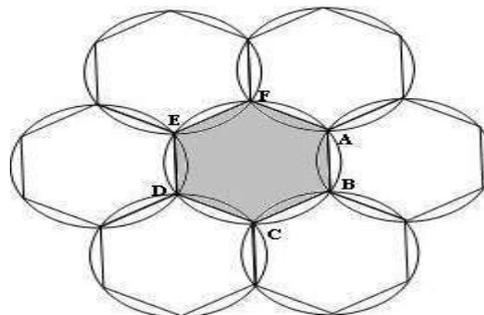
Abstract

During the past few years, advances in mobile communication theory have enabled the development and deployment of different wireless technologies, complementary to each other. Hence, their integration can realize a unified wireless system that has the best features of the individual networks. Next- Generation Wireless Systems (NGWS) integrate different wireless systems, each of which is optimized for some specific services and coverage area to provide ubiquitous communications to the mobile users. In this paper, we propose to enhance the handoff performance of mobile IP in wireless IP networks by reducing the false handoff probability in the NGWS handoff management protocol. Based on the information of false handoff probability, we analyze its effect on mobile speed and handoff signaling delay.

Keywords: NGWS (Next Generation wireless Systems), Handoff, False handoff probability, Mobile IP, Signaling delay.

I. INTRODUCTION

A cell is the radio region secured by a transmitting station or a Base Station (BS). Every Mobile Terminal (MTs) inside that region are associated and overhauled by the BS. In this manner, in a perfect world, the region secured by a cell is a hover, with the BS being at the inside. Along these lines, really cells are not hexagonal. Hexagon fitted the planed region pleasantly and hexagon is the best region in the hover as for some other shape. The cell is subsequently approximated to an ordinary hexagon and side of the hexagon is the normal rope of two nearby cells. At the point when any MT crosses a typical line of a cell, we can say that handoff has happened starting with one cell then onto the next cell.



Extension of Handoff with The Help of Wider Channels

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Abstract

In this paper, we have discussed the issue of the IEEE 802.11 Wireless Local Area Networks (WLAN) based wireless blocking probability with its algorithm and upgrading of the channels. WLAN provides multimedia services like live telecast, video streaming, video conferencing, Voice over IP (VoIP) to its users. For deployment of these fast real time services, it needs stringent Quality of service (QoS) requirement such as delay time less than 150ms for VoIP, and packet loss rate of 1%. The user mobility service provides the handoff cost required when mobile stations are linked for continuous service from one access point (AP). In existing 802.11 IEEE handoff procedure, the scanning phase can exceed duration of 200ms and packet loss can exceed 10%. Through the implementation of handoff time of less than 150ms the proposed approach focuses on achieving reduced general handoff latency, which in IEEE 802.11 is sufficient for seamless operation.

Keywords: BS (Base Station), MN (Mobile Node), RSS (Received Signal Strength), WLAN (Wireless Local Area Network), AP (Access Point)

1.Introduction:

It has been expanded to personal and business purposes by IEEE 802.11 built from wireless local area networks (WLAN). The networks are used for Voice over IP (VoIP) handoff latency management and multimedia are some pricey applications for smooth and continuous handover in Quality of Service (QoS).

1.1 IEEE802.11x Architecture

Types of Wireless LAN: The operating modes of IEEE 802.11 are two basic modes: infrastructure and ad hoc modes. Mobile units directly relay peer-to-peer in ad hoc mode. mobile units connect in networking mode as a connector to other networks (such as the Internet or the LAN) through an access point.

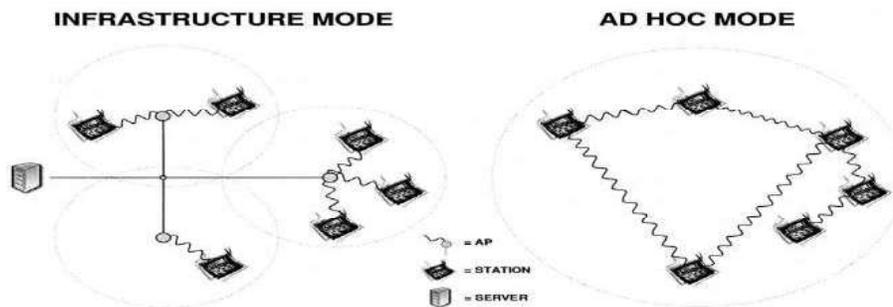


Fig 1. Types of wireless LAN: Infrastructure Mode and AD Hoc Mode

Kinetics of Water Desorption in Select Marine Ferromanganese Crust materials by Stepped Isothermal Evolved Gas Analysis

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Abstract: A new desorption technique, 'Stepped isothermal evolved gas analysis (SI-EGA)' is used for water desorption of select marine ferromanganese crust (MFMC) materials. Five samples of two discrete select MFMC materials are studied in details. Desorption is carried out by heating homogeneous powder of MFMC materials (0.25 g) from 31 °C to 191 °C in several steps. At any temperature, the kinetics of water desorption is determined from the change of pressure in a fixed volume. Water desorption approximately follows first order kinetics at all temperatures; however, anomalous water desorption phenomena is observed at 31 °C. Average activation energy of 1.19 ± 0.35 kcal/mole is obtained from the Arrhenius equation of the powder samples, in the temperature range of 51 °C-191 °C.

Keywords: Marine ferromanganese Crust, Stepped isothermal evolved gas analysis, Desorption, Rate constant, Activation energy

Introduction

The most commonly used thermal desorption techniques are differential scanning calorimetry (DSC), differential thermal analysis (DTA), thermogravimetry (TG) and evolved gas analysis (EGA)¹⁻⁹. Kinetics of water desorption from type A-Zeolites had been investigated by DSC and EGA analysis²⁻⁶. Water desorption from rutile TiO₂ surface was studied by thermogravimetry (TG) technique using a microbalance¹⁰. Redhead reported thermal desorption of gases, from a metal surface by a flash filament technique, both for linear and reciprocal variation of temperature¹¹. Forni *et al.*, investigated ammonia desorption from zeolites by using a temperature programmed desorption (TPD) technique, at constant heating rate. In this case desorption rate was controlled by the intracrystalline surface diffusion¹²⁻¹⁴. A variant of temperature programmed desorption (TPD) technique, by



Institutional Ground Serves as A Safe Haven for Birds, Butterflies and Odonates – A Case Study from Kolkata

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Abstract

Urban biodiversity has received very little importance from environmentalists in comparison to natural and protected ecosystems. Much of our native birds, butterflies and odonates are fast disappearing due to habitat destruction in urban environment and unscientific management of our natural resources and at present, their survival is under threat. The objective of the present review is focussed on the assessment of the diversity of butterflies, birds and odonates with vegetation composition of habitat and conservation priorities in a college campus. A combination of direct search and opportunistic sighting methods were applied to record 49 species of butterflies under 5 families and 36 genera, 45 species of birds belonging to 12 orders and 25 families and 23 different Odonata species (18 dragonflies and 5 damselflies) from the study area during the period 2014-2016. Our observation emphasizes that the institutional campus fulfils an environment favourable for harbouring a rich and diverse fauna. This study aims to focus on creation of a comprehensive biodiversity management program to properly monitor the diverse flora, fauna as well as the habitat in and around the college ground.

Keywords: *bird, butterfly, Odonata, biodiversity, conservation.*

Introduction

The Indian subcontinent presents extremely diverse climate, terrain and vegetation owing to which there is tremendous diversity of flora and fauna. It has been estimated that our country harbors about 1,300 species of birds (Grimmett *et al.* 1988, Ali S. 2002). 1504 species of butterflies (Tiple AD 2011) and 474 species of Odonates (Subramanian 2014). Being very sensitive towards any type of change in their habitat, avian species assemblages, odonates and butterflies are considered potent indicators of ecosystem health and functioning. Butterflies enable sustenance of ecosystem services through their role in pollination (Nair *et al.* 2014). Butterflies and Odonates play significant role

as important food chain components. Thus, exploration of avifauna as well as lepidopterans and odonates become important in identifying and preserving potential habitats under threat.

The well-being of humans has always been inexorably linked to the health of our local environments. Unfortunately, urban biodiversity has received very little importance from environmentalists as compared to natural and protected ecosystems. In urban ecosystems, species diversity assessment can be used as a means to reduce human misconduct and pollution in industrial, rural, and managed areas (Reaka-Kudla *et al.* 1997). Taking this into consideration, diversity

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"How class everything becomes when you look from the darkness of a dungeon!"

— Umberto Eco, *Foucault's Pendulum* (1988)

The beginning of this year (2020) gave humans an experience hitherto unprecedented: For all of us, much of our lives *wishis on hold*. We knew we could die, but the 'uncertainty' about who could and when, had never loomed so large on us. We were in darkness. In a word, Coronavirus has turned our body and society into uncertain spaces, which in turn has, led to a new kingdom of bio-politics to its extreme. What was previously known as 'exception', has now become 'normal' or the so-called 'new normal' in this limited space, let us take a stock of some of the efforts since the outbreak of Coronavirus and the governmental mechanism to cope with/contain the challenge, which in effect has allowed the (medical) knowledge/(governmental) power combine to redesign the lives of the 'ruled', especially in India.

On March 11, 2020, WHO Director-General Tedros Adhanom Ghebreyesus, in a press conference in Geneva, for the first time declared COVID 19 outbreak to be a pandemic. He further added, 'Pandemic is not a word to use lightly or carelessly. It is a word that, if misused, can cause unrescuable fear, or unjustified acceptance that the fight is over, leading to unnecessary suffering and death'.¹ Thus, emerged a crisis, that Ranabir Samaddar had identified to be an amalgamation of several crises, (during a roundtable discussion, held during the 5th Annual Research and Curation Workshop and Conference, on 21 November 2020, Kolkata²).

Events leading to the Lockdown:

The Wuhan Municipal Health Commission in China (on December 31 2019), reported a cluster of cases of pneumonia in Wuhan, Hubei Province, which was later on identified as novel coronavirus or COVID 19. In January 2020, China had shared the genetic sequence of COVID 19 and first case was confirmed outside China, in Thailand. Finally, on March 11 2020, based on the spread and severity of the virus, the World Health Organization declared it to be a pandemic.³ The first case to be reported in India was on January 30 and on February 12, Rahul Gandhi of Indian National Congress, had tweeted, 'The Corona Virus is an extremely serious threat to our people and our economy. My sense is the government is not taking this threat seriously. Timely action is critical'.⁴

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¹ See <https://www.youtube.com/watch?v=9b76AAANF0M>. Last accessed 12.11.20.

² The above idea was shared during a roundtable discussion, held during the 5th Annual Research and Curation Workshop and Conference, on 21 November 2020, Kolkata.

³ For details see <https://www.who.int/>. Last accessed 16.11.2020.

⁴ For details see <https://twitter.com/rahulgandhirajada>. Last accessed 16.11.2020.

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Share of community participation component in inequality of primary healthcare in West Bengal, India

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Abstract

Aim

This study aims to measure the inequality of designated six domains of Primary Healthcare System in West Bengal with special emphasis on Community Participation Domain.

Method

To estimate the domain specific share of inequality in Primary Healthcare System, Modified Gini, is used to identify inequality in six domains that exists across the spatial region. The value of Inequality in Overall Deprivation ranges from -1 to +1. Fifty one indicators were used to estimate the domain that contributes most in overall inequality in Primary Healthcare System. Further disaggregation is done of the indicators of Community Participation domain to understand which factors contribute most to the inequality.

Results

The overall inequality of Primary Healthcare System in West Bengal is 0.47. Out of the selected six domains, community participation domain shows the highest share of inequality, that is, 22.92%. The deprivation or inequality in community participation domain has a significant correlation with child death. The indicators, Citizens Charter (13.61) and Participation in Village Health Plan (13.21) have the highest share in inequality within Community Participation Domain in West Bengal. Case Study of Onda Block and Khargram Block shows the severe disparity in share of inequality by this domain. Community Participation domain shares inequality of 8.49 in the primary healthcare system in Onda Block whereas it is as high as 43.45 in Khargram Block.

Conclusion

The State is concerned about meeting the targets of Universal Immunisation and other goals. Hence, community participation and its possible benefits in health outcome remain oblivious. Neglect of this domain leads to a higher share in overall inequality.

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Keywords

Community, Healthcare, Inequality, Primary, Participation, Share.

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Three epitope-distinct human antibodies from RenMab mice neutralize SARS-CoV-2 and cooperatively minimize the escape of mutants

Emergence of Oligonucleotide Drugs

Jharna Barman Nandi[†]

Abstract

Identification of DNA as hereditary material together with the revelation of double helical structure of DNA laid the foundation for understanding various diseases of genetic origin. Later on, with the report of non-aqueous chemical synthesis of genetic material, i.e., oligonucleotides, and discovery of solid phase synthesis, possibilities to produce custom design pieces of genetic material in large quantity, in reasonable time frame and in cost-effective manner emerged. This paved the path for nucleic acid based therapeutics. As technology matured, several oligonucleotide drugs got green signals from FDA during last decade. Waylivra® and Givlaari® are the latest additions.

Key words: DNA, oligonucleotide, therapeutics, antisense, siRNA.

Introduction

The mysterious nature of the genetic material kept scientists puzzled for years. Enormous efforts were invested during early years of the past century for understanding the physical and chemical nature of the genetic material. Finally, in 1944, Oswald T. Avery, Colin M. MacLeod, and Maclyn McCarty were able to demonstrate that genes are composed of DNA [1, 2]. In the year of 1953, publication by James Watson and Francis Crick in 'Nature' journal [3] revealed the double helical structure of DNA. They shared noble prize in physiology/medicine for determination of DNA double helix structure together with Maurice Wilkinon [4, 5] in 1962. This breakthrough work revolutionized fundamental concepts of molecular biology and also the understanding of various diseases having genetic origin/connection.

In 1968, the Nobel Prize in Physiology or Medicine was shared jointly by Robert W. Holley, Har Gobind Khorana and Marshall W. Nirenberg for their works on the interpretation of the genetic

code. Though worked independently, both of their works indicated how the three letters codes, formed by nucleobases, carried information from DNA, transcribed to RNA and finally translated into proteins. This was another leap forward for translational research of modern time. Har Gobind Khorana also pioneered the non-aqueous chemical synthesis of oligonucleotides [6] without which today's reality of oligonucleotide (ON) drugs was not possible.

During late 1970s, first Paul Zamecnik and Mary Stephenson [7, 8] and later Helen Donis-Keller [9] showed that a synthetic ON is capable of inactivating virus by cleaving the viral-RNA. Helen Donis-Keller also demonstrated the mechanism of antisense action that the 'antisense' strand forms DNA:RNA hybrid duplex with the 'sense' viral RNA strand and the sense strand then gets cleaved by endogenous enzyme RNase H, present in most cells. These seminal works helped scientists conceiving the idea of artificial ON based drug. However, chemical synthesis of

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A Study on Interrelatedness between Corporate Social Responsibility and Corporate Reputation

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Structured Abstract

Purpose: This study attempts to shed light on the relationship between the performance of corporate social responsibility actions and the creation of corporate reputation. Furthermore the study tries to examine the effect that corporate reputation has on the behaviors of customers, employees, investor as different stakeholder group.

Design/ Methodology: The study is purely of theoretical nature, where different journals, newspaper, published articles, books were reviewed and analyzed.

Findings: The study shows that there is a positive relationship between corporate social responsibility and corporate reputation and corporate reputation has a positive effect on the behaviors of customers, employees, investor as different stakeholder group.

Conclusion: The theoretical analysis and review shows that Corporate Social Responsibility put its impact on corporate reputation.

Assessment of the Prevalence of Polycystic Ovary Syndrome among the College Students: A Case–Control Study from Kolkata

Madhumati Chatterjee, Soma Aditya Bandyopadhyay¹

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Abstract

Background: Polycystic ovary syndrome (PCOS) is one of the most common endocrine disorders in women of reproductive age. Of late, the disease is on its rise due to environmental changes as well as lifestyle disorders, affecting 4%–26% of adolescent and young women all over the globe. Initially, this condition is asymptomatic in young girls, progressing toward menstrual irregularities, obesity, hyperandrogenism in late puberty and eventually developing insulin resistance, hypertension, type 2 diabetes, cardiovascular diseases, and infertility around middle age. **Aims:** Early diagnosis is necessary for early intervention, including lifestyle modifications to prevent the immediate and chronic consequences of PCOS. **Materials and Methods:** Our study design was of a cross-sectional questionnaire-based survey, conducted from September 2017 to March 2018 to investigate the prevalence of PCOS and its association with body composition variables. The study population comprised randomly chosen students (age group 18–20 years) of all discipline. The data were collected from the students using structured questionnaire with Rotterdam's criteria, and anthropometric measurements were taken using standard techniques. **Results:** Approximately 28% of the college students were found to be at high risk of developing PCOS. More than 85% of the PCOS cases had oligomenorrhea, 19% were hirsute, 41% had acne, 63% had emotional disturbance, and 22% with a positive family history. Furthermore, the body mass index of the PCOS students demonstrated a trend of Grade 1 obesity than the normal females of the same age group. **Conclusion:** The present study is an attempt to create increased awareness among the students for early and accurate diagnosis, which is the primary step in managing PCOS.

Keywords: Body mass index, hirsutism, obesity, oligomenorrhea, polycystic ovary syndrome, Rotterdam's criteria

INTRODUCTION

Polycystic ovary syndrome (PCOS) is a heterogeneous, multifactorial, complex disorder with a broad spectrum of clinical manifestations such as hyperandrogenism, polycystic ovaries, and ovulatory dysfunction. Reports suggest that women with PCOS are more likely to develop metabolic syndrome with obesity, dyslipidemia, and insulin resistance culminating in serious long-term consequences such as type 2 diabetes mellitus, cardiovascular disease, and infertility.^[1,2] PCOS accounts for significant health-care costs and distress and has a major impact on the quality of life and fertility.^[3] Approximately 4%–10% of the world population experiences PCOS although the incidence rate is higher for India, rounding off to 20%–26%.^[4] Although it has an alarming incidence globally, the syndrome is enigmatic with unclear etiology^[5]

and its diagnosis is difficult as it manifests as a spectrum of symptoms than a specific one. The symptoms of PCOS appear insidiously and are coincident with changes that accompany normal pubertal development, so it is difficult to identify the disorder in young girls.^[6] Thus, PCOS often goes unnoticed and undiagnosed during the adolescent period, except its manifestation as irregular cycles around menarche. The diverse manifestations of PCOS start at an early age with

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Assessment of the Prevalence of Polycystic Ovary Syndrome among the College Students: A Case–Control Study from Kolkata

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A DIASPORIC READING OF CHITRA BANERJEE DIVAKARUNI'S *BEFORE WE VISIT THE GODDESS*: A DISRUPTED TALE DELINEATING MULTIGENERATIONAL DISSEMINATIONS

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Abstract:

Chitra Banerjee Divakaruni, a pioneering figure in the Postcolonial era, emerged as the envoy of the female marginalised sect of the unprivileged migrants; along with their cross-cultural in-betweenness, benumbed patriarchal subjugation and their utmost endeavour of adaptation with peripheral roles. The major concerns of diasporic disillusionment and distressful acculturation are well represented through her innovative delineation as reflected in: *The Mistress of Spices*, *Arranged Marriages*, *Queen of Dreams*, *Sisters of the Heart*, *One Amazing Thing*, *The Palace of Illusion* and so on. Our present concern; *Before We Visit The Goddess* (2016), is another compilation of various episodes happened in the lives of three generations of women; Sabitri, Bela and Tara. It tells about their pathos, pains and desires, unfulfilled dreams and alienated belongingness. The chapters are however connected with a common thread of suffering, which is inevitable in all generations, both India and abroad. The enormous tale of the collective otherization of the 'second sex' as well as their solemn search of actual belongingness unfurl the subtle nuances of this book through the incessant narrative shifting, the aestheticism of magic reality as well as with the delicate touches of stream of consciousness.

Keywords: Diaspora, Displacement, In-betweenness, Nostalgia, Root etc.

Introduction:

The term 'Diaspora' originating from the Greek *diaspeir* ('to distribute') amalgamates 'dia' ('from one end to another') and 'speir' ('to sow or to scatter' like seeds) discusses the broader issues like shifting of homes, nostalgia for a long lost past, an utmost urge to go back to that pre-migratory mythic existences, melancholia and so on. William Safran applies the term 'diaspora' to expatriate minority communities who have disseminated from their original home, to settle in a new land; either voluntarily or forcefully and are compelled to adopt a new culture in an alien land. Diasporans thus live in one country and pine for some mythic past which is impossible to get back. Their fragmented identities formulate a psychic torn between two countries, two cultures, two worlds and produce an unrecompensed wistfulness for the past. Therefore, there is an obvious prevalence of a 'centre', a home, which is lost but commences the dispersions; and a 'periphery', the adopted land which they disown. The diasporic writing issues out of the diasporic writer's concern both for his lost homeland and a new found host land and thus gets shuffled between two cultures. Thus, space becomes an important category though a double binding process- one of experience and another of memory. In *The Location Of Culture* (2004) Homi Bhabha has called this as the 'third space', a hybrid in-between existence of incoherence, perpetual chaos and defenceless vulnerability. Likewise, a diasporic writer also occupies a second space, a peripheral site, and voices against the laxity, biasness and spasm the immigrants have to suffer daily. In order to adopt the host culture, they oscillate between the two and often fall a prey to mimicry and hybridism. This in-between disorientation affects their sense of belonging. Again the first generation diasporans are more troubled by the consisting pull of the mystic home; while that affection loses its hold on the second or the third generation immigrants.

The South Asian Diaspora constitutes a minority discourse, surfacing with urgency in the field of cultural studies in the US. The diasporic authors, especially the female authors are the artefacts of two diverse cultures: they are unsure of their eminence related to the mainstream and also in relation to their minority congregation. Chitra Divakaruni, like Bharati Mukherjee or Jhumpa Lahiri is a versatile persona who dipped her pen into the



Portrayal of Gender in Henry Fielding's *Amelia* : A Reconsideration

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Henry Fielding, the eighteenth century English novelist, has been thought by critics to reveal a 'male' outlook in his novels. Fielding studies have highlighted the horseplay and the robustness of his novels but have failed to recognise the gender issues prevalent in the works. On analysis of his works it will be found that an active debate on the social position of women, about sexual difference and gender roles in eighteenth century society forms a major theme running through the whole of Henry Fielding's work. This paper will attempt to relate the characters and incidents in Henry Fielding's last novel *Amelia* (1751) to the gender issues prevalent in eighteenth century England. It will try to show that while Fielding in *Amelia* seems mostly to conform to the conventional views of the eighteenth century; in many cases he challenges these traditional views of gender.

The period from the Restoration to the mid- eighteenth century in England witnessed a number of satires against women. The context of these anti feminist satires created a myth of negative assumptions about women. Women in Pope's satires exhibit characteristics of inconstancy, pride and self-love. Edward Young used familiar examples of undesirable women like the learned lady, the prude, and the affected devout to insist that the ideal woman is chaste, obedient, and also fragile and requires patriarchal protection.¹ In the literature of the age, women were often portrayed as stereotypes. The narrator in Fielding's last novel *Amelia* makes certain generalisations regarding women which betray the patriarchal conditioning which was prevalent in eighteenth century England. Some women characters in the novel are envisaged as types rather than individuals in their own right. The type of the superannuated immoral widow found in Restoration plays seems to have influenced the creation of Mrs

Cu(II) complexes with N₂O donor Schiff bases ligand derived from acetylacetone/salicyldehyde and different kind of diamines: a broad review

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Abstract: This paper contains a broad review on the systematic study of the Cu(II) complexes containing tridentate N₂O donor Schiff base ligands as N,O donor derived from acetylacetone/salicyldehyde and different kind of diamines. The nuclearity, geometry around Cu(II) centers, bridging mode of ligands and magnetic properties of complexes are describe briefly.

Keywords: Crystal structure; Cu(II); Schiff base; Acetylacetone; Salicyldehyde; Dinuclear; Polynuclear; Coligands.

Introduction

Polynuclear Cu(II) systems have received the attention of coordination chemists as they are ideal systems for developing new functional molecule based materials, for understanding the fundamental science of magnetic interactions and magnetostructural correlations in molecular species, and for their use in catalysis. Moreover Cu(II) compounds are widely found in nature and are present in many oxidase enzymes (e.g. ascorbate oxidase, laccase and ceruloplasmin)¹ as an oxygen carrier in invertebrates and in photosynthesis. Although increasing attention has been paid to the design of copper complexes with polydentate ligands as model copper oxidases, the use of multinuclear copper complexes for such reactions still remains a challenge for the synthetic chemists. On the other hand, dinuclear, trinuclear and polynuclear Cu(II) complexes have received great attention in the studies of exchange-coupling interactions between adjacent metal centers.² So designing of copper complexes with polydentate organic ligands, with at least two donor atoms, mostly N,O donors is an active area of current research in inorganic and bio-inorganic chemistry. Some examples of N,O donor ligands are various types of Schiff bases, picolinic acids, pyridine-2,4-dicarboxylic acid, amino acids, pyrazine-2,3-dicarboxylic acid, etc.³

Accessibility, A Determining Factor For School-Going Children: A Case- Study on Howrah and Hooghly Districts of West Bengal

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ABSTRACT

Road Investment has a positive impact on rural communities provided there is a road infrastructure network that is sustained over the long run. Adequate and efficient road infrastructure is crucial and a pre-requisite for the provision of accessibility and mobility. Access to primary education is the key in determining the extent of mobility. This is only possible if education is available for all. Here, we

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determining the extent of mobility. This is only possible if education is available for all. Here, we assess the accessibility of children to rural primary schools through the three parameters such as travel time, travel cost and quality of schools. Thus, rural roads provide access to and help in the utilization of physical and social infrastructure. In this paper, an approach known as Integrated-Rural Accessibility Planning methodology has been suggested to determine the travel-needs and quantify overall accessibility levels. This also helps to compare accessibility levels of different villages. The quantification technique is the key to the approach. It promotes local-level participation and provides a basis for local planning and can be used as a tool for local level access planning.

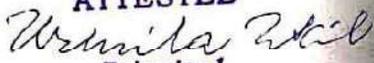
This technique has been applied in the two districts of West Bengal like Hooghly and Howrah, where accessibility to primary schools has been determined. The results show the village with a highest score, having major deficit in accessibility parameters and the village with a lowest score has fewer problems of accessibility. The villagers have assigned higher weight to the lack of access of the factors and sub-factors of accessibility.

Keywords: accessibility, mobility, quantification, factors, weight.

INTRODUCTION

Infrastructure plays an important role in rural India. Rural roads constitute about 80 per cent of the country's road network. Roads are a lifeline for rural communities, linking them to markets, education, health and other facilities. The impact of infrastructure on human well-being is higher in the remote areas. It has an impact on the socio-economic development. Increased level of well-being affects the access to infrastructure as human's education, health and income increases, the demand for

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Exploring Problems Related to Organization of Documents on Gender Spectrum: A Case Study with the Latest Five Editions of DDC

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***Abstract:** In 21st century, with the advancement of Information and communication technology, Library professionals experience challenges in their day to day activity. Classifier is the person who classifies documents in the Library. Recently in 2018, in a historic verdict, the supreme court of India allowed Gay sex among consenting adults. It is also said that adult Gay sex is natural and people have no control over it. Being a professional in library and Information science the questions regarding the development of LGBT related terms in DDC always whip on mind. DDC gets enriched with new subjects only after the emergence of new literary warrant. Henceforth, the present study wants to investigate the development trend of LGBT related keywords in DDC and challenges of a Classifier in this regard.*

***Keywords:** Concept; DDC; Development; , LGBT; Literary warrant*

1. Introduction

According to the queer dictionary “The term gender spectrum is a way of describing gender without conforming to the gender binary. It denotes gender as a continuum that includes male and female, but without establishing them as absolutes or polar opposites. The view of gender as a spectrum allows for the inclusion of identities besides male and female-- specifically, it allows for the inclusion of intersex people, no binary gender identities, and no binary gender expressions”. The Indian Pinal Code (IPC) was brought in India by British in the year 1860. The section 377 was introduced in the year 1861. It is an act which criminalizes homosexuality. Before 6th September 2018, there were no legal provisions for same sex marriage. LGBT couples or singles were not allowed to adopt children. Discrimination at jobs, education, and at homes was very common. An NGO Naz Foundation started a fight in 2009 to decriminalize section 377. Section 377 of the IPC criminalizes unnatural sex between two individuals. The offence is punishable with imprisonment up to life. However, in a historic verdict, the supreme court of India allowed Gay sex among consenting adults in private in 6th September 2018. It is also said that adult Gay sex is natural and people have no control over it.

In Library and Information science, Classifier is a term which denotes a person who classifies all the



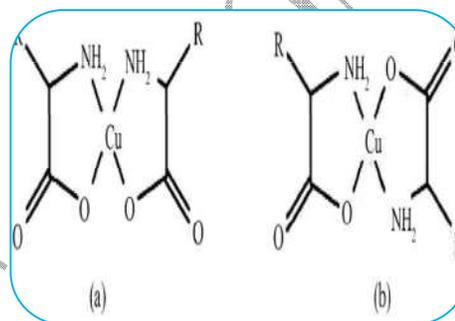
COPPER(II) COMPLEXES WITH ASPARTIC ACID AND GLUTAMIC ACID

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Sarojini Naidu College for Women, Dum Dum, Kolkata, West Bengal.**

ABSTRACT:

This paper reports the dissimilar complexes of Copper(II) with different amino acids, specially aspartic acid and glutamic acid. It is generally accepted that aspartic or glutamic acid act as tridentate bridging ligands to the metal ions in an extended chain configuration by the loss of both acid protons, giving rise to polymeric complexes. But there are two examples of glutamic acid where it acts as bidentate chelating mono-negative ligand where one of the carboxylate groups is deprotonated and coordinated to the metal while the other remains protonated.



KEYWORDS: Cu(II) complexes; Aspartic acids; Glutamic acid; Tridentate bridging ligand; Polynuclear, chelate, Bidentate mono-negative ligand.

INTRODUCTION

Polynuclear copper(II) systems have received the attention of coordination chemists as they are ideal systems for developing new functional molecule based materials, for understanding the fundamental science of magnetic interactions and magnetostructural correlations in molecular species, and for their use in catalysis. Moreover copper(II) compounds are widely found in nature and are present in many oxidase enzymes (e.g. ascorbate oxidase, lactase and ceruloplasmin)¹ as an oxygen carrier in invertebrates and in photosynthesis. Although increasing attention has been paid to the design of copper complexes with polydentate ligands as model of copper

oxidases, the use of multinuclear copper complexes for such reactions still remains a challenge for the synthetic chemists. On the other hand, dinuclear, trinuclear and polynuclear copper(II) complexes have received great attention in the studies of exchange-coupling interactions between adjacent metal centers.² So designing of copper complexes with polydentate organic ligands, with at least two donor atoms, mostly N, O donors is an active area of current research in inorganic and bio-inorganic chemistry. A very good example of N,O donor ligands are various types of amino acids. The α -Amino acids as protein constituents are small molecules with various functional groups. They are excellent metal complexing agents forming chelates through the amino and carboxylato groups.³ In addition they

often have a side chain with a metal binding group, such as the imidazole group of histidine (his), the side chain carboxylato group of aspartate (asp) and glutamate (glu), and the phenol ring of tyrosine (tyr), which serve as the metal binding sites in proteins.^{3,4} Copper complexes of amino acids are of continuous interest, since they are model systems to study metal-protein interaction and also amino acid complexes of copper(II) are well known to be important for metal ion transport in blood.



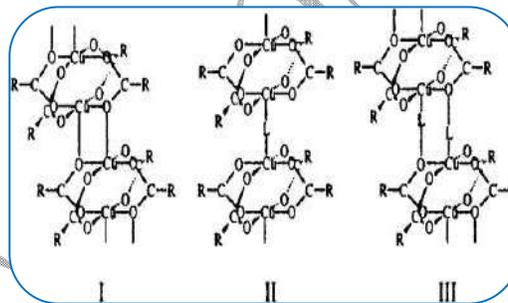
STRUCTURAL DIVERSITY OF COPPER(II) COMPLEXES WITH DIFFERENT CARBOXYLATES LIGANDS

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ABSTRACT :

The paper deals with an overview on the mononuclear, dinuclear and polynuclear Cu(II) complexes of some carboxylate ligands. This paper also emphasize on versatile coordination behavior of carboxylates displaying distinct bonding modes toward metal cations, such as monodentate and chelate, as well as μ_2 bridging ligands in *syn-syn*, *syn-anti*, and *anti-anti* conformations. Long chain dicarboxylates are excellent structure directing anions due to their flexible bridging capability for the construction of metal-organic networks (MOF's).



KEYWORDS : Cu(II) complexes; carboxylate ligand; bridging mode; Dinuclear, Polynuclear, chelate, long chain.

INTRODUCTION:

Over the past decade, dimeric and polynuclear copper(II) carboxylates have received great attention in the studies of exchange-coupling interactions between adjacent metal centers,^{1,2} as well as for their special bioactive and biocatalytic functions.³ In addition, carboxylate anions exhibit a versatile coordination behavior displaying distinct bonding modes toward metal cations, such as monodentate and chelate, as well as μ_2 bridging ligands in *syn-syn*, *syn-anti*, and *anti-anti* conformations. Another type of coordination mode is the monatomic bridge,⁴ in which two metal ions are connected by a single oxygen atom of a carboxylate group. On the other hand, long chain dicarboxylates are excellent structure directing anions due to their flexible bridging capability for the construction of such metal-organic networks. This diversity of coordination modes assumed by carboxylate ligands is shown in scheme 1. Magnetic studies on structurally characterized carboxylato-bridged copper(II) complexes reveal that strong antiferromagnetic interactions are mediated by the *anti-anti* and *syn-syn* bridging modes,⁵ whereas weak either ferromagnetic or antiferromagnetic interactions^{6,5b} occur in the *syn-anti* mode.

**COMMON FIXED POINT RESULTS FOR
NON-COMPATIBLE R-WEAKLY COMMUTING
MAPPINGS IN PROBABILISTIC SEMIMETRIC SPACES
USING CONTROL FUNCTIONS**

KRISHNAPADA DAS

ABSTRACT. In common fixed point problems in metric spaces several versions of weak commutativity have been considered. Mappings which are not compatible have also been discussed in common fixed point problems. Here we consider common fixed point problems of non-compatible and R-weakly commuting mappings in probabilistic semimetric spaces with the help of a control function. This work is in line with research in probabilistic fixed point theory using control functions. Further we support our results by examples.

1. Introduction

The problem of finding common fixed points of more than one mappings have been considered in several contemporary works. In this context the commuting condition on a pair of mappings has been relaxed mainly in two directions. In one direction the notion of compatibility of various types have been introduced and common fixed point results of several types of compatible mappings have been established. This line of research was initiated by Jungck [11]. It has also been noted that fixed point problems of non-compatible mappings are also important and have been considered in a number of recent works [20, 23].

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Key words and phrases: Menger space, compatible maps, (ϕ, R) -weakly commuting maps, fixed point.

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Fixed point result in Menger spaces of p -cyclic ciric type contraction mappings

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ABSTRACT. In the present paper we give a generalization of Ciric [9] type fixed point results. We have used p -cyclic contraction in Menger spaces. This result is an instance of the use of Φ -function introduced by Choudhury and Das [4]. We have given some corollaries to our theorem which are generalization of some existing results. We also given an example in support one of the corollary to the main theorem.

1 Introduction

Fixed point theory and related problems hold an important position in mathematical analysis. The idea of fixed point was first flashed in the mind of the great mathematician Cauchy. Metric fixed point theory is widely recognized to have originated in the celebrated work of S. Banach in 1922. The result of Banach is known as Banach contraction Mapping Principle. This principle has been subsequently apply to prove many fundamental results in different branches of mathematics. Now this principle has been generalized in many directions.

One of the recent generalization came into the literature of fixed point theory due to Khan, Swaleh and Sessa [18]. In 1984 they have introduced the concept of 'altering distance function' in metric space as a generalization of

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Key words and phrases: Menger space, fixed point, Φ -function, Ψ -function.

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Estimation of population mean in presence of random non response in two-stage cluster sampling

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ABSTRACT

The present investigation addresses the problem of estimating a finite population mean in two-phase cluster sampling in presence of random non response situations. Utilizing information on an auxiliary variable, regression type estimators has been proposed. Effective imputation techniques have been suggested to deal with the random non response situations. The properties of the proposed estimation strategies have been studied for different cases of random non response situations in practical surveys. The superiority of the suggested methodology over the natural sample mean estimator of population mean has been established through empirical studies carried over the data sets of natural population and artificially generated population.

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Auxiliary variable; bias; cluster sampling; efficiency; imputation; mean square error; random non response; study variable; regression; two-stage sampling

MATHEMATICS SUBJECT CLASSIFICATION

Primary 62D05

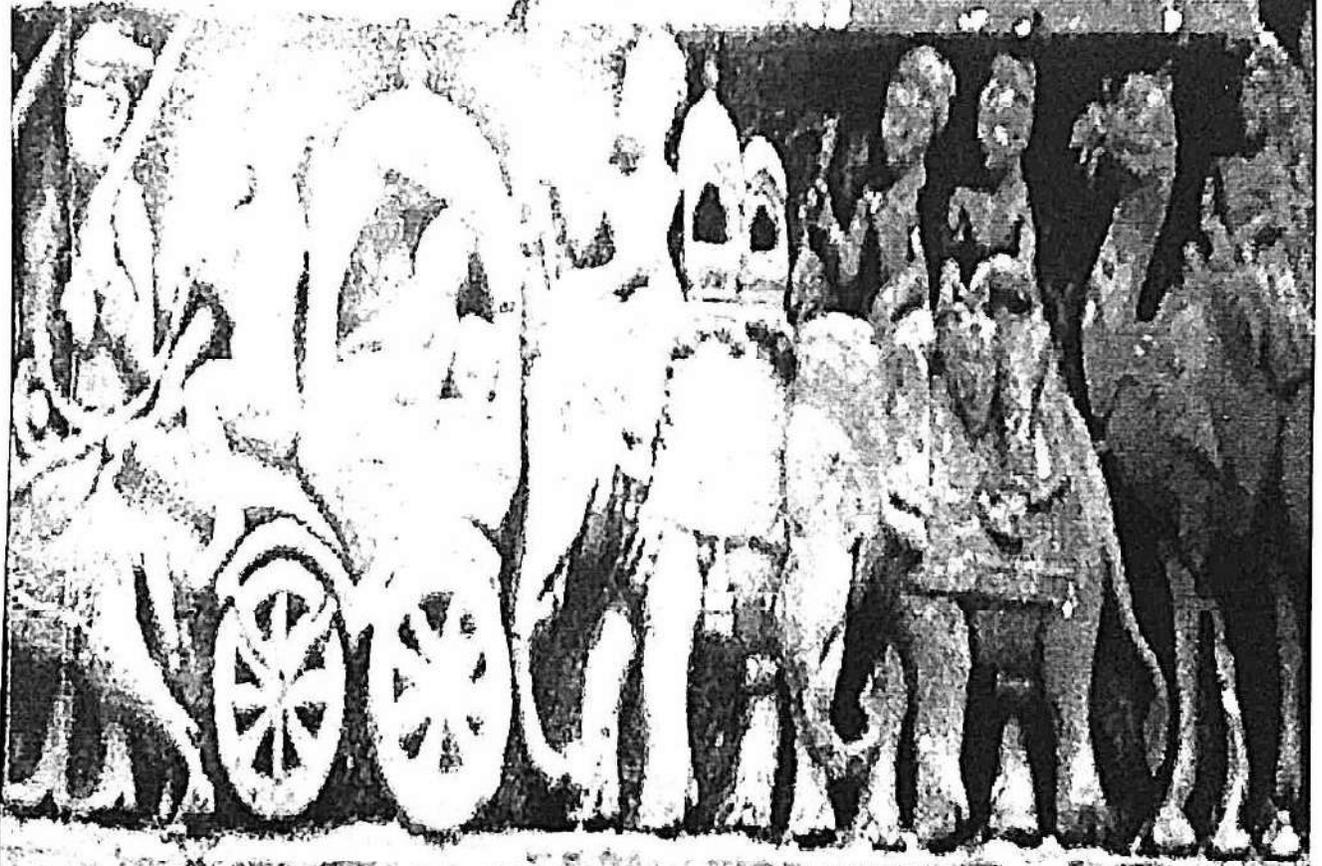
1. Introduction

In practical surveys, often it may be seen that a complete list of all the units of study in the population is not available which indicates that drawing a simple random sample is not feasible. For instance, in socioeconomic survey, a list of households is not generally available, whereas a list of residential houses each accommodating a number of households should be available with municipal and other appropriate authorities. In such cases, it may be advisable to draw a simple random sample of houses and survey all the households belonging to sample households. This procedure is known as cluster sampling. Cluster sampling is a technique where the entire population is divided into groups or clusters and a random sample of the selected clusters are included in the sample. Sometimes in cluster sampling, it is not possible to draw a sample of ultimate units of interest, as the frame of such units is not available. However a list of some suitably defined bigger units or primary stage units (psu's) may be available from which a sample of second stage units (ssu's) may be selected. Instead of completely enumerating all the ssu's belonging to the selected psu's as in case of cluster sampling, one may select sample of ssu's from the list of all ssu's belonging to the selected psu. The sampling is therefore carried out in two stages. The sampling procedure is therefore called two stage

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ইতিহাস ও সংস্কৃতি

পঞ্চম খণ্ড, দ্বিতীয় ভাগ, বর্ষ ২০১৯ খ্রি.



পশ্চিমবঙ্গ আঞ্চলিক ইতিহাস ও লোকসংস্কৃতিচর্চা কেন্দ্র

ইতিহাস ও সংস্কৃতি

একটি আন্তর্জাতিক, বিশেষজ্ঞ পরীক্ষিত, আন্তঃবিষয়ক,
বার্ষিক গবেষণাময়ী সাময়িকী

পঞ্চম খণ্ড, দ্বিতীয় ভাগ

মুখ্য সম্পাদক
মস্তুখ দাস

বিভাগীয় সম্পাদক
নিসারউদ্দিন খান

কলকাতা :
পশ্চিমবঙ্গ আঞ্চলিক ইতিহাস ও লোকসংস্কৃতি চর্চা কেন্দ্র,
২০১৯ খ্রি.

ATTESTED
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স্বাধীনোত্তর পশ্চিমবঙ্গে উদ্বাস্তু পুনর্বাসনে কমিউনিস্টদের ভূমিকা

নারায়ণ নন্দী

আসিস্ট্যান্ট প্রফেসর, সরোজিনী নাইডু কলেজ ফর উইমেন, কলকাতা

সারসংক্ষেপ: ১৯৪৭ খ্রিস্টাব্দে ভারতবর্ষের স্বাধীনতালাভের পাশাপাশি দেশভাগ হয়, সৃষ্টি হয় উদ্বাস্তু সমস্যা। দেশভাগের ফলে বাংলায় উদ্বাস্তুদের ঢল নামে। কংগ্রেস পরিচালিত তৎকালীন কেন্দ্রীয় সরকার বাংলায় উদ্বাস্তু পুনর্বাসনের বিষয়টি গুরুত্ব দিয়ে বিবেচনা করেনি। উদ্বাস্তু সমস্যা শোকাবিলায় কোনও সদর্থক পন্থা অবলম্বন করে নি। এমনকি বহুদিন বাংলায় উদ্বাস্তু সমস্যার অস্তিত্ব স্বীকারও করেনি। ১৯৫০ খ্রিস্টাব্দে কেন্দ্রীয় সরকার ত্রাণের ঘোষণা করলেও পুনর্বাসনের কোনও ব্যবস্থা করে নি। উদ্বাস্তুদের পুনর্বাসনের বিষয়ে রাজ্য সরকারের ভূমিকাও খুব একটা উজ্জ্বল ছিল না। এমনকি বিধানচক্র রায়ও উদ্বাস্তু পুনর্বাসন সংক্রান্ত বিষয়ে সন্তুষ্ট ছিলেন না। সরকারি পুনর্বাসন প্রক্রিয়া ব্যর্থ হওয়ায় উদ্বাস্তুরা নিজেরাই ফাঁকা জমি দখল করে জবরদখল কলোনি গড়ে তোলে। উদ্বাস্তুদের পাশে দাঁড়ায় কমিউনিস্ট দলগুলি। যদিও ১৯৫০-এর আগে কমিউনিস্ট পার্টিও এবিষয়ে কোনও উদ্যোগ নেয় নি, কেননা কমিউনিস্ট পার্টি উদ্বাস্তুদের সাম্প্রদায়িক মনে করত। তবে এই অবস্থা বেশিদিন থাকে নি। পার্টি অনুভব করে যে এই বিপুল সংখ্যক জনগোষ্ঠীকে দক্ষিণপন্থী শিবিরে যেতে দিলে তাঁরা ক্ষতিগ্রস্ত হবে। এই পর্বে কমিউনিস্টদের কার্যকলাপ ছিল গঠনমূলক। উদ্বাস্তু ক্যাম্প ও কলোনি পরিচালনায় তাঁরা সক্রিয় ভূমিকা নিয়েছিল। ক্রমশ উদ্বাস্তুদের সমস্যা সমাধানের বিষয়টি পার্টির রাজনৈতিক কর্মকাণ্ডের অর্ন্তভুক্ত হয়। তাঁদের আন্দোলন ও দাবি-দায়ার ফলে সরকারের পক্ষে উদ্বাস্তুদের দাবিদায়ী সম্পর্কে উদাসীন থাকা সম্ভব হয় নি। বস্তুত কমিউনিস্টদের সহায়তায় উদ্বাস্তুরা পশ্চিমবঙ্গের জন-জীবনে নিজেদেরকে অঙ্গীভূত করতে সক্ষম হয়েছিল আর বাংলায় বামপন্থী কমিউনিস্ট আন্দোলনেও প্রাণ সংগারিত হয়েছিল।

সূচকশব্দ: দেশভাগ, উদ্বাস্তু, পুনর্বাসন, কংগ্রেস, কমিউনিস্ট পার্টি।

১৯৪৭ খ্রিস্টাব্দের ১৫ই আগস্ট ভারতবর্ষ ব্রিটিশের কবল থেকে মুক্ত হয়। ভারতবর্ষ অর্জন করে বহু-কাজিত স্বাধীনতা। কিন্তু স্বাধীনতা লাভের পাশাপাশি দেশভাগ হয়। সৃষ্টি হয় নানাবিধ সমস্যার। যেগুলির মধ্যে অন্যতম ছিল উদ্বাস্তু সমস্যা। 'Refugee' শব্দটির বাংলায় দুটি অর্থ প্রচলিত আছে— শরণার্থী ও উদ্বাস্তু। শরণার্থী বলতে সাধারণ অর্থে বোঝায় কোনও ব্যক্তি যিনি উর্দ্ধতন কারো কাছে নিরাপত্তা ও আশ্রয় চাইছে অর্থাৎ

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Accessibility to rural primary schools: a case study of the District North 24 Parganas, West Bengal, India

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Abstract

Objectives: Access to primary education determines the extent of mobility. Here, we assess the accessibility of children to rural primary schools through the three parameters such as travel time, travel cost and quality of schools.

Methods/Statistical analysis: The new approach to local-level planning is known as Integrated Rural Accessibility Planning (IRAP). The feature of local level planning is the development of a quantification technique by which accessibility to primary schools would be determined. It would be expressed in form of indices. Here household is taken as the unit of analysis. The three parameters taken are travel time, travel cost and quality of service, represented by Accessibility Index.

Findings: Results show that with the help of an Accessibility Index, a village with a higher score has more difficulties in accessing primary schools and a village with a lower score has fewer difficulties. These are determined by the importance put on accessibility to primary schools based on travel time, travel cost and quality highlighting no. of students, teachers, classroom and number of classes. Weights are assigned accordingly. The village Berunanpukuria would be more concerned over the problems caused due to more travel time factor, lack of quality factor depending on the importance put on them. On the other hand, the village Fateabad Narayanpur would be less concerned with the problems because they have assigned lower importance to the factors of accessibility as quality factors have catered the need for accessibility. We need to identify the alternative projects and then select the best solution within the available budget, in consultation with the villagers. Thus, it is necessary to examine the impact of the facility or infrastructure on the nearby villages.

Application/Improvements: Accessibility Index is a useful parameter to decide the provision of infrastructure, services and its impact. The accessibility indices (AI) help to compare the villages with regard to accessibility to primary schools.

Keywords: Education, access, mobility, primary schools, weights

1. Introduction

Access is an important contributor to the development of educational sector in the rural areas. The role of transport is to facilitate access to goods, services and facilities by improving mobility of the people. Improvement of the transport sector leads to sustainable development. Adequate and efficient road infrastructure is crucial and a pre-requisite for the provision of accessibility and mobility [1]. Social infrastructure like education and health are essential for economic development. Accessibility and mobility are provided to such infrastructure through rural road investment. Rural access can be defined as the ability and the level of difficulty, of rural people to use, reach or obtain the necessary facilities, goods and services. It can be improved through the provision of rural infrastructure and by improving rural transport. The process of improving rural access is by identification of real access needs and the transport patterns of the rural people. Traditional cost-benefit analysis of the improvement of the road have focussed on measurable output like road length, number of beneficiaries, reduced travel time, transportation costs and environmental effects [2]. Rural access can be determined by a number of factors. They can be enumerated as follows: Physical access relates to distances and travel. It can be improved by the provision of physical infrastructure. A lack of physical access deprives people of the opportunities to improve and sustain their living.

Influence of geometrical configuration on low angular momentum relativistic accretion around rotating black holes

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We illustrate how the formation of energy-preserving shocks for polytropic accretion and temperature-preserving shocks for isothermal accretion are influenced by various geometrical configurations of general relativistic, axisymmetric, low angular momentum flow in the Kerr metric. Relevant pre- and postshock states of the accreting fluid, both dynamical and thermodynamic, are studied comprehensively. Self-gravitational backreaction on the metric is not considered in the present context. An elegant eigenvalue-based analytical method is introduced to provide qualitative descriptions of the phase orbits corresponding to stationary transonic accretion solutions without resorting to involved numerical schemes. Effort is made to understand how the weakly rotating flow behaves in close proximity to the event horizon and how such “quasiterminal” quantities are influenced by the black hole spin for different matter geometries. Our main purpose is thus to mathematically demonstrate that, for non-self-gravitating accretion, separate matter geometries, in addition to the corresponding space-time geometry, control various shock-induced phenomena observed within black hole accretion disks. We expect to reveal how such phenomena observed near the horizon depend on the physical environment of the source harboring a supermassive black hole at its center. We also expect to unfold correspondences between the dependence of accretion-related parameters on flow geometries and on black hole spin. Temperature-preserving shocks in isothermal accretion may appear bright, as a substantial amount of rest-mass energy of the infalling matter gets dissipated at the shock surface, and the prompt removal of such energy to maintain isothermality may power the x-ray/IR flares emitted from our Galactic Center.

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I. INTRODUCTION

Study of the accretion process helps in observational identification of black hole candidates. The dynamical and thermodynamic properties of such an accretion flow reveal the extreme nature of space-time surrounding

black holes. The emergent spectra from the accretion process is used to probe the characteristic features of the black hole metric [1]. It is thus imperative to understand the dynamics of the relativistic black hole accretion phenomenon.

In order to satisfy the inner boundary condition imposed by the black hole event horizon, black hole accretion usually manifests transonic properties, until the source of accreting matter is perceived to be supersonic stellar wind. The transonic mechanism is simple—accreting matter starts subsonically from a large distance and becomes supersonic in the course of its motion since it has to cross the event horizon supersonically. The maximum relativistic sound speed allowed for the steepest possible equation of state is $c/\sqrt{3}$, whereas the bulk velocity of the infalling matter

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A Micro Level Study of Implication of Sarva Shiksha Abhiyan Into Rural Education in Arshullah Village of Baduria block, North 24 Parganas, West Bengal

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Abstract:

Universal Elementary Education is necessary for all India to eradicate the social, gender-wise educational gaps. For all this purpose the Government of India had taken several programmes to solve out those problems. Sarva Shikha Abhiyan is one of the vital programme of Paschim Banga Sarva Shikha Abhiyan (PBSSM) in West Bengal in participation with the School Education Department is to provide the essential needs for all stratum of society. The main aim of the paper is to find out the implication of SSA into rural area and the condition of enrolment and drop out ratio before and after implementation of the scheme in the village & how the village is benefited by the different schemes of Sarva Shikha Abhiyan. Development of educational quality, improvement of infrastructure conditions of schools and perception of teachers about the scheme. The paper is also highlight that after the implementation of Sarva Shikha Abhiyan there are low enrolment rate & rate of drop out among male students are still high due to poverty, lack of awareness of education.

Keywords: Enrolment rate, Drop out, the impact of the different scheme of Sarva Shikha Abhiyan (SSA)

1. Introduction:

One most powerful decision was taken at the time of the construction Indian Constitution that after 10 years of continuing education should be universal, free and elementary for everyone but that goal can't fulfill due to lack of negligence and communication gap among different administrative sectors. In 2000 month of September Millennium Development (MDG) Sarva Shikha Abhiyan was set up by the apex court for universalization of education at the age group of 5-14 in upper primary level in India. "The state shall endeavor to provide, within a period of ten years from the commencement of the constitution, for free and compulsory education for all children until they complete the age of fourteen years". (ACT OF 45) Being a democratic country in India literacy and education is the simultaneous process of Education is the main pillar of grown-up society. In the primitive age, a man had three basic needs but after modernization of society in some respect the three basic needs changes into six or seven among of them education is a vital one. If you illiterate then the darkness of society covered you. Education is the weapon

Menu

Original Research Article

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The Impact of Land Use Land Cover on the Flood Plain of Bhagirathi River, Purba Bardhaman District, West Bengal, India

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- Tuhin Roy⁺

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Abstract

Aims: Human interference is the most important factor to change the LULC pattern over the earth surface. Land cover means to the physical parameters and land use means the cultural components. The present study associated with the changes in land uses a land cover pattern for the simultaneous changes of geomorphic features as well as the changes in the course of the river. This work is mainly going to summarize the changing behavior of land use land cover areas of a river bank in several decades.

Place and duration of the Study: The research area traced in between 24°00'00"N to 23°16'15"N and 88°12'00"E to 88°28'00"E, which is situated in the eastern part of Purba Bardhaman District, West Bengal.

Methodology: Entire study made by GIS techniques through the uses of topographical sheet (SOI-1960, Scale 1:50,000) and Satellite data (2002, 2008 & 2016). Through the help of superimposition technique the changes of river course have been identified which is directly affecting the LULC pattern of the entire flood plain.

Result: The study reveals that the entire area changes their LULC pattern which reflects the entire flood plain.

Conclusion: Due to the high interference of human physical elements as well as water bodies, sand bar, fallow lands are being decreased in past decades, whereas settlement patches are continuously growing up. It means for the necessity of human livelihood human always have been modifying the land in different ways.

Keywords

- Land use land cover
- human interference
- flood plain
- river cut off
- sedimentation
- morphometry etc

A Micro Level Study of Implication of Sarva Shiksha Abhiyan Into Rural Education in Arshullah Village of Baduria block, North 24 Parganas, West Bengal

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Abstract:

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Effective sound speed in relativistic accretion discs around Schwarzschild black holes

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Keywords:

Accretion
Fluid dynamics
Analogue gravity

ABSTRACT

For low angular momentum axially symmetric accretion flow maintained in hydrostatic equilibrium along the vertical direction, the value of the Mach number at the critical points deviates from unity, resulting in the non-isomorphism of the critical and the sonic points. This introduces several undesirable complexities while analytically dealing with the stationary integral accretion solutions and the corresponding phase portraits. We propose that the introduction of an effective dynamical sound speed may resolve the issue in an elegant way. We linearly perturb the full spacetime-dependent general relativistic Euler and the continuity equations governing the structure and the dynamics of accretion disc in vertical equilibrium around Schwarzschild black holes and identify the sonic metric embedded within the stationary background flow. Such metric describes the propagation of the linear acoustic perturbation inside the accretion flow. We construct the wave equation corresponding to that acoustic perturbation and find the speed of propagation of such perturbation. We finally show that the ordinary thermodynamic sound speed should be substituted by the speed of propagation of the linear acoustic wave which has been obtained through the dynamical perturbation. Such substitution will make the value of Mach number at the critical point to be equal to unity. Use of the aforementioned effective sound speed will lead to a modified stationary disc structure where the critical and the sonic points will be identical.

1. Introduction

Accretion flows onto astrophysical black holes are supposed to exhibit transonic properties in general (Liang and Thompson, 1980; Frank et al., 1985; Kato et al., 2008). For low angular momentum, practically inviscid, axially symmetric accretion, sonic transition may take place at more than one locations on the equatorial plane of the disc and such multi-transonic flow may accommodate steady, standing shock transition (Liang and Thompson, 1980; Abramowicz and Zurek, 1981; Muchotrzeb and Paczynski, 1982; Muchotrzeb, 1983; Fukue, 1983; 1987; Lu, 1985; 1986; Muchotrzeb and B., 1986; Abramowicz and Kato, 1989; Chakrabarti, 1989; Abramowicz and Chakrabarti, 1990; Chakrabarti, 1996; Kafatos and Yang, 1994; Yang and Kafatos, 1995; Pariev, 1996; Peitz and Appl, 1997; Caditz and Tsuruta, 1998; Das, 2002; Das et al., 2003; Barai et al., 2004; Fukue, 2004; Abraham et al., 2006; Das et al., 2007; Okuda et al., 2004; 2007; Das and Czerny, 2012; Suková and Janiuk, 2015b; 2015a; Suková et al., 2017). Properties of the shocked multi-transonic accretion are usually studied for three different geometrical configurations of accreting matter, see, e.g.,

(Chakrabarti and Das, 2001; Abramowicz and Chakrabarti, 1990; Nag et al., 2012; Tarafdar and Das, 2015; 2018) for the details of such geometric configurations.

Among those three, one particular configuration, namely the accretion in hydrostatic equilibrium along the vertical direction, exhibits certain peculiar features. For such flow geometry, the Mach number at the critical points of the flow may not become unity (Matsumoto et al., 1984; Fukue, 1987; Das, 2002; Das et al., 2007; Das and Czerny, 2012; Tarafdar and Das, 2018) and hence the critical points may not be considered as sonic points. For accretion under the influence of various post-Newtonian pseudo-Schwarzschild or pseudo-Kerr black hole potentials, critical points for polytropic flow are formed at a location different from that of sonic points. For isothermal accretion under the influence of post-Newtonian black hole potentials, critical points and sonic points are, however, isomorphic. The amount of deviation of the value of the Mach number from unity, remains the same for both the saddle type sonic points for multi-transonic shocked polytropic flows under the influence of post-Newtonian potentials, and such deviations depends only on γ , where γ is the ratio of the specific heats evaluated at

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Identification of River Migration Using Geospatial Data: A Case Study of The Lower Part of River Ajay Near Katwa Town

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ABSTRACT

River migration is important and significant geomorphological processes that are involved with lateral movement of both sides of the river and it migrates throughout the entire floodplain. Ajay is one of the most important non-perennial rivers that involves with migration of bank especially Lower part which is very close Katwa Town. At present context, River Ajoy has drastically eroded the sideward portion and through this process river width of Ajoy is gradually increased day by day. Due to the study of River migration, the morphometrical patterns are also identified. For this study, 1927 PS Map, 1968 Topographical Sheet, 1990 Landsat TM, and 2016 Resourcesat LISS-III satellite images are used. All maps are deeply analyzed and calculated to find out the river width and the river bank erosion. Geospatial data is analyzed with the help of ArcGIS Software. By this analysis, we have found the nature of erosion which is mainly highlighted on the confluence point of the river and human activities are also affected due to the changing behavior of this river.

KEYWORDS: Bankline Erosion, Channel Shifting, Confluence Point, Floodplain, Geospatial data, Thalweg point Thematic Map, Sand Mining.

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I. INTRODUCTION

Ajay is a non-perennial river that originates on a small hill, Deoghar in Jharkhand and then it flows through Jharkhand and West Bengal. The river creates boundaries between Jharkhand and Burdwan district and finally, it joins to the Bhagirathi River near Katwa subdivision in Purba Burdwan District, West Bengal. The total length of the river is 288 km. Morphometrical changes are a valuable aspect of geomorphological studies. Morphometrical changes of the river also influence on the river channel. River discharge condition may affect the change of morphometry, the high-level discharge may affect the surrounding landform of the river bank, may influence the change of morphometric features (P.K. Sen. 1993).

II. OBJECTIVES

The present study will try to fulfill the following objectives:

- To measure the changing pattern of the Ajay River course (near Katwa) in comparison with a long period of time (1927-2016).
- To analyze the Riverbank line shifting pattern of the Ajay River in different years.

III. LITERATURE REVIEW

- D. Knighton(1984) tried to describe in his book entitled, “Fluvial Forms and Process”, that the pattern of river flow may affect the morphological pattern of a river.
- P.K. Sen(1993) mentioned in his book entitled, “Geomorphological Analysis of Drainage Basin”, river morphology totally controlled by the condition of river discharge. It also affects the surrounding landforms.
- M. Gustauson. and E. kolstrup (2006) analysis of the geomorphological characteristics of a landscape in their Research paper entitled, “A new symbol and GIS-based detailed Geomorphological Mapping System Development: Renewal of A scientific discipline” for understanding landscape development.

The Problems of Coastal Tourism in Bakkhali and Sustainable Strategy of Development

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Abstract: Coastal Tourism is contemplated as extending sector of the economy of any developing country. Being a developing country in India also in West Bengal Tourism is one of the most important parts of our Bengal's developing economy. The present work is mainly going to look for the problems faced by tourists in Bakkhali after the construction of Namkhana bridge and facing the other problem related to infrastructural facilities. There are different types of problems that are related to physical & socio-cultural issues. The primary and secondary data are used to explain the research problems and associated issues. This paper has also highlighted the changes in the tourism industry & the perception of local people about the spot and also mention the sustainable strategy of development regarding the problems and proper planning of the area will increase both domestic and foreign tourist attraction in the very recent future.

Keywords: Coastal Tourism, Coastal area development planning, sustainable strategy, etc.

I. INTRODUCTION

Tourism helps to promote the development of selected remote & backward coastal areas for its tourism background. West Bengal has 180km long shoreline divided into two regions western and eastern part. Among them, Bakkhali is situated on the eastern part of south Bengal. In all over world Bakkhali is one of the beaches that has half-moon shaped south facing view that provides beautiful sunrise & sunset of the main attraction of tourist. Bakkhali is not properly explored but it is one of the calm & quiet beaches of south Bengal. Tourism in India is developing income sector like many other developing countries and also generate employment source for different backward & remote areas. In South Bengal coastal tourism is developing day by day. In South 24 Parganas, Sundarban is well-known world heritage site carved in 1987. Bakkhali is not verily populated like other sea beaches Digha, Mandarmoni in West Bengal. Bakkhali is a breathtaking refreshing weekend short trip for tourist. Opening of Namkhana Bridge to reduce the time of tourist, local people & a hassle-free journey to over Hatania Doania river. It is not properly open to connect Kolkata to Bakkhali bus services. This paper is to find out the existing problem of ecotourism in Bakkhali. There are health issue problem and low connectivity, lack of opportunities in both economically, educationally.

LOCATION OF THE STUDY

Bakkhali is well known coastal tourist spot in West Bengal which is the southernmost end of the south. first in the year 1972, A Govt tourist lodge with 3 rooms was opened by honorable Chief Minister of West Bengal for tourism development. Bakkhali is a breathtaking island located on one of the several deltic islands of Sundarban. Bakkhali (Latitude 21° 34' N & 88° 25' E) is a coastline village of approximately 7 km towards Freserganj.

II. OBJECTIVES

- ❖ To form an idea over tourism development.
- ❖ To access the infrastructure facilities.
- ❖ To identify the existing tourism problem.
- ❖ To analyze micro level planning.
- ❖ To suggest a sustainable strategy

III. LITERATURE REVIEW

Baitalik A, Majumder S, [2015] has stated in their paper entitled Coastal tourism destination in West Bengal Historical Background and development that though the region is continuously changing with tourism development.

Chattopadhaya U, Ghosh A, [2013] analyzed in their paper outlined A, Present Status and Tourism Potentialities, A Case Study in Bakkhali and Adjacent Tourist Spots, South 24 Parganas West Bengal, the concept of sustainable ecotourism need more awareness in that coastal area.

Different aspects of Land Transformation - A special study on North 24 Parganas, West Bengal, India

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ABSTRACT

North 24 Parganas is an extremely populated district in West Bengal. Most of the land is fertile, so agricultural production is quite good to supply food for its inhabitants. Due to the strong pressure of the population, overall development is most important. For this reason, the North 24 Parganas are being developed rapidly. Rural area developing its own way and urban areas are also growing according to its needs. This development reflected on the land use pattern of the whole district. So the land transformation of this district is very distinct for the identification of rapid change. From the year 1970 to 2019 gradual transformation of land can be detected by the Geospatial analysis. Some determinants have been taken for detecting the change, like area population relation, changing worker category, increasing built-up area, land conversion. By this analysis, we have found some problems, which have been generated by some unplanned growth of the settlement, decreasing agricultural production due to the minimization of culturable land, etc.

Key Words: *Change detection, Decadal Growth rate, inhabitants, land transformation, Geospatial analysis, etc.*

1. INTRODUCTION

The land is a basic natural resource on Earth. It is the habitat of plants, animals and human beings for their livelihood. The land considered as a resource because it produces agricultural and industrial products by which people can live their life. For this reason, people make highest efforts to get the maximum output from the land. Actually, this is the main aim to use any land. It is also important that the use of land in any region is influenced by the economic social and cultural feature of that region in several ways. The economic and cultural advancement of that region determined the pattern of the land use.

Accessibility of children having access to Primary Schools with respect to Social and Religious Group: a case study in the District of North 24 Parganas, West Bengal

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Abstract

Infrastructure provides the basis of socio-economic development of any country. Road Investment has a positive impact on rural communities provided there is a road infrastructure network that is sustained

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Abstract

Infrastructure provides the basis of socio-economic development of any country. Road Investment has a positive impact on rural communities provided there is a road infrastructure network that is sustained over the long-run. Road transport infrastructure is an essential component of economic growth and development. The role of transport is to provide connectivity and access to opportunities like education, markets, work and ultimately in enhancing the quality of life. Adequate and efficient road infrastructure is crucial and a pre-requisite for the provision of accessibility and mobility. Geographical mobility forms the basis for upward social mobility. Social infrastructure like education and health are essential for economic growth and accessibility and mobility is provided to such infrastructure through rural road investment. Investment in rural roads helps in increasing school enrolment which reduces gender gap and helps in social mobility. As enrolment increases, new roads would increase the returns to education and drive the long-run growth. Inadequate road investment results in limiting accessibility, mobility. Lack of adequate road infrastructure results in poor socio-economic condition. Access to primary education is the key in determining the extent of mobility. This is only possible if education is available for all. Thus, rural roads provide access to and help in the utilization of physical and social infrastructure.

In this paper, we show the impact of Accessibility to Enrolment in primary Schools for the disadvantaged class as well the Religious Minority Group. Results show that higher accessibility denotes higher enrolment for the disadvantaged group and it is invariant with respect to the religious minority group along with lower enrolment for all students inclusive of disadvantaged and religious minority group to primary schools in rural areas.

Keywords: Access, Dis-advantaged, Enrolment, Infrastructure, Religious, Roads.

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The Problems of Coastal Tourism in Bakkhali and Sustainable Strategy of Development

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COMMON FIXED POINT RESULTS IN FUZZY METRIC SPACES FOR R -WEAKLY COMMUTING MAPPINGS

KRISHNAPADA DAS¹, KRISHNA KANTA SARKAR² and SHARMISTHA GHOSH³

(Received 26 July 2018)

Abstract : In this paper we have established a common fixed point result in fuzzy metric spaces for two pair of R -weakly commuting mappings satisfying some contractive conditions. We have deduced some corollaries to our theorem. One of the corollaries of our theorem is supported by an example.

1. Introduction. L.A. Zadeh (1965) in 1965 first introduced the concept of fuzzy sets. After introduction of this paper in the literature a bunch of directions are opened to the researchers. The concept of fuzzy set leads us to fuzzy logic, which have been applied to our daily life appliances.

In 1975, Kramosil and Michalek (1975) give us the definition of fuzzy metric spaces. George and Veeramani (1994) modified this definition in 1994. Introduction of the definition of fuzzy metric space provides us a huge opportunity to prove new type fixed results. Some references may be seen in (Choudhury and Das, 2004, Choudhury, Das and Bhattacharya, 2013, Bari and Vetro, 2003, Despande and Pathak, 2015, Gregory and Sapena, 2002, Som, Choudhury and Das, 2011, Shukla and Chauha, 2015, Vasuki, 1999 and Vasuki and Veeramani, 2003).

The problem of finding common fixed point results have been considered in several contemporary works. To prove common fixed point results commutativity of mapping have been introduced in the literature. R.P. Pant (1994) in 1994 introduced the concept of R -weakly commutativity in the context of metric spaces. Some references of commuting, weakly commuting and R -weakly commuting mapping results may be seen in (Choudhury et al., 2013, Krishnakumar and Sanatammappa, 2018, Pant, 1986, 1993 1998 1999 2000, Rani, 2018, Shukla and Chauhan, 2015, Vasuki, 1999, Vasuki and Veeramani, 2003, and Xu, Chen and Radenovic, 2018).

Various forms of contraction have been used in fuzzy metric spaces to find fixed point results. In the present work we have used the contraction mapping in the form as given by Gregory and Sapena (2002). Some other references of this type contraction may be seen in (Som, Choudhury and Das, 2011) and (Shukla and Chauhan, 2015). R -weakly commuting mappings also used to find fixed point results in fuzzy metric

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COMMON FIXED POINT THEOREM FOR FOUR
COMPATIBLE MAPPINGS IN MENGER SPACES
INVOLVING ALTERING DISTANCE FUNCTION

KRISHNAPADA DAS

(Received 7 December 2018)

Abstract. In this paper we prove a common fixed point theorem for four compatible mappings satisfying some contractive conditions involving altering distance function in Menger spaces. Our result generalize some existing fixed point results in metric spaces as well as probabilistic metric space also. We also support our result by an example.

1. Introduction. In 1976, Jungck (1976) introduce the concept of commuting mappings and proved a common fixed point theorem, which is a generalization of well-known Banach contraction mapping principle. Sessa (1982) defined a generalization of commutativity which is called weak commutativity and gave the common fixed point theorem for weakly commuting mappings. Again in 1986 Jungck introduce the concept of compatible mappings in (Jungck, 1986). In the same paper it has been shown that any commuting mappings and weakly commuting mappings are compatible but the converse is not true. Some other references of commuting and compatible mappings may be seen in (Jungck, 1988, Kang and Kim, 1992, Pant, 1986, 1998, 2000).

Menger (1942) introduced the notion of probabilistic metric spaces, which is a generalization of metric spaces. The idea was to use distribution functions instead of non-negative real numbers as values of the metric. The study of these spaces was expanded rapidly. Fixed point theory in probabilistic metric spaces is an active branch of research. Sehgal and Bharucha-Reid first introduced the contraction mapping principle in probabilistic metric spaces in (Sehgal and Bharucha-Reid, 1972). A comprehensive survey of research in this line is given in (Hadzic and Pap, 2001). Some of the other references may be noted in (Choudhury and Das, 2008, Choudhury, Dutta and Das, 2008, Choudhury and Das, 2009, Dutta, Choudhury and Das, 2009, Mihet, 2005, 2009, 2009 and Singh and Jain, 2005). The purpose of this paper is to establish a common fixed point theorem for four mappings in probabilistic metric spaces which satisfy some contractive condition. Further the result is supported by an example.

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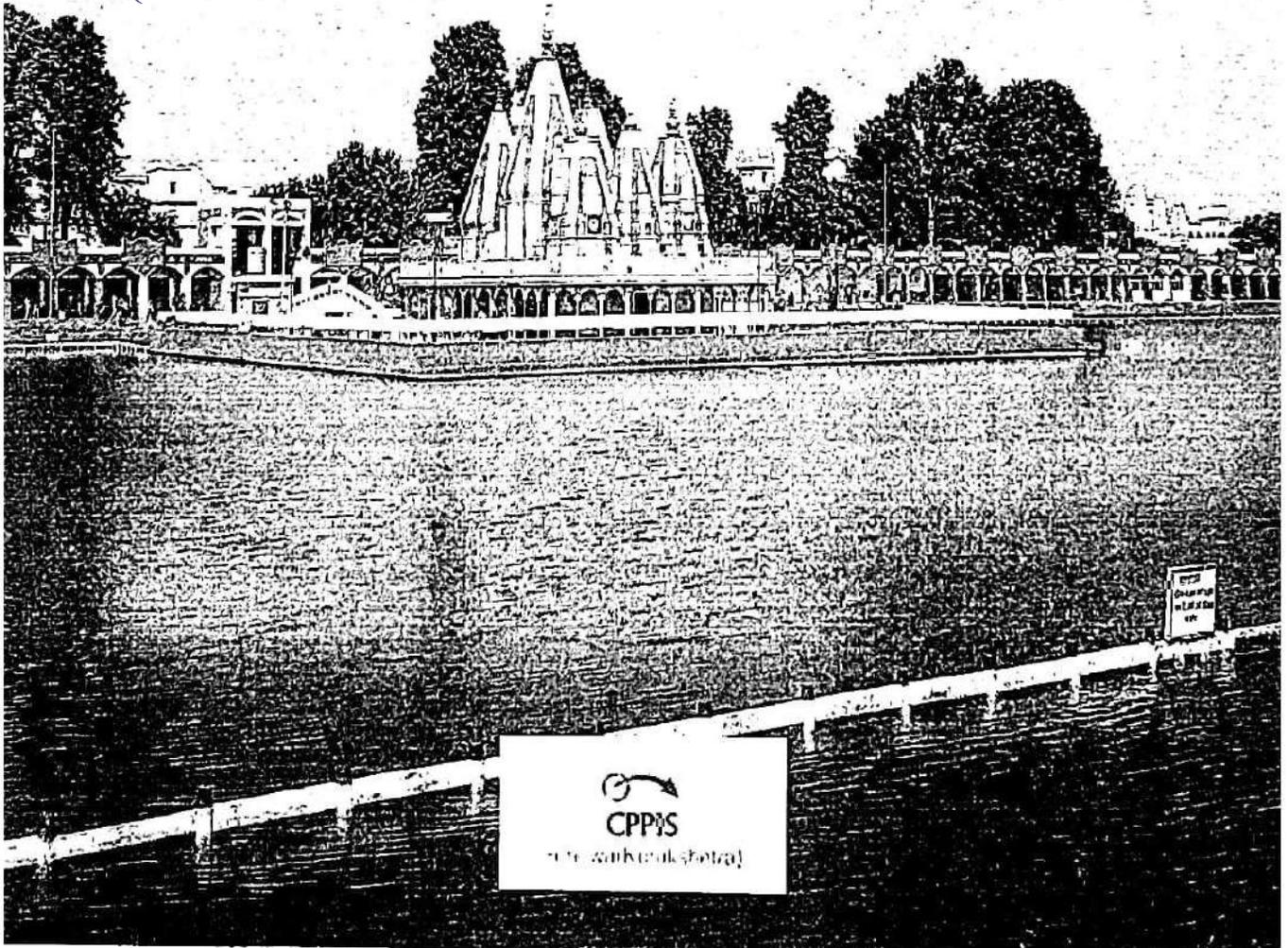


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Ultimate Goal of Human Soul: A Review after Ibn Sīnā

Rejina Kabir

Abstract

This article is expository in nature. The aim of this paper is to expose the nature of soul as well as human soul after Ibn Sīnā (980A.D.-1037A.D.). It is also an earnest effort to explain the relation between the Absolute soul and human soul as represented by him. Ibn Sīnā holds that soul is a unity. For him, soul is a single substance and it is the substratum of all experiences. The unifying principle of experience is the soul itself. The soul organizes the body and gives life to it. In the case of human soul, in general the first perfection of an organic body, which apprehends universals and acts by deliberation. In concern to the relation between these two concepts he has taken the middle position between those who thought that the souls of men join with and are reunited into one common soul, and the religious belief that they remain separate, moreover, individual retaining their identity after the death of the body. He claims that souls remain distinct, and in consequence are innumerable, but they may not retain the identity of the body which they have occupied. In pursuance of the objective of this article it is designed in three sections namely, The notion of soul as interpreted by Ibn Sīnā, The notion of human soul as interpreted by Ibn Sīnā and Deliverance of rational soul from the sensible realm to the divine realm.

Keywords: Soul, Human soul, Active Intellect, ma'rifat Allah.

The aim of this article is to expose and analyse the ultimate goal of human being as explained by Ibn Sīnā (980A.D.-1037A.D.). To understand the goal or aim of a *Human* soul first it is necessary to know about the concept of soul or especially human soul as interpreted and explained by him. In pursuance of the article it is divided into three sections. The first section explains the characteristics of soul after Ibn Sīnā. The second section exposits the notion of *human* soul after him. The third section is designed to explain the deliverance of rational soul from the sensible realm to the divine realm. He has shown that the ultimate relation between, the human soul and *Allah*, i.e., Absolute Being, is a state, which some human souls can ascend and obtain as the ultimate goal of human soul.

The notion of Soul as interpreted by Ibn Sīnā

It must be pointed out that the term 'soul' (*nafs*) is used in more than one sense in Islamic philosophy. The term is used to refer four things. It refers to the plant or vegetative part of a living being. Sometimes the term 'soul' refers to the animal or sensitive part of a living being. Sometimes it refers to

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Effective Estimation of Ratio and Product of Two Population Means in Presence of Random Non-Response in Successive Sampling

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Abstract: The present article intends to develop efficient estimation strategy to reduce the negative impact of random non-response at both occasions in two occasion successive sampling. Utilizing the information on an auxiliary variable effective imputation strategy was developed to cope with the non-response situation. Estimators for the current occasion are also derived as a particular case when there is non-response either on the first occasion or on the second occasion. To study the efficacy of the suggested imputation method, performances of the proposed estimators are performed in two different situations: with and without non-response. The pre-eminence of the suggested estimator has been established through empirical studies carried over some natural population dataset and artificially generated population dataset, which presents the soundness and usefulness of the suggested estimator in practice. Suitable recommendations to the survey statistician are also made.

Keywords: Product estimation, ratio estimation, successive sampling, study variable, auxiliary variable, bias, mean square error, percent relative loss

1 Introduction

A variety of practical problems can fall in the arena of applied and environmental sciences where various characters opt to change with respect to different parameters; such changes are inherent behavior of the nature. Some type of changes directly or indirectly affects the quality of living and surrounding of the human beings. This requires the continuous monitoring of the real life situation in hand. The theory and practice of surveying the same population at different points of time technically called repetitive sampling or sampling over successive occasions or rotation sampling and have been given considerable attention by the survey statisticians. Successive (rotation) sampling provides a strong tool for generating the reliable estimates at different occasions. For example, monthly data on the prices of goods are collected to determine the consumer price index, political opinion surveys are conducted at regular intervals to know the voters preference, etc. Theory of successive sampling appears to have started with the work of [6]. He pioneered using the entire information collected in the previous investigations (occasions). Further the theory of successive sampling was extended by [10, 11, 4, 3, 2] and many others.

It is worth to be mentioned that most of the recent works of successive sampling are based on the problem of estimation of population mean. However, in many practical situations an estimate of the population ratio or product of two characters for the most recent occasion may be of considerable interest, such as, the ratio of corn acres to wheat acres, the ratio of expenditure on labour to total expenditure, the product of cultivated area and yield rate, product of mortality rate and area of a locality. For instance, if data on yield of corn and wheat from certain agricultural plot is available for previous few seasons then one may estimate their ratio for the current season and may decide accordingly to cultivate suitable crops for more income and if the data on income and expenditure are available for previous few financial years, then one may estimate their yearly ratio and plan for suitable investment for the current year. Similarly, if data on the product

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Methods of Deprotection of 1,3-Dithianes and 1,3-Dithiolanes to the Corresponding Carbonyl Compounds: A Review

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ABSTRACT

Cyclic S,S-acetals, such as 1,3-Dithianes and 1,3-dithiolanes are useful carbonyl protecting groups under acidic as well as basic conditions. Because of the central importance of carbonyl compounds in organic synthesis and utilization of 1,3-dithianes in umpolung-based synthetic strategies, regeneration of carbonyl compounds from these procarbonyl compounds has engaged the attention of chemists over the years. This paper describes recent methods of deprotection of 1,3-Dithianes and 1,3-dithiolanes to the corresponding carbonyl compounds with focus on selectivity and green chemistry features.

KEY WORDS: Dethioacetalization, 1,3-Dithianes, 1,3-dithiolanes, cleavage, carbonyl compounds.

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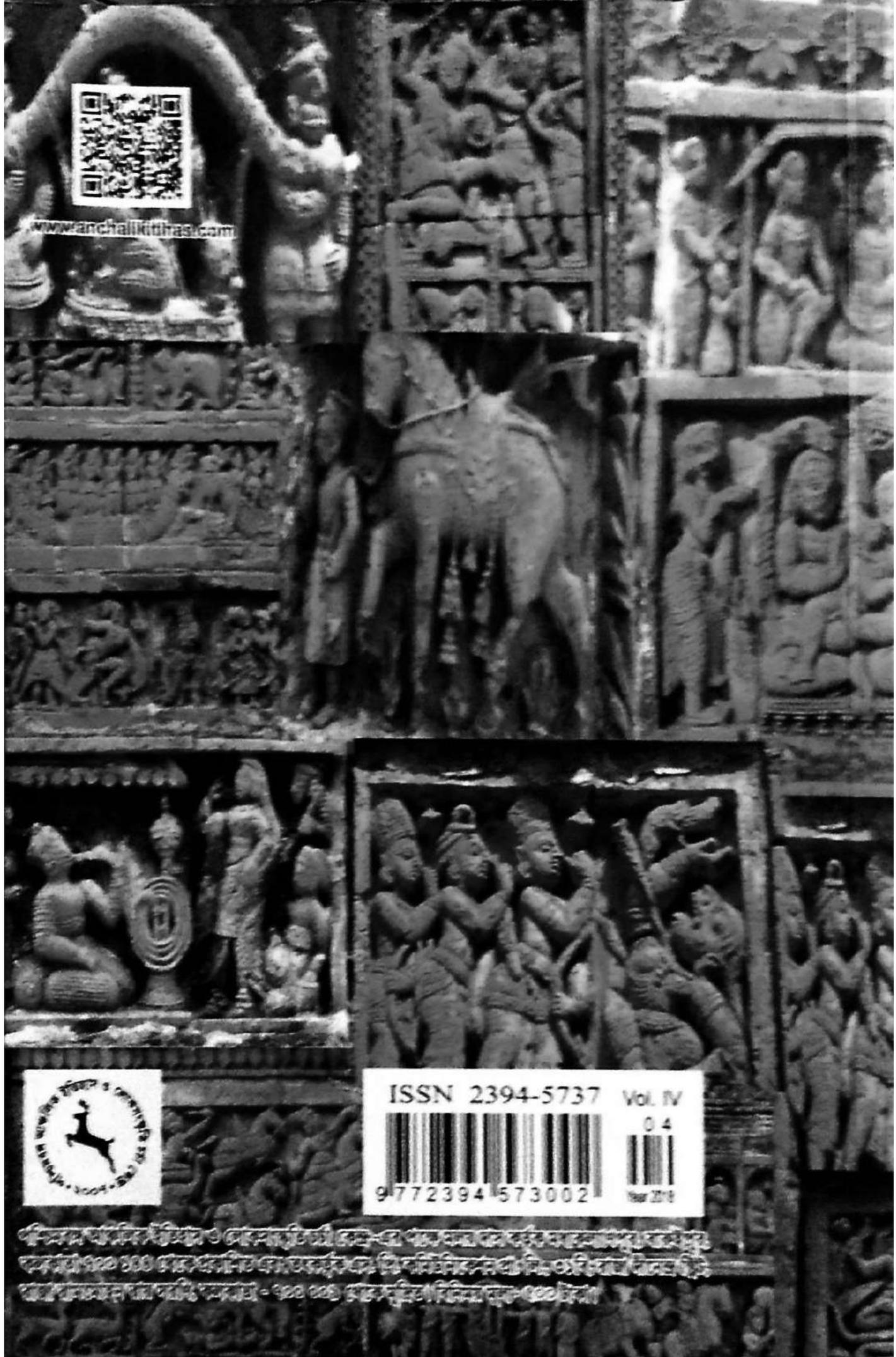
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মুখ্য সম্পাদক
ময়ূখ দাস

সহযোগী সম্পাদক
নিসারউদ্দিন খান
অয়ন ব্যানার্জী

কলকাতা :
পশ্চিমবঙ্গ আঞ্চলিক ইতিহাস ও লোকসংস্কৃতি চর্চা কেন্দ্র,
২০১৮ খ্রি.

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প্রকাশকের লিখিত পূর্ব অনুমতি ব্যতীত এই জার্নালে প্রকাশিত কোনো প্রবন্ধ বা প্রবন্ধসমূহ, সম্পূর্ণ বা আংশিকরূপে পুনঃপ্রকাশ, পুনর্মুদ্রণ, পুনর্ব্যবহার, পুনর্নির্মাণ, পুনঃউৎপাদন করা যাবে না বা পুনঃউৎপাদনের জন্য যান্ত্রিক বা বৈদ্যুতিন উপায়ে সংরক্ষণ তথা হস্তান্তর করা যাবে না। প্রচ্ছদ বা সূচিপত্র ছাড়া এই জার্নালে প্রকাশিত কোনো প্রবন্ধ বা প্রবন্ধসমূহ, সম্পূর্ণ বা আংশিকরূপে সোশ্যাল মিডিয়ায় আপলোড করা যাবে না। এই জার্নালে প্রকাশিত যাবতীয় প্রবন্ধ-এ উপস্থাপিত তথ্য, ব্যক্ত মতামত, গৃহীত সিদ্ধান্ত, ভাষা, ইঙ্গিত, দৃষ্টিকোণ প্রভৃতির সম্পূর্ণ দায়িত্ব একান্তভাবেই সংশ্লিষ্ট লেখকের বা লেখকদের। এগুলির জন্য সম্পাদকমণ্ডলী অথবা সংস্থা কোনভাবে দায়ী থাকবে না।

প্রকাশক

মলয় দাস,

সভাপতি,

পশ্চিমবঙ্গ আঞ্চলিক ইতিহাস ও লোকসংস্কৃতি চর্চা কেন্দ্র,

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মুদ্রণ

এস. পি. কমিউনিকেশন প্রা. লি.,

৩১বি, রাজা দীনেন্দ্র স্ট্রিট, রাজা রামমোহন রায় সরণি, কলকাতা - ৭০০ ০০৯

মূল্য

৫০০.০০ টাকা

ATTESTED
Urmita
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Sarojini Naidu College
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| দিলাল খান : সম্বীপের বিশ্বতপ্রায় এক স্বাধীন রাজা রফিক আখন্দ | ৬১ |
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বাংলার মন্দিরস্থাপত্যে শিবনিবাস মন্দির

নবরত্ন নন্দী

অসিস্ট্যান্ট প্রফেসর, ইতিহাস বিভাগ, সরোজিনী নাইডু কলেজ ফর উইমেন, কলকাতা

স্বল্পকালীন অষ্টাদশ শতাব্দীতে মহারাজ কৃষ্ণচন্দ্রের সময় বাংলার মন্দির ইতিহাসে এক নতুন অধ্যায় সৃষ্টি হয়েছিল। এই সময় আড়ংঘাটা, শিবনিবাসসহ এই জেলার বিভিন্ন স্থানে রাজ অনুমোদিত অনেক মন্দির নির্মিত হয়েছিল। যেগুলির মধ্যে শিবনিবাসের মন্দিরগুলি ছিল অন্যতম। কৃষ্ণচন্দ্রের মহারাজ কৃষ্ণচন্দ্র রায় বর্গিহানা থেকে পরিব্রাজণ পাবার জন্য চূর্ণীর তীরে, এখানেই তার দ্বিতীয় রাজধানী স্থাপন করেন। মহারাজ এই স্থানে সুরমা রাজপ্রাসাদ, সৌধ ও কৃষ্ণ আকৃতির শিবমন্দির নির্মাণ করেন এবং স্থানটির নামকরণ করেছিলেন 'শিবনিবাস।' মন্দির প্রতিষ্ঠা উপলক্ষে মহারাজ বাজপের যন্ত্র সুসম্পন্ন করেন ও অগ্নিহোত্রী বাজপেয়ী উপাধি নেন। সেই সময় শিবনিবাস দ্বিতীয় কাশীধাম বলে বিবেচিত হত। শিবনিবাসে মহারাজ কৃষ্ণচন্দ্র নির্মিত মন্দিরগুলি ছিল 'বাংলা রীতি'তে নির্মিত, তবে এগুলি বাংলার প্রচলিত কোন একটি বিশেষ রীতিতে পড়ে না। মন্দিরগুলি অনেকাংশে গাঞ্চিক স্থাপত্যের অনুকরণে নির্মিত। বর্তমানে এই প্রাচীন একক স্তম্ভশালী মন্দির ও ঐতিহাসিক স্থান তার শ্রী ও কৌলিন্য হারিয়েছে। দীর্ঘদিন সংস্কার ও নটিক রক্ষণাবেক্ষণের অভাবে মন্দিরগুলি আজ জরাজীর্ণ, তাঁর প্রাচীন গৌরব লুপ্তপ্রায়।

স্বল্পকাল: মহারাজ কৃষ্ণচন্দ্র, শিবচন্দ্র, বুড়েশিব, বর্গিহানা, চূর্ণীনদী, রামসীতা, বিশপ রেভারেন্ড হেব্বার।

সত্যতার অবিরাম স্রোতে, কালের অমোঘ নিয়মে, এ পৃথিবীর সবকিছুই সময়ের সাথে একদিন মিলিয়ে যায়, থেকে যায় কিছু স্মৃতি, কিছু চিহ্ন, ইতিহাসের মূক সাক্ষী হয়ে। সত্যতার ইতিহাসে থেকে যায় তার অস্তিত্ব। আর এমনই এক স্মৃতি-চিহ্নের অস্তিত্ব রক্ষার সংগ্রাম বর্তমান প্রবন্ধের বিষয়।

কল্যাণের ধার্মিক, ধর্ম অস্ত্র প্রাণ, এই বঙ্গে রয়েছে বহু বিখ্যাত মন্দির, যেগুলি শুধু ধর্মের স্তম্ভই নয়, বাংলার প্রাচীন স্থাপত্যের সাক্ষীও বটে। নদিয়া জেলার শিবনিবাসের অবস্থিত রাজ কৃষ্ণচন্দ্র প্রতিষ্ঠিত মন্দিরগুলি এর অন্যতম। নিবাস কথার অর্থ আবাসস্থল অর্থাৎ সেখানে বাস করা হয়। শিবনিবাস অর্থাৎ শিবাস নিবাস বা বাড়ি। শিবনিবাস মন্দির বর্তমান নদিয়া জেলার সদর মহাকুমার অন্তর্গত, কৃষ্ণগঞ্জ ব্লক ও কৃষ্ণগঞ্জ থানার, শিবনিবাস গ্রাম পঞ্চায়েতের- শিবনিবাস গ্রামে অবস্থিত। জেলা সদর কৃষ্ণনগর থেকে

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ইতিহাস ও সংস্কৃতি

চতুর্থ খণ্ড, চতুর্থ ভাগ

ইতিহাস, সমাজ ও সংস্কৃতি

চতুর্থ খণ্ড, চতুর্থ ভাগ, বর্ষ ২০১৮ খ্রি:

পশ্চিমবঙ্গ আঞ্চলিক ইতিহাস ও লোকসংস্কৃতি উদ্যোগ কেন্দ্র

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প্রকাশকের লিখিত পূর্ব অনুমতি ব্যতীত এই জার্নালে প্রকাশিত কোনো প্রবন্ধ বা প্রবন্ধসমূহ, সম্পূর্ণ বা আংশিকরূপে পুনঃপ্রকাশ, পুনর্মুদ্রণ, পুনর্ব্যবহার, পুনর্নির্মাণ, পুনঃউৎপাদন করা যাবে না বা পুনঃউৎপাদনের জন্য যান্ত্রিক বা বৈদ্যুতিন উপায়ে সংরক্ষণ তথা হস্তান্তর করা যাবে না। প্রচ্ছদ বা সৃষ্টিপত্র ছাড়া এই জার্নালে প্রকাশিত কোনো প্রবন্ধ বা প্রবন্ধসমূহ, সম্পূর্ণ বা আংশিকরূপে সোশ্যাল মিডিয়ায় আপলোড করা যাবে না। এই জার্নালে প্রকাশিত যাবতীয় প্রবন্ধ-এ উপস্থাপিত তথ্য, ব্যক্ত মতামত, গৃহীত সিদ্ধান্ত, ভাষা, ইঙ্গিত, দৃষ্টিকোণ প্রভৃতির সম্পূর্ণ দায়িত্ব একান্তভাবেই সংশ্লিষ্ট লেখকের বা লেখকদের। এগুলির জন্য সম্পাদকমণ্ডলী অথবা সংস্থা কোনভাবে দায়ী থাকবে না।

প্রকাশক

মলয় দাস,

সভাপতি,

পশ্চিমবঙ্গ আঞ্চলিক ইতিহাস ও লোকসংস্কৃতি চর্চা কেন্দ্র,
মধ্যকল্যাণপুর, বারুইপুর, কলকাতা - ৭০০ ১৪৪

মুদ্রণ

এস. পি. কমিউনিকেশন প্রা. লি.,

৩১বি, রাজা দীনেন্দ্র স্ট্রিট, রাজা রামমোহন রায় সরণি, কলকাতা - ৭০০ ০০৯

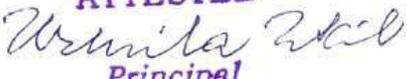
মূল্য

৫০০.০০ টাকা

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Urmita Ntil
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স্বাধীনতা আন্দোলনে শিলিগুড়ি : পটভূমি ও চরিত্র

আজিজুল বিশ্বাস

অ্যাসিস্ট্যান্ট প্রফেসর, ইতিহাস বিভাগ, সরোজিনী নাইডু কলেজ ফর উইমেন, কলকাতা

সারসংক্ষেপ: ভারতের জাতীয়তাবাদী আন্দোলনের ধাত্রীভূমি ছিল অবিভক্ত বাংলা। তবে বাংলার সর্বত্র এই আন্দোলন তীব্রতা ও ব্যাপ্তির দিক থেকে সমমাত্রিক ছিল না। কলকাতা, ঢাকা, মেদনীপুর, চট্টগ্রাম, ফরিদপুর, ২৪ পরগনায় ইংরেজ বিরোধীতার তীব্রতা ছিল প্রবল। উত্তরেবঙ্গ দিনাজপুর জেলা জাতীয়তাবাদী আন্দোলন যতটা জোরালো ছিল; দার্জিলিং জেলায় তা ততটাই ছিল স্রিয়মান। কেবল তাই নয়, বাংলার জেলাগুলির মধ্যে দার্জিলিং এ ব্রিটিশ বিরোধী আন্দোলন ছিল, সবচেয়ে বেশি অসংগঠিত ও বিলম্বিত। এই জেলার পার্বত্য এলাকার মতো শিলিগুড়ি মহকুমাতেও ব্রিটিশ বিরোধী আন্দোলন ছিল চরিত্র ও প্রবনতায় প্রায় একই রকম। ব্রিটিশ শাসনধীন বাংলার গ্রীষ্মকালীন রাজধানী দার্জিলিং-এ পৌছানোর 'ট্রানজিট' কেন্দ্র রেল মানচিত্রে জায়গা করে নেওয়ার একদা প্রায় 'পাণ্ডববর্জিত' গ্রাম্য জনপদ শিলিগুড়ি 'হাটা-হাটা' পথে সমৃদ্ধির পথে পা বাড়ায়। একদিকে রেল, অন্যদিকে প্রশাসনিক কেন্দ্র ও ব্যবসায়িক সম্ভাবনার সূত্র ধরে শিলিগুড়িতে বাঙালি, রাজবংশী, বিহারি, মাড়োয়ারি, মুসলমান-আদিবাসী জনগোষ্ঠীর বসবাসগড়ে ওঠে। শিলিগুড়ি বৈচিত্র্যময়তায় 'মিনি ভারত' হয়ে ওঠে। ফলে বিলম্বিতও শ্লাথগামী হলেও শিলিগুড়ির স্বাধীনতা আন্দোলন ছিল 'জাতীয়চরিত্রে'-এর সমগোত্রীয়। বৈশিষ্ট্য-লক্ষ্য-কর্মসূচি-গুরুত্বে স্থানীয় কিছু নিজস্বতা যেমন ছিল- তেমনি জাতীয় আন্দোলনের সর্বভারতীয় চেহারার প্রতিফলন ঘটেছে। নিম্নলিখিত গবেষণামূলক প্রবন্ধটিতে শিলিগুড়ির স্বাধীনতা আন্দোলনের পটভূমি ও চরিত্র বিচার করা হয়েছে আন্দোলনের নানান ঘটনা প্রবাহের অগ্রগতির ধারায়।

সূচকশব্দ: ধাত্রীভূমি, জাতীয়তাবাদী, পার্বত্য, জেলা, মহকুমা, দার্জিলিং, শিলিগুড়ি, রাজবংশী, পাণ্ডববর্জিত, স্বাধীনতা, আন্দোলন।

দার্জিলিং জেলার চারটি মহকুমার তিনটি-ই পার্বত্য অঞ্চলে অবস্থিত। কেবল সমতলে শিলিগুড়ি মহকুমা। মহানন্দা ও মেচি নদীর অন্তর্ভুক্ত সমতল এবং পার্শ্ববর্তী জলপাইগুড়ি জেলার কিছু অংশ নিয়ে গঠিত হয় তরাই মহকুমা ২৭৪ বর্গ মাইল আয়তন বিশিষ্ট তরাই মহকুমার আগের নাম ছিল পূর্ব মোরঙ। ১৮৬৪ সালে এই মহকুমার সদর দপ্তর স্থাপিত হয় ফাঁসিদেওয়াতে। ১৮৭৮ সালে রেলপথ সম্প্রসারিত হয় শিলিগুড়ি পর্যন্ত তখন শিলিগুড়ির জনসংখ্যা মাত্র শ'চারেক হবে। ১৮৮০ সালের শেষদিকে তরাই মহকুমার

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Low angular momentum accretion of fractal medium on to Kerr black holes and the emergence of the acoustic manifold

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ABSTRACT

For certain types of geometric configuration of matter suitable for describing low angular momentum practically inviscid, multitransonic, axially symmetric flow of matter, having *fractional dimension* of mass distribution, accretion process on to rotating astrophysical black holes has been studied by employing post-Newtonian pseudo-Kerr black hole potential. Such task has been accomplished by mapping the fractal nature of accreted medium on to its continuum counterpart. The difference between the spin dependence of accretion dynamics of the fractal medium and that of the continuous medium has been highlighted. By employing a time-dependent linear perturbation scheme, it has been demonstrated that accretion of matter with fractional dimension of density distribution can be considered as a natural example of classical analogue model. The corresponding acoustic surface gravity has been estimated in terms of accretion variables, the fractal dimension of matter distribution, and the spin parameter of the black hole. The value of the surface gravity changes as the accreted matter makes a transition from its fractal nature to the corresponding continuum distribution. We thus address the problem from astrophysical point of view as well as from the perspective of the dynamical systems study and the analogue gravity phenomena. Such exhaustive treatment of a potentially new field i.e. a spinning black hole accreting fractal matter has not been presented in literature yet.

Key words: black hole physics – hydrodynamics – Accretion disc – analogue gravity – fractal.

1 INTRODUCTION

The multitransonic behaviour and the formation of the standing shock as a consequence of such sonic profile have been studied by several authors for black hole accretion under the influence of various post-Newtonian black hole potentials (see e.g. Liang & Thomson 1980; Abramowicz & Zurek 1981; Muchotrzeb & Paczynski 1982; Muchotrzeb 1983; Muchotrzeb-Czerny 1986; Blaes 1987; Abramowicz & Kato 1989; Chakrabarti 1989; Das 2002; Das, Pendharker & Mitra 2003; Nag et al. 2012; Saha et al. 2016 and examples therein). The analogy and correspondence between the mathematical equations governing such accretion flow and the set of first-order differential equations describing autonomous dynamical systems have recently been utilized by several works (Ray et al. 2002; Ray

2003a,b; Ray et al. 2005a,b, 2006, 2007b; Bhattacharjee & Ray 2007; Ray et al. 2007a; Chaudhury, Ray & Das 2006; Nag et al. 2012; Saha et al. 2016).

Quite recently, it has been argued that accreting black holes may be considered as classical analogue gravity models, and for axially symmetric accretion studied within the framework of pseudo-Newtonian black hole potentials, a linear perturbation scheme may be developed to study the emergence of curved acoustic geometry embedded within such flow structure. The corresponding acoustic surface gravity has been computed (Nag et al. 2012; Bilic et al. 2014; Saha et al. 2016) leading to the understanding of the analogue Hawking-like effects (see Novello, Visser & Volovik 2002 and references therein) in terms of accretion variables. Recent studies of low angular momentum inviscid black hole accretion thus help to understand various astrophysical phenomena as well as to the proper realization of analogue gravity effects as observed within the non-quantum fluids.

The aforementioned works, quite naturally, assume the accreting fluid to be a continuum. There are, however, recent observational

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Assessment of Quality of Primary Healthcare Facilities in West Bengal

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Abstract:

Aim: The present study aims to assess the extent of spatial and structural variation in quality of Primary Healthcare facilities in West Bengal.

Method: Using data from Health Management Information System, Govt. Of West Bengal, India, on availability of structural inputs for the year 2013-14 in Primary Healthcare Centres (PHCs) from 341 Blocks, the district level Overall Development Index (ODI) is constructed. ODI is a composite measure of the relative importance of all available structural inputs in PHCs. A spatial variation of ODI is then depicted in map to present the shortfall of existence of structural inputs across different districts. To understand structural (domain-specific) variation and its inequality in PHCs, at the district level, Modified Overall Gini and IMR-based Concentration Index from Overall Development Indices (ODI) are used.

Results: The study reveals that inter-district variation in quality of healthcare across West Bengal ranges from 0.68 (Bankura) to 0.17 (Murshidabad). Domain-specific inequality is highest for laboratory facilities (25.92 %) and lowest for manpower (17.20 %). Moreover, the (IMR-based and MMR-based) Concentration Index, disease-based measure is used to present the inequality in the use of structural facilities at PHCs and show contrasting scenario with that of inequality in availability of Domain-specific facility. Here the inequality is highest for Services (29%) for IMR and (32%) for MMR while it is lowest for equipment facilities (6.5%) for IMR and (3.13%) for MMR.

Conclusion: Spatial variation of healthcare facilities as well as the Domain-specific inequality across the blocks as unit analysis from different districts are prominently distorting even under same flagship programme NRHM in West Bengal. Moreover there is huge gap between inequality in availability of facilities and inequality in use of facilities at PHCs in West Bengal. The present findings may help to review the health policies towards effective involvement of PHCs for wide intervention in primary healthcare facilities at District level in West Bengal.

Keywords: Primary healthcare centres, Overall Development Index, Modified Overall Gini, and IMR-based Concentration Index.

1. INTRODUCTION

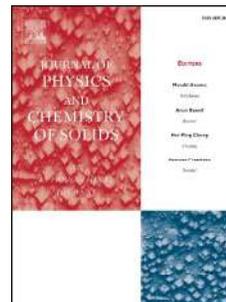
India's public health owes its framework from the recommendations forwarded by Bhore Committee as far back as 1946. Bhore Committee headed by Joseph Bhore penned recommendations including formation of health committees with five to seven individuals in every village. This was largely ignored due to paucity of funds during pre-independence period.

Indian Government is trying to shape the formal national health mission to make plans and strategies to incorporate primary healthcare as a part of national health system and to sustain it, after the Alma Ata Declaration in 1978. WHO described the services provided by the primary healthcare system as 'essential healthcare' and thus it should be available and accessible to all (Park.K. 2009). Planning Commission's study reveals that piecemeal services in various primary health centres reduces the availability by manifold (Husain Z, 2011). Negligence of primary care and primary healthcare institutions influenced the utilization of health services and worsened the epidemiological profile of

Accepted Manuscript

Photophysical study of the interaction between ZnO nanoparticles and globular protein bovine serum albumin in solution and in a layer-by-layer self-assembled film

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Solvent Effects on the Photoelectrochemical Water Oxidation Behaviour of TiO₂ Semiconductors

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Abstract

The present report describes the synthesis and characterization of TiO₂ thin film semiconductor using titanium isopropoxide dispersed in different solvents like ethylene glycol (EG), glycerol, acetonitrile, dimethyl formamide, dimethyl sulphoxide and water followed by annealing at 600^o C in air on the In-doped tin oxide (ITO) coated glass. UV-vis absorption spectrum measures the band gap energy 3.1 eV, indicating UV absorptivity of the materials, whereas XRD analysis reveals preferential growth of anatase form of TiO₂ with tetragonal body-centred cubic lattice. The material developed from EG recorded the highest photoelectrochemical water oxidation current ~400 μA cm⁻² at 0.8 V vs. Ag/AgCl, with 17% incident photon to current conversion efficiency (IPCE) and ~22% absorbed photon to current conversion efficiency (APCE).

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Keywords: TiO₂ thin film semiconductor; Photoelectrochemical solar cells; Solvent effect; Water oxidation; IPCE & APCE.

1. Introduction

The major advances of civilization for extent of industrialization of a country and the standard of living of its people have direct relation with increased consumption of energy. The conventional dependence upon fossil fuels has been continuously creating serious drawbacks, like uneven distribution around the globe and problems of

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Multi-elemental chalcogenide *n*-BiCdSe films grown under controlled depth voltammetry: Improved photo-electrochemical behaviour toward energy conversion

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Abstract: Thin films of composite semiconductor (SC) *n*-BiCdSe were electrochemically synthesized through periodic voltammetry at room temperature from aqueous acidic bath containing respective precursor salts. The well adherent and uniformly deposited thin films were subjected to optical measurements (UV-VIS), scanning electron microscopy (SEM-EDAX) and X-Ray diffraction studies to determine the optical properties, structure and morphology of the film matrices. The polycrystalline films were composed of agglomerated particles with spherical geometry and size in the range ~30-40 nm. A series of electrochemical techniques were employed to determine the performance output of the films toward their photo-electrochemical (PEC) characteristics in liquid junction solar cell. During fabrication of the films the voltammetric cycles were optimized to obtain the best performing composite film exhibiting maximum photo-conversion efficiency of 2.6 % and least photocurrent decay.

Keywords: BiCdSe composite film; photo-electrochemical cell; Electrochemical impedance spectra (EIS); potentiodynamic polarization; Anodic stripping voltammetry

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Hunt for efficient variance estimation strategy in two-occasion successive sampling using fuzzy tools

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Abstract

The purpose of this paper is to report a general group of estimators for population variance estimation on second (current) occasion in two-occasion rotation sampling. Behaviors of the introduced class of estimators are studied in detail and its optimum replacement policy has also been observed. The introduced class of estimators has been compared with the natural estimator of the population variance and the results obtained are

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রাজনৈতিক বন্দী মুক্তি আন্দোলন ও বঙ্গীয় নারী সমাজের স্বাতন্ত্র্য প্রতিষ্ঠা : একটি ঐতিহাসিক পর্যালোচনা

ড: সুতপা ভট্ট

১৯৩১ সালের ৫ মার্চ গান্ধী-আরউইন চুক্তি স্বাক্ষরের মধ্যে দিয়ে আইন-অমান্য আন্দোলনের প্রথম পর্ব শেষ হয়। যদিও এই আন্দোলনের সঙ্গে বহু মানুষ সক্রিয় ভাবে যুক্ত ছিল। এই আন্দোলনেই সর্ব প্রথম অভিজাত থেকে সাধারণ নিম্নবিত্ত পরিবারের মেয়েরা সক্রিয় ভাবে অংশ গ্রহণ করে। এই আন্দোলনেই প্রথম মেয়েদেরকে কোন জাতীয় আন্দোলনের নেতৃত্বের জায়গায় প্রতিষ্ঠিত করেন। গান্ধীজী গ্রেপ্তার হবার পর, কংগ্রেসের প্রথম সারির নেতৃত্বেরা ও গ্রেপ্তার হবার পর সরোজিনী নাইডু এই আন্দোলনের নেতৃত্ব দেন। এসময় সমগ্র ভারতবর্ষে এবং বাংলার বহু জায়গায় সক্রিয়ভাবে নারীরা আন্দোলনে অংশ নেয়।

গান্ধীজী ইতিমধ্যে গোলটেবিল বৈঠকে যোগ দেন। এই দ্বিতীয় গোলটেবিল বৈঠক শেষ পর্যন্ত ব্যর্থ হলে আইন অমান্য আন্দোলন এর দ্বিতীয় পর্ব শুরু হয়। এই পর্যায়ে (১৯৩২-৩৪) আইন অমান্য আন্দোলন তীব্র গতিতে শুরু হয়েও মাঝামাঝি পর্বে তার গতি হারায়। যদিও এই দ্বিতীয় পর্যায়ের আইন অমান্য আন্দোলনে নারীরা আরও সক্রিয় ভাবে অংশ গ্রহণ করে। সমগ্র ভারতের মত বাংলার সব স্তরের সব শ্রেণীর নারীরা এই আন্দোলনে সক্রিয়ভাবে অংশ গ্রহণ করেন। ১৯৩৪ সালের শেষের দিকে ক্রমশ এই আন্দোলন তার অপন নিয়মেই গতি হারায় তবুও বহু নারী যারা এই সময় আন্দোলনে যোগ দেন তারা সবাই আবার অতীতের নারীর রাজনীতিতে অংশ গ্রহণের ধারা মেনে ফিরে যাননি গৃহকোণে। এদের অনেকেই এই সময়কার অন্যান্য প্রথম সারির নারী নেত্রীদের মত সক্রিয় রাজনীতিতে যোগ দেন। অনেকে আবার সমাজ সেবার সাথে নিজেদের যুক্ত করেন।^১

ইতিমধ্যেই গান্ধীজীর আইন অমান্য আন্দোলনের ডাকে সামনে রেখে ইন্ডিয়ান রিপাবলিকান আর্মির চট্টগ্রাম শাখা রাজদ্রোহ আইন অমান্য^২ করার ডাক দিয়েছেন। “১৯৩০ সালের ১৮ এপ্রিল রাত দশটার যুগপৎ আক্রমণ আরম্ভ হল টেলিগ্রাফ অফিসে, অস্ত্রাগারে, পুলিশ ব্যারাকে। লাঙ্গলকোট ও ধূমের কাছে রেলের লাইন তুলে ফেলা হল।”^৩ এই ইন্ডিয়ান রিপাবলিকান আর্মির চট্টগ্রাম শাখার প্রেসিডেন্ট ছিলেন মাস্টারদা সূর্য সেন।^৪ এই বিপ্লবীরা লুণ্ঠন করল ব্রিটিশের ক্ষমতার প্রতীক অস্ত্রাগার। দখল নিল ব্যারাকের। এরপর বিপ্লবীরা আশ্রয় নেয় জালালাবাদ পাহাড়ে। “২২ এপ্রিল জালালাবাদের

An observation on the Odonata diversity in and around Sarojini Naidu College campus, Kolkata, West Bengal, India

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Abstract

Odonates play vital role in environmental monitoring and can be used as biological indicators of ecological health. The present investigation was undertaken as a pilot study to study the diversity and abundance of dragonflies and damselflies (Odonata) in Sarojini Naidu College campus, Kolkata, West Bengal, India. A combination of direct search and opportunistic sighting methods were applied to record 23 different Odonata species (18 dragonflies and 5 damselflies) from the study area during May, 2015 to April, 2016. In spite of the college campus being located in an industrial urban area, the present study revealed a striking diversity of Odonates. A suitable geographic location, favourable climatic conditions, appropriate vegetation provided a comfortable shelter for Odonata species to flourish in this area. This study is aimed towards contributing to the plan of biodiversity restoration in our campus and development of management strategies for conservation of this important group of insects.

Keywords: odonata, dragonfly, damselfly, sarojini naidu college, diversity, conservation

1. Introduction

Odonata comprising the dragonflies (Anisoptera) and damselflies (Zygoptera) constitute a small and highly specialized order of insects that are widely distributed all over the world [1]. Approximately 6000 species and subspecies to 630 genera in 28 families are known from all over the world [2], out of which 474 species in 142 genera and 18 families are known from India [3]. Being predators both at larval and adult stages, Odonates play significant role as important food chain components especially for spiders and birds and serve to keep harmful insects (like mosquitoes, blood-sucking flies, bees, ants, wasps etc.) under control [4]. Moreover, Odonate taxa are ideal models for the investigation of the impact of environmental warming and climate change due to their tropical evolutionary history and adaptations to temperate climates [5]. Studies have shown that they are good indicators of ecosystem health [6] and have strong association with water because of their aquatic larvae [7]. Even though most species of odonates are highly specific to a habitat, some have adapted to urban areas and exploit man-made water bodies [8]. Anecdotal observations suggest that some Odonates are so habitat sensitive that even minor changes can lead to their disappearance [4]. In the recent past, researchers have studied Odonates from some of the urban and sub-urban areas of Kolkata [9-12]. Institutional campuses with undisturbed natural vegetation provide potential habitat for Odonate population as they are devoid of any developmental activities and pollution. Sarojini Naidu College for Women (SNCW), Dum Dum, (22°37'12" N and 88°25'12" E) is located in a sub-urban belt having a well-wooded campus amidst a mosaic of concrete buildings (Fig 1). The campus is spread over an area of 3.5 acres with lush green vegetation having large trees, bushy shrubs and long grasses. The College campus is surrounded by residential apartments, hospital, office buildings and large and small scale industries. The campus is flanked by roads with continuous vehicular movements. There are also ponds and water bodies with rich aquatic vegetation in the vicinity of the

college. The study area experiences a sub-tropical climate with hot summers from late March to early June (Temperature range: 25 °C-40 °C), the humid monsoon season from mid June to late September and a cool dry winter from late November to early February (Temperature range: 12 °C-25 °C). Humidity is generally very high during summer and the area receives an average rainfall of 170 mm. The present survey is focused not only on preparing the checklist of odonates, but also to create awareness for their conservation.

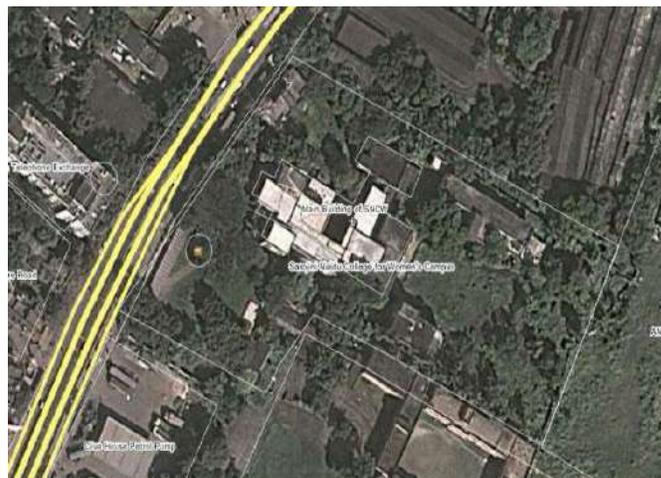


Fig 1: Satellite overview map of study locality

2. Materials and Methods

The present study was carried out between the months of May 2015 to April 2016. Visual surveys were done randomly in the morning, noon and evening times and the Odonates were identified up to the species level. All the specimens were identified with the aid of a Bushnell Binocular (8X40) and photographed with Canon PowerShot SX 510 HS in their natural habitats. In case of difficulties, unidentified ones were collected using a butterfly net and identified in the laboratory

সত্যের আলোকে আনন্দময়ী ও সুচরিতার প্রতিবাদের স্বরূপ বিশ্লেষণ রেজিনা কবীর

অধ্যাপিকা,

দর্শন বিভাগ, সরোজিনী নাইডু কলেজ ফর উইমেন

ভারতীয় দর্শন মতে মানব জীবনের চরম লক্ষ্য তথা পরম পুরুষার্থ হ'ল মোক্ষ বা মুক্তি। মুক্তি অর্থে দুঃখ মুক্তিকে বোঝানো হয়। অদ্বৈত বেদান্ত মতে 'মুক্তি' শব্দের অর্থ নির্ধারণ করা হয় 'বন্ধননিবৃত্তি' অবিদ্যাই জীবের বন্ধন, সেই অবিদ্যারূপ বন্ধনের নিবৃত্তিই মোক্ষ (ভট্টাচার্য, দর্শন কোষ, ১০৭) আবার ন্যায় দর্শন মতে যে বস্তু যে রকম নয়, তাকে সেরকম বোঝাই মিথ্যা জ্ঞান। যথা আমরা যদি আত্মাকে অনাত্মা বলে বুঝি, দুঃখকে সুখ বলে বুঝি তাহলে আমাদের সেই জ্ঞানকে মিথ্যা বলে গণ্য করা হবে। এই সব মিথ্যা জ্ঞানের নিরাস হলেই সত্যজ্ঞানের উদয় হয়। তাতেই জীবের মুক্তি (দাস, প্রবন্ধ, ৯৬)। আমরা সকলেই যে দুঃখ থেকে মুক্তি চাই এবিষয়ে কোন দ্বিমত নেই। কিন্তু প্রশ্ন হ'ল তা কী উপায়ে লাভ করা যাবে?

শাস্ত্রমতে ধর্ম পালনের দ্বারা মুক্তিলাভ সম্ভব। প্রশ্ন জাগে তবে ধর্ম কী? 'ধর্ম' শব্দের ব্যুৎপত্তিগত অর্থ 'যাহা ধরিয়৷ রাখে'- অর্থাৎ যা মানব সমাজকে ধরে রাখে অর্থাৎ রক্ষা করে তাই ধর্ম। ধর্ম শব্দটিকে এই অর্থে গ্রহণ করলে নীতি, সদাচার, সততা প্রভৃতিকে ধর্ম বলা যায় (গুপ্ত ও বন্দ্যোপাধ্যায়, ধর্ম দর্শন, ৩)। মনুষ্য চিন্তার বিবর্তনের ইতিহাসে ধর্মের স্থান অতি গুরুত্বপূর্ণ। প্রাগৈতিহাসিক কাল থেকেই ধর্ম মানুষের জীবনে কেন্দ্রীয় স্থান অধিকার করে আছে। কিন্তু 'ধর্ম কী'?- এ প্রশ্নের উত্তর দেওয়া বড় সহজ নয়। মনুষ্যচিন্তার বিবর্তন ও পরিবর্তনের সঙ্গে ধর্মের স্বরূপও পরিবর্তিত হওয়ায় ধর্মের সহজ ও সর্বজনগ্রাহ্য সংজ্ঞা সম্ভব নয়। অধ্যাপক গ্যালোয়ের ভাষায় বলা যায়- "Man's faith in a power beyond himself whereby he seek to satisfy emotional need and gains stability of life and which he expresses in acts of worship and service" (Galloway, Religion, 184) - যার ভাবানুবাদে বলা যায়

5-2017

Effective Estimation Strategy of Finite Population Variance Using Multi-Auxiliary Variables in Double Sampling

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SOME FIXED POINT RESULTS IN FUZZY METRIC SPACES USING A CONTROL FUNCTION

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Abstract. In this paper, we establish the results on existence and uniqueness of fixed point for ϕ -contractive and generalized C-contractive mapping in the fuzzy metric space in the sense of George and Veeramani. We use the notion of altering distance for proving the results.

1 Introduction

Menger [19] introduced an interesting and important generalization of the metric space called probabilistic metric space in 1942. The idea was to use distribution functions instead of non-negative real numbers as values of the metric. Kramosil and Michalek [18] introduced fuzzy metric space as a generalization of Menger spaces. Later George and Veeramani [11] modified the notion of fuzzy metric spaces. They imposed some conditions on the fuzzy metric space in order to obtain a Hausdorff topology. In this paper we consider some fixed point problems in the fuzzy metric spaces defined in the sense of George and Veeramani.

Fixed point theory is an active branch of research. Sehgal and Bharucha-Reid [26] introduced the notion of contraction mapping in probabilistic metric spaces. They studied the existence and uniqueness of fixed point for B-contraction on a complete Menger space. Hicks [16] introduced the class of probabilistic C-contractions which was different from Sehgal's contraction. After that fixed point theory in probabilistic and fuzzy metric spaces developed in different directions. A comprehensive survey of research in this line was given by Hadzic and Pap in [14]. Some of recent references probabilistic and fuzzy metric spaces may be noted in [2, 5, 6, 7, 9, 10, 13] and [27].

In 1984 Khan et al [17] introduced the notion altering distance function and using it they had proved some fixed point theorems in complete metric spaces.

2010 Mathematics Subject Classification: 47H10, 54H25.

Keywords: Probabilistic metric space; fuzzy metric space; altering distance; p-convergent subsequence.

<http://www.utgjiu.ro/math/sma>

কালকূটের প্রাচেতস্ : ‘কবি তব মনোভূমি’

সবিতা মণ্ডল

অধ্যাপিকা, সংস্কৃত বিভাগ
সরোজিনী নাইডু কলেজ ফর্ উইমেন

নব-বাল্মীকি রবীন্দ্রনাথ তাঁর ‘ভাষা ও ছন্দ’ কবিতায় আদি-বাল্মীকির সংশয়দীর্ঘ চিন্তে আপন কবিতে প্রত্যয়ী হয়ে ওঠার জন্য নারদীয় বাণীকে স্মরণ করে লিখেছিলেন-

“সেই সত্য যা রচিবে তুমি-

ঘটে যা তা সব সত্য নহে। কবি, তব মনোভূমি

রামের জনমস্থান, অযোধ্যার চেয়ে সত্য জেনো।”

(রবীন্দ্র-রচনাবলী, ষষ্ঠ খণ্ড, পৃ..২৬১)

কবির মনোভূমি শুধু স্থানের সীমাকেই অতিক্রম করে না, তা কালের গঞ্জী পেরিয়ে কালাতীত এক চিরন্তন সত্যকে লালন করে। অতীত-বর্তমান-ভবিষ্যৎ সেই মনোভূমিতে একাকার হয়ে যায়। রামায়ণ রচয়িতা বাল্মীকি তাই আদি ও অনন্তের কবি।

বিংশ শতকের দ্বিতীয়ার্ধে এ কালের কথাসাহিত্যিক সমরেশ বসু ওরফে কালকূট মানসভ্রমণে বেরিয়ে আদি কবির মনোভূমিতে বিচরণ করতে চেয়েছেন। কৃত্তিবাসী রামায়ণের সুবাদে আমরা সকলেই জানি রত্নাকরের বাল্মীকি হয়ে ওঠার কাহিনি। রত্নাকর দস্যুবৃত্তি করে সংসার নির্বাহ করতেন। একদা দেবর্ষি নারদকে হত্যা করতে উদ্যত হলে নারদ তাকে প্রশ্ন করেন, তার এই নরহতাজনিত পাপের ভাগ কে নেবে? রত্নাকরের স্পষ্ট জবাব, দস্যুবৃত্তি করে তিনি যাদের ভরণপোষণ করেন অর্থাৎ তার বাবা-মা ও স্ত্রী তাঁর পাপের ভাগ নেবে। নারদ এই মন্তব্যে সংশয় প্রকাশ করলে রত্নাকর একে একে বাবা, মা ও স্ত্রীর কাছে পাপের ভাগ তারা নেবে কিনা জানতে চায়। প্রত্যেকেই আপন আপন যুক্তি দেখিয়ে পাপের ভাগ নিতে অস্বীকার করেন। তখন রত্নাকরের চৈতন্য হয়। অতঃপর নারদের কাছে রামমন্ত্রে দীক্ষিত হয়ে ষাট হাজার বছর তপস্যারত থাকেন ও সিদ্ধিলাভ করেন। তপস্যাকালে বল্মীকে আবৃত হয়েছিলেন বলে তাঁর নাম হয় বাল্মীকি। সরস্বতীর বরপুত্র রূপে অসাধারণ কবিত্বশক্তির অধিকারী হন এবং নারদের নির্দেশে রামায়ণ রচনা করেন।- সর্বজনজ্ঞাত এই কাহিনির মধ্যে অতিকথন বা অলৌকিকত্বের ছোঁয়া আছে নিশ্চয়ই, কিন্তু দস্যু থেকে কবি হয়ে ওঠার মানসযাত্রায় যে আলোড়ন কাজীকৃত ছিল, মানসিক টানাপোড়েন ও কৃতকর্মজনিত বিবেকের দংশনে ক্ষতবিক্ষত হৃদয়ের আর্তি অনিবার্য ছিল, তার স্মরণ ঘটেনি। কালকূট দস্যু থেকে কবি হয়ে ওঠার ইতিহাসকে নৃতাত্ত্বিক-পুরাতাত্ত্বিক ও প্রাকৃতিক পটভূমিতে বিধৃত করে মনস্তাত্ত্বিক বিশ্লেষণে ‘অধিকতর সত্য’ রূপে উপস্থাপন করেছেন। তা সম্ভাব্যতা (Possibility) ও কাম্যতা (Probability) সূত্রে জীবনসম্ভব হয়ে উঠেছে।

কৃত্তিবাসী রামায়ণে বাল্মীকির পূর্বনাম ‘রত্নাকর’ হলেও কালকূট তাঁর ‘প্রাচেতস্’ উপন্যাসে রত্নাকর নামটি বর্জন করেছেন। বাস্তবিকই নামটির গভীরতর কোন ব্যঞ্জনা চরিত্রের মধ্যে পরিস্ফুট নয়। অপরদিকে ‘প্রাচেতস্’ নামের মধ্যে ঋষি প্রচেতার উত্তরসূরিত্বের ছোঁয়া আছে। প্রচেতা ভৃগু বংশীয় মুনি। কৃত্তিবাস রত্নাকরকে চ্যবনপুত্র বলে উল্লেখ করেছেন। কালকূট প্রাচেতসকে চ্যবন গোষ্ঠীর সন্তান হিসাবে দেখিয়েছেন। চ্যবনেরা বীণা বাজিয়ে যাযাবরের মতো ঘুরে ঘুরে মানুষকে গান শুনিয়ে জীবিকার্জন করতো। ছেলেবেলায় প্রাচেতস্ বীণাও বাজাতেন। কিন্তু গান গেয়ে অপরের মনোরঞ্জন করে অর্জিত ভিক্ষা জীবন কাটাতে চাননি। কিরাতদের সংস্পর্শে এসে কৈশোরেই তিনি চ্যবনদের জীবিকার্জনের পথ ত্যাগ করে স্বাধীন জীবিকার সন্ধান করেন।

এই কিরাতেরা কিন্তু অনার্য বা এদেশীয় কালো রঙের মানুষ নয়। চণ্ডীমঙ্গলে কালকেতুর যে পরিচয় আমরা পাই, এরা তার পূর্বসূরি নয়। পাখী ও পশু শিকার করে তা বিক্রি করে জীবিকার্জন করা প্রাচেতসের সহযোগী কিরাতদের ধর্ম নয়। উপন্যাসে ‘কিরাত’ শব্দটি গৃহীত হয়েছে ‘কেলট’ থেকে। যারা হরিয়ুপীয়া থেকে আগত। এই হরিয়ুপীয়া হল একালের ইউরোপ। এ দেশীয় অনার্যদের মতো এরা কালো রঙের মানুষ নয়। এরা দীর্ঘাঙ্গ, গৌরবর্ণ, পেশিবহুল শক্ত চেহারার মানুষ। এরা দস্যু। রক্তপাত ও লুণ্ঠন এদের প্রধান জীবিকা। অর্ধদক্ষ মৃগ, ছাগ, পক্ষী মাংস খেতে অভ্যস্ত। এদের সঙ্গে মিশে ভৃগুবংশীয় ব্রাহ্মণ সন্তান প্রাচেতস্ দস্যুবৃত্তিকে জীবিকা হিসাবে গ্রহণ করেছেন। শুধু তাই নয়, হয়ে উঠেছেন দলপতি। তার নামে সমস্ত জনপদ থর-থর কম্পমান। অসাধারণ তীক্ষ্ণ বুদ্ধি ও আক্রমণের কৌশল। তার ক্ষিপ্ততার কাছে বুদ্ধিমত্তা ও কৌশলী পদক্ষেপে প্রবল প্রতিপক্ষও হার মানে। তপস্বী ও মুনি-ঋষির প্রাচেতস্কে ‘ভৃগুবংশীয় কুলাঙ্গার’ বলে অভিহিত করেন।

একদা এক ভ্রাম্যমাণ রাজা যথেষ্ট সেনাসামন্ত সঙ্গে থাকা সত্ত্বেও প্রাচেতস্ ও তার গুটিকয়েক সঙ্গীর কাছে পরাজিত হয়ে তার সমস্ত ধনরত্ন প্রাচেতস্কে অর্পণ করে তার কাছে সাকাতরে প্রার্থনা করেছিলেন- “হে প্রাচেতস্, তুমি আমার এই ভ্রাম্যমাণ রাজ্যের সমস্ত ভার নাও। রাজার পরেই মন্ত্রী, সচিব ও সেনাপতির পদ তোমার থাকবে। তোমার দলবল নিয়ে তুমি আমার সঙ্গে যোগদান করো।”(কালকূট, ‘প্রাচেতস্’, পৃ.৩৪)।

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The Colonial Gaze: Women in Travel Photography

The long tradition

Europe is privy to a long tradition of representing continents as women. Such a tradition was central to the Eurocentric view point. Cesare Ripa's *Iconologia* published in 1603 depicts allegorical figures of women providing illustrations for the various continents. The four figures (figure no. 1, 2, 3 and 4) viz. *Europa*, *Africa*, *Asia* and *America* illustrate the fixed perceptions of the nature of the "four corners of the world" from the European perspective (*Wikipedia* "Four continents").



Fig. 1



Fig.2



Fig. 3



Fig. 4

The same correspondence is again evident in the paintings of Peter Paul Rubens, whose superbly executed Renaissance painting *The Four Continents* (figure no. 5) depicts four female figures representing Europe, Africa, Asia and America entwined with four male figures representing the four major river Gods – Danube, Nile, Ganges and Rio de la Plata (*Wikipedia* "The Four Continents").

সত্যের আলোকে আনন্দময়ী ও সুচরিতার প্রতিবাদের স্বরূপ বিশ্লেষণ রেজিনা কবীর

অধ্যাপিকা,

দর্শন বিভাগ, সরোজিনী নাইডু কলেজ ফর উইমেন

ভারতীয় দর্শন মতে মানব জীবনের চরম লক্ষ্য তথা পরম পুরুষার্থ হ'ল মোক্ষ বা মুক্তি। মুক্তি অর্থে দুঃখ মুক্তিকে বোঝানো হয়। অদ্বৈত বেদান্ত মতে 'মুক্তি' শব্দের অর্থ নির্ধারণ করা হয় 'বন্ধননিবৃত্তি' অবিদ্যাই জীবের বন্ধন, সেই অবিদ্যারূপ বন্ধনের নিবৃত্তিই মোক্ষ (ভট্টাচার্য, দর্শন কোষ, ১০৭) আবার ন্যায় দর্শন মতে যে বস্তু যে রকম নয়, তাকে সেরকম বোঝাই মিথ্যাজ্ঞান। যথা আমরা যদি আত্মাকে অনাত্মা বলে বুঝি, দুঃখকে সুখ বলে বুঝি তাহলে আমাদের সেই জ্ঞানকে মিথ্যা বলে গণ্য করা হবে। এই সব মিথ্যা জ্ঞানের নিরাস হলেই সত্যজ্ঞানের উদয় হয়। তাতেই জীবের মুক্তি (দাস, প্রবন্ধ, ৯৬)। আমরা সকলেই যে দুঃখ থেকে মুক্তি চাই এবিষয়ে কোন দ্বিমত নেই। কিন্তু প্রশ্ন হ'ল তা কী উপায়ে লাভ করা যাবে?

শাস্ত্রমতে ধর্ম পালনের দ্বারা মুক্তিলাভ সম্ভব। প্রশ্ন জাগে তবে ধর্ম কী? 'ধর্ম' শব্দের ব্যুৎপত্তিগত অর্থ 'যাহা ধরিয়৷ রাখে'- অর্থাৎ যা মানব সমাজকে ধরে রাখে অর্থাৎ রক্ষা করে তাই ধর্ম। ধর্ম শব্দটিকে এই অর্থে গ্রহণ করলে নীতি, সদাচার, সততা প্রভৃতিকে ধর্ম বলা যায় (গুপ্ত ও বন্দ্যোপাধ্যায়, ধর্ম দর্শন, ৩)। মনুষ্য চিন্তার বিবর্তনের ইতিহাসে ধর্মের স্থান অতি গুরুত্বপূর্ণ। প্রাগৈতিহাসিক কাল থেকেই ধর্ম মানুষের জীবনে কেন্দ্রীয় স্থান অধিকার করে আছে। কিন্তু 'ধর্ম কী'?- এ প্রশ্নের উত্তর দেওয়া বড় সহজ নয়। মনুষ্যচিন্তার বিবর্তন ও পরিবর্তনের সঙ্গে ধর্মের স্বরূপও পরিবর্তিত হওয়ায় ধর্মের সহজ ও সর্বজনগ্রাহ্য সংজ্ঞা সম্ভব নয়। অধ্যাপক গ্যালোয়ের ভাষায় বলা যায়- "Man's faith in a power beyond himself whereby he seek to satisfy emotional need and gains stability of life and which he expresses in acts of worship and service" (Galloway, Religion, 184) - যার ভাবানুবাদে বলা যায়

কালকূটের প্রাচেতস্ : ‘কবি তব মনোভূমি’

সবিতা মণ্ডল

অধ্যাপিকা, সংস্কৃত বিভাগ
সরোজিনী নাইডু কলেজ ফর্ উইমেন

নব-বাল্মীকি রবীন্দ্রনাথ তাঁর ‘ভাষা ও ছন্দ’ কবিতায় আদি-বাল্মীকির সংশয়দীর্ঘ চিন্তে আপন কবিতে প্রত্যয়ী হয়ে ওঠার জন্য নারদীয় বাণীকে স্মরণ করে লিখেছিলেন-

“সেই সত্য যা রচিবে তুমি-

ঘটে যা তা সব সত্য নহে। কবি, তব মনোভূমি

রামের জনমস্থান, অযোধ্যার চেয়ে সত্য জেনো।”

(রবীন্দ্র-রচনাবলী, ষষ্ঠ খণ্ড, পৃ..২৬১)

কবির মনোভূমি শুধু স্থানের সীমাকেই অতিক্রম করে না, তা কালের গঞ্জী পেরিয়ে কালাতীত এক চিরন্তন সত্যকে লালন করে। অতীত-বর্তমান-ভবিষ্যৎ সেই মনোভূমিতে একাকার হয়ে যায়। রামায়ণ রচয়িতা বাল্মীকি তাই আদি ও অনন্তের কবি।

বিংশ শতকের দ্বিতীয়ার্ধে এ কালের কথাসাহিত্যিক সমরেশ বসু ওরফে কালকূট মানসভ্রমণে বেরিয়ে আদি কবির মনোভূমিতে বিচরণ করতে চেয়েছেন। কৃত্তিবাসী রামায়ণের সুবাদে আমরা সকলেই জানি রত্নাকরের বাল্মীকি হয়ে ওঠার কাহিনি। রত্নাকর দস্যুবৃত্তি করে সংসার নির্বাহ করতেন। একদা দেবর্ষি নারদকে হত্যা করতে উদ্যত হলে নারদ তাকে প্রশ্ন করেন, তার এই নরহতাজনিত পাপের ভাগ কে নেবে? রত্নাকরের স্পষ্ট জবাব, দস্যুবৃত্তি করে তিনি যাদের ভরণপোষণ করেন অর্থাৎ তার বাবা-মা ও স্ত্রী তাঁর পাপের ভাগ নেবে। নারদ এই মন্তব্যে সংশয় প্রকাশ করলে রত্নাকর একে একে বাবা, মা ও স্ত্রীর কাছে পাপের ভাগ তারা নেবে কিনা জানতে চায়। প্রত্যেকেই আপন আপন যুক্তি দেখিয়ে পাপের ভাগ নিতে অস্বীকার করেন। তখন রত্নাকরের চৈতন্য হয়। অতঃপর নারদের কাছে রামমন্ত্রে দীক্ষিত হয়ে ষাট হাজার বছর তপস্যারত থাকেন ও সিদ্ধিলাভ করেন। তপস্যাকালে বল্মীকে আবৃত হয়েছিলেন বলে তাঁর নাম হয় বাল্মীকি। সরস্বতীর বরপুত্র রূপে অসাধারণ কবিত্বশক্তির অধিকারী হন এবং নারদের নির্দেশে রামায়ণ রচনা করেন।- সর্বজনজ্ঞাত এই কাহিনির মধ্যে অতিকথন বা অলৌকিকত্বের ছোঁয়া আছে নিশ্চয়ই, কিন্তু দস্যু থেকে কবি হয়ে ওঠার মানসযাত্রায় যে আলোড়ন কাজীকৃত ছিল, মানসিক টানাপোড়েন ও কৃতকর্মজনিত বিবেকের দংশনে ক্ষতবিক্ষত হৃদয়ের আর্তি অনিবার্য ছিল, তার স্মরণ ঘটেনি। কালকূট দস্যু থেকে কবি হয়ে ওঠার ইতিহাসকে নৃতাত্ত্বিক-পুরাতাত্ত্বিক ও প্রাকৃতিক পটভূমিতে বিধৃত করে মনস্তাত্ত্বিক বিশ্লেষণে ‘অধিকতর সত্য’ রূপে উপস্থাপন করেছেন। তা সম্ভাব্যতা (Possibility) ও কাম্যতা (Probability) সূত্রে জীবনসম্ভব হয়ে উঠেছে।

কৃত্তিবাসী রামায়ণে বাল্মীকির পূর্বনাম ‘রত্নাকর’ হলেও কালকূট তাঁর ‘প্রাচেতস্’ উপন্যাসে রত্নাকর নামটি বর্জন করেছেন। বাস্তবিকই নামটির গভীরতর কোন ব্যঞ্জনা চরিত্রের মধ্যে পরিস্ফুট নয়। অপরদিকে ‘প্রাচেতস্’ নামের মধ্যে ঋষি প্রচেতার উত্তরসুরিত্বের ছোঁয়া আছে। প্রচেতা ভৃগু বংশীয় মুনি। কৃত্তিবাস রত্নাকরকে চ্যবনপুত্র বলে উল্লেখ করেছেন। কালকূট প্রাচেতসকে চ্যবন গোষ্ঠীর সন্তান হিসাবে দেখিয়েছেন। চ্যবনেরা বীণা বাজিয়ে যাযাবরের মতো ঘুরে ঘুরে মানুষকে গান শুনিয়ে জীবিকার্জন করতো। ছেলেবেলায় প্রাচেতস্ বীণাও বাজাতেন। কিন্তু গান গেয়ে অপরের মনোরঞ্জন করে অর্জিত ভিক্ষা জীবন কাটাতে চাননি। কিরাতদের সংস্পর্শে এসে কৈশোরেই তিনি চ্যবনদের জীবিকার্জনের পথ ত্যাগ করে স্বাধীন জীবিকার সন্ধান করেন।

এই কিরাতেরা কিন্তু অনার্য বা এদেশীয় কালো রঙের মানুষ নয়। চণ্ডীমঙ্গলে কালকেতুর যে পরিচয় আমরা পাই, এরা তার পূর্বসূরি নয়। পাখী ও পশু শিকার করে তা বিক্রি করে জীবিকার্জন করা প্রাচেতসের সহযোগী কিরাতদের ধর্ম নয়। উপন্যাসে ‘কিরাত’ শব্দটি গৃহীত হয়েছে ‘কেলট’ থেকে। যারা হরিয়ুপীয়া থেকে আগত। এই হরিয়ুপীয়া হল একালের ইউরোপ। এ দেশীয় অনার্যদের মতো এরা কালো রঙের মানুষ নয়। এরা দীর্ঘাঙ্গ, গৌরবর্ণ, পেশিবহুল শক্ত চেহারার মানুষ। এরা দস্যু। রক্তপাত ও লুণ্ঠন এদের প্রধান জীবিকা। অর্ধদক্ষ মৃগ, ছাগ, পক্ষী মাংস খেতে অভ্যস্ত। এদের সঙ্গে মিশে ভৃগুবংশীয় ব্রাহ্মণ সন্তান প্রাচেতস্ দস্যুবৃত্তিকে জীবিকা হিসাবে গ্রহণ করেছেন। শুধু তাই নয়, হয়ে উঠেছেন দলপতি। তার নামে সমস্ত জনপদ থর-থর কম্পমান। অসাধারণ তীক্ষ্ণ বুদ্ধি ও আক্রমণের কৌশল। তার ক্ষিপ্ততার কাছে বুদ্ধিমত্তা ও কৌশলী পদক্ষেপে প্রবল প্রতিপক্ষও হার মানে। তপস্বী ও মুনি-ঋষির প্রাচেতস্কে ‘ভৃগুবংশীয় কুলাঙ্গার’ বলে অভিহিত করেন।

একদা এক ভ্রাম্যমাণ রাজা যথেষ্ট সেনাসামন্ত সঙ্গে থাকা সত্ত্বেও প্রাচেতস্ ও তার গুটিকয়েক সঙ্গীর কাছে পরাজিত হয়ে তার সমস্ত ধনরত্ন প্রাচেতস্কে অর্পণ করে তার কাছে সাকাতরে প্রার্থনা করেছিলেন- “হে প্রাচেতস্, তুমি আমার এই ভ্রাম্যমাণ রাজ্যের সমস্ত ভার নাও। রাজার পরেই মন্ত্রী, সচিব ও সেনাপতির পদ তোমার থাকবে। তোমার দলবল নিয়ে তুমি আমার সঙ্গে যোগদান করো।”(কালকূট, ‘প্রাচেতস্’, পৃ.৩৪)।

Ankita Chatterjee

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Looking at the Billboards: Gender Construction in Hindi Movies

In any given social order, ideology “a system of representation at the heart of a given society” is at the base, which makes culture its “crucial vehicle” to propagate the value-system (Barry 157). The ideological structures in any social matrix such as art, literature, media, theatre, cinema, school, and religious institution are both the products of the prevalent ideology and the formulators of the ideologies at the same time. In the context of Indian society, Hindi cinema has played a very significant role in shaping and reshaping of the psyche of Indian men and women throughout ages.

The evolution of Hindi Cinema is also a process, which is a result of a “compulsive discourse” that has been defining the “social reality as it describes the seemingly obvious” (Kona). In fact the making of ‘Indian men’ and Indian women’ has been greatly influenced by Hindi Cinema. According to Ferdinand de Saussure, “the interpretation of the individual” needs the understanding of the “larger abstract structures which contain them” (Barry 39). Similarly, an analysis of Hindi cinema as a “compulsive suggestive discourse” and its contribution in gender-construction will require the identification and detailed understanding of the greater insidiously working structures of patriarchy which is at the base of Indian society (Kona).

In an age of consumerism, a frequently used saying: “a picture is worth thousand words,” finds itself applicable in almost every sphere where media is used as a means of

Tuhin Roy

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**Unacknowledged Urbanisation and Dynamics of Urban Mobility:
An Experience of Katwa Town, District: Burdwan, West Bengal, India**

Abstract

Urbanization does not always become a cause of creating town or city with potentiality of equal range of growth and development in all respects. Because across the global every town or city on various grounds has been left with some sort of shortcomings within its being in reality. As a result, certain segments of the town or city remain deprived of irreversible drawbacks. Urbanisation in India is neither unique nor exclusive, but somewhat it is similar to global scenario. Because Indian urbanization has gone through a long process which is almost equal to other countries in the world, i.e. based on progressive nature of market economy. Besides, other important causative factors are occupational shift from agriculture to urban based industries and services. In West Bengal, Katwa is situated in the district of Burdwan. It is a sub-divisional as well as an important town with long historical past. Katwa is governed by municipality which provides civic amenities to its residents though the same are not enough to match their need. Due to both physical and non-physical constraints has controlled the growth and development of the town. This study attempts to discuss the histogenesis, trend of urbanization, growth, expansion, constraints, problems which give a concrete idea of constraints related with less development in all aspects of Katwa town. This paper will highlight the level of urbanization of Katwa town of Burdwan district of West Bengal. Whether it is an old town but some constraints which were interrupt to

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Labour Market Issues and Development

Abstract

In spite of labour laws been widely studied for almost a decade and various recommendations to re-invent/evolve labour laws in the current wake of globalization, the issues pertaining to welfare of labour and flexibility of the firms to grow in sync with market conditions for better industrial relations, persists even today. For the past six to seven years it has been argued (especially by employers) that labour laws in India are excessively pro-worker in the organized sector and this has led to serious rigidities that has resulted in adverse consequences in terms of performance of this sector as well as the operation of the labour markets. There have been recommendations by the government to reform labour laws in India by highlighting the need for flexibility in Indian labour laws that would give appropriate flexibility to the industry that is essential to compete in international markets. But the attitude has mainly been towards skill enhancement and focus on flexible labour markets rather than assessment of proper enforcement of the laws, assessment of the situation of different categories of employers and coverage of the social protection system.

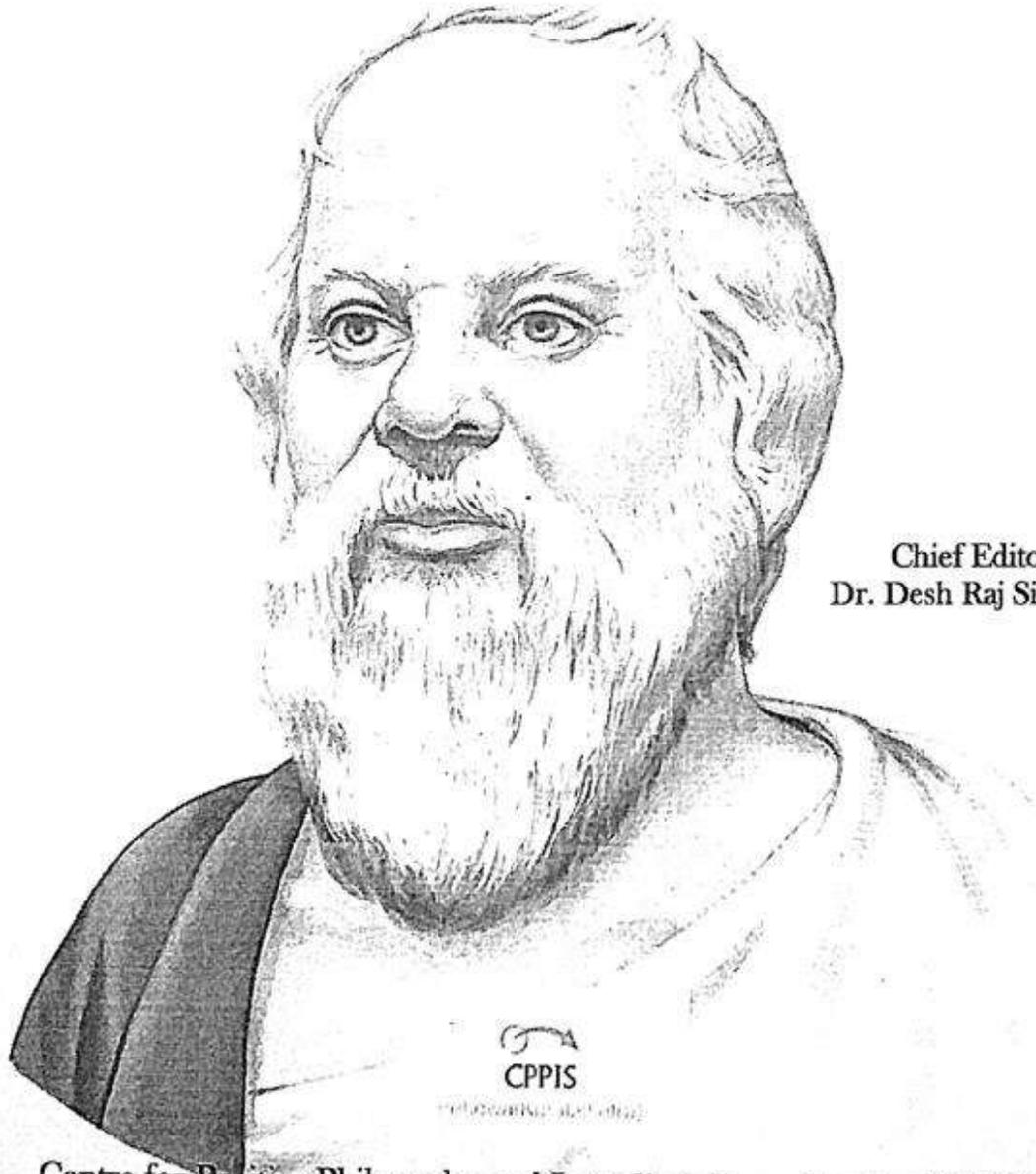
Keywords: *Liberalisation, Globalisation, Flexibility, Reform, Labour Law, Rigidity*

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An Enquiry into the Nature of the Absolute Being as Necessary Existent: A Review after Ibn Sīnā

Rejina Kabir

Abstract

The term, 'Absolute', is used by the philosophers to signify the ultimate reality regarded as one and yet as the source of variety; as complete, or perfect and yet as not divorced from the finite, imperfect world. The objective of this article is an analytical exposition of the concept of the Absolute Being as represented by Ibn Sīnā (980A.D.-1037A.D.) in his system of philosophy. Ibn Sīnā is one of the Islamic philosophers who have developed some unique and original concepts in their systems of study in medieval philosophy. As per Goodman, Ibn Sīnā has tried to meet the challenge by harmonizing reason with revelation, introducing innovations and refining philosophical techniques and analysis. Ibn Sīnā claims that the concept of Being is the first acquisition of the human mind. The knowledge of the concept of Being is arrived at both subjectively and objectively. Subjectively we are aware or conscious of our own existence. Objectively we acquire the impression of being through sense-perception and physical contact with the things around us. Ibn Sīnā classified the nature of being or existence into two types namely- necessary and contingent. This paper is mainly concerned with an analysis of the concept of the Absolute Being as Necessary Existent. Ibn Sīnā contends that the essence of the Necessary Existent can be no other than existence. In pursuance of the objective of this article it is designed in three sections namely, A brief introduction of Ibn Sīnā, The Notion of Being as per Ibn Sīnā, The Notion of Absolute Being as Necessary Existent.

Keywords: *Ibn Sīnā, Being, Absolute Being, Necessary Existent.*

The concept of Absolute Being is one of the most important concepts discussed in metaphysics. The term, 'Absolute', is used by the philosophers to signify the ultimate reality regarded as one and yet as the source of variety; as complete, or perfect and yet as not divorced from the finite, imperfect world.¹

The objective of this article is an analytical exposition of the concept of the Absolute Being as Necessary Existent after Ibn Sīnā (980A.D.-1037A.D.) in his system of philosophy. In other words, existence is the essence of the Absolute Being. In pursuance of the objective of this article it is designed in three sections namely, A brief introduction of Ibn Sīnā, The Notion of Being as per Ibn Sīnā, The Notion of Absolute Being as Necessary Existent.

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ইতিহাস ও সংস্কৃতি

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গ্রন্থস্বত্ব

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প্রকাশকের লিখিত পূর্ব অনুমতি ব্যতীত এই সংকলনে প্রকাশিত কোনো প্রবন্ধ বা প্রবন্ধসমূহ সম্পূর্ণ বা আংশিকরূপে পুনঃপ্রকাশ, পুনর্মুদ্রণ, পুনর্ব্যবহার, পুনর্নির্মাণ, পুনঃউৎপাদন করা যাবে না বা পুনঃউৎপাদনের জন্য যান্ত্রিক বা বৈদ্যুতিন উপায়ে সংরক্ষণ করা যাবে না। সংকলনে প্রকাশিত যাবতীয় প্রবন্ধ-এ উপস্থাপিত তথ্য, ব্যক্ত মতামত, গৃহীত সিদ্ধান্ত, ভাষা, বানান, ইঙ্গিত, দৃষ্টিকোণ প্রভৃতির সম্পূর্ণ দায়িত্ব একান্তভাবেই সংশ্লিষ্ট লেখকের বা লেখকদের। এগুলির জন্য সম্পাদকমণ্ডলী অথবা সংস্থা কোনভাবে দায়ী থাকবে না।

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সভাপতি,

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মধ্যকল্যাণপুর, বারুইপুর, কলকাতা - ৭০০ ১৪৪

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মূল্য

৭০০.০০ টাকা

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| বীরভূমের পটচিত্র: একটিলুপ্ত প্রায় হস্তশিল্প সুচেতনা পাল | ১৮০ |
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অব্দ থেকে বঙ্গাব্দ : বাংলা পঞ্জিকার বিবর্তন

আজিজুল বিশ্বাস

অ্যাসিস্টেন্ট প্রোফেসর, ইতিহাস বিভাগ, সরোজিনী নাইডু কলেজ ফর উইমেন

সারসংক্ষেপ: মানব সভ্যতার ক্রমবিকাশের কোন এক উন্নত ধাপে মানুষের মনে উদ্বেক হওয়া স্বতন্ত্র গোষ্ঠীর ভাবনা থেকে গোষ্ঠীভিত্তিক ঘটনাবলী চিহ্নিত করার প্রয়োজনীয়তা দেখা দেয়। মানুষের এই গোষ্ঠীচিন্তা ও কালবোধ থেকেই অব্দের জন্ম হয়। জাতি বা গোষ্ঠীর পরিচয় তার ভাষায়, সাহিত্যে, সাংস্কৃতিক ঐতিহ্যে - সামগ্রিক ইতিহাসে। এই ইতিহাসে কাল 'অব্দ' দ্বারা চিহ্নিত হয়। পৃথিবীর নব সভ্য দেশেই অব্দের প্রচলন দেখা যায়। প্রচলিত অব্দ গুলির মধ্যে ভারতের 'শকাব্দ', নেপালের 'নেওয়ার অব্দ', বৌদ্ধ ধর্মাবলম্বীদের 'বুদ্ধাব্দ', খ্রিস্ট ধর্মাবলম্বীদের 'খ্রিষ্টাব্দ', ইসলাম ধর্মাবলম্বীদের 'হিজরি', বাঙ্গালীর 'বঙ্গাব্দ' উল্লেখযোগ্য। উল্লেখ্য যে, ভারতে প্রচলিত 'বঙ্গাব্দ'-এর সঙ্গে বাংলাদেশের সরকারী বর্ষপঞ্জী বঙ্গাব্দের পার্থক্য বিদ্যমান। বাংলা তথা বাঙ্গালীর ঐতিহাসিক পথ পরিক্রমায় গৌড়রাজ শশাঙ্ক থেকে মুঘল সম্রাট আকবরের সিংহাসনারোহনের কাল বঙ্গাব্দের উৎস সন্ধানে আলোচ্য এই গবেষণাধর্মী প্রবন্ধে বিতর্কের বিষয় হয়ে উঠেছে। পণ্ডিত মহলের বিতর্কে বঙ্গাব্দের অন্তর্কঠামো বা পঞ্জিকায় 'গোঁজামিল তত্ত্ব'-এর ঠাই মিলেছে। 'সৌর' ও 'চান্দ্র' বর্ষমানের ব্যবধান খোঁচাতে গিয়ে বাংলা পঞ্জিকায় তিথি গণনায় বিভ্রাট দেখা দেয়। এই বিভ্রাট নিরসনে বিকল্প ভাবনার হৃদিস দেবার প্রচেষ্টা রয়েছে আলোচ্য প্রবন্ধে।

সূচকশব্দ: অব্দ, বঙ্গাব্দ, খ্রিষ্টাব্দ, শকাব্দ, নেওয়ার অব্দ, হিজরি, পঞ্জিকা, তিথি।

মহাকালের রথে চড়ে জীবজগতের সর্বশ্রেষ্ঠ জীব মানুষ এসেছে সবার শেষোৎকর্ষের দীর্ঘপথ পরিক্রমায় সত্য, দ্বন্দ্ব, ত্রেতা, কলিযুগে মানুষ আজ লেজ মুক্ত প্রাণী। 'বন্যতা' কাটিয়ে অসভ্য বর্বর গুহাবাসী মানুষ একাকীত্বকে 'আলবিদা' জানিয়ে 'যুথবদ্ধ' তাকে অস্তিত্ব রক্ষার অমোঘ টানে সাদরে বরণ করেছে। মানব সভ্যতার এই সূচনালগ্ন থেকে অগ্রগতির ধারায় মানুষের আচার-ব্যবহার তথা প্রবৃত্তি ও বৌদ্ধিক চেতনার ক্রমঃবিবর্তনের এক উন্নত ধাপে মানুষ স্থান-কাল-পাত্র ভেদে নিজের অবদানকে চিহ্নিত করতে কালবোধের ধারণাকে প্রাতিষ্ঠানিক রূপ দিতে সক্রিয় হয়েছে। মানুষের গোষ্ঠী-সমাজচিন্তা থেকেই একদিন জন্ম নেয় অব্দ বা কালপঞ্জী।

সংস্কৃত শব্দ 'অব্দ' বাংলা ভাষায় তৎসম শব্দ হিসাবে পরিচিতি লাভ করেছে। অব্দের সমার্থক শব্দ 'সন' বা 'সাল' শব্দ যুগল যথাক্রমে আরবী ও ফারসী, বাংলা ভাষায় বিদেশী শব্দ হিসাবে স্বীকৃত কাল বোধক বর্ষ নির্ণয়ের একক কে বলা হয় অব্দ কিংবা সন বা সাল। কোন রাজা-বাদশা-সম্রাট কিংবা মহাপুরুষের জীবনের বিশেষ ঘটনার স্মারকচিহ্ন হিসাবেই অব্দ তথা বর্ষগণনার সূচনা। 'সৌর ও চান্দ্র। ১২ টি সৌরমাসে থাকত ৩৬৫ দিন আর ১২ টি চান্দ্র মাসে ও বছরের সংখ্যা গোনা হলেও একসময়ে ভারতে অনেক রকম অব্দ, সন, সাল, সংবৎ চালু ছিল। বিভিন্ন সময়ে, বিভিন্ন স্থানে, বিভিন্ন রাজা এক-একটি অব্দের সূচনা করতেন।'

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NATURE PERMEATES ALL: AN ECOCRITICAL INTERPRETATION OF THE PROTRACTED ECOSPHERE IN THE FICTIONAL WORLD OF KIRAN DESAI

Debalina Sengupta* and Dr. Joydeep Banerjee**

Abstract: Nature, the indubitable initiator as well as redeemer of the living beings, presently breathes heavily under material manacles. Human beings, at the pompous amusement of prosperous living, are obliterating natural resources; which in turn brings about their impending closure in a rapid hop. This paper, therefore, in a noble mission of warning humanity against its foolish suicidal attempts, analyses the two novels of Kiran Desai from an Ecocritical point of view citing diverse examples from the texts and in doing so ties up the two seemingly dissimilar works with a common theoretical realm. Therefore, we have applied Eco-criticism as a methodological tool for examining those texts, cited references both from textual and co-textual sources and finally proved our points tying up the texts with a unique speculative flair.

Keywords: Bio-diversity, Destruction, Ecology. Environment, Habitat, Law etc.

INTRODUCTION

Kiran Desai, the daughter of the renowned fictionist Anita Desai, who explored in the Indian English novels concerns like socio-political, moral, racial, cross-cultural, psycho-analytical as well as essential man-human-relationships in the post-independence era, emerged on the Indian English landscape in late 1990s. In the series of Booker Prize winners after Ruth Pravar Zabwawla, Salman Rushdie and Arundhati Roy; Kiran Desai has fêted her name and smothered away the anonymity and despondency in the family surroundings which had anticipated her mother to be triumphant over the coveted honour. An article in the *Times of India* by Rashmee Roshan Lal announced:

Kiran Desai won the inheritance of her novelist mother Anita's loss by accomplishing the world's most prestigious literary award, the 50,000 pound prize money, the prospect of soaring global book sales and a passport to the most glittering place of them all— the galaxy of Indian literary star chroniclers of cultural confusion and hybrid hyphenated immigrant identity. (Thursday, 12th October 2006).

She appeared in literary aura in 1997 with her first publication in the *New Yorker* and in *Mirrorwork*, and in an anthology "50 Years of Indian Writing" edited

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DETERMINANTS OF PARTICIPATION OF WOMEN IN LABOUR MARKET: AN EMPIRICAL EVIDENCE FROM NADIA DISTRICT OF WEST BENGAL IN INDIA

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Partha Pratim Sengupta^{*****}

Abstract: The paper is an attempt to investigate the determinants of women work force participation (WWFP) in labour market empirically in India. During last two decades Indian economy has grown by satisfactory rates and at present India belongs to the fastest growing countries across the globe. But labour market in India exhibits different striking characteristics like low rate of WWFP, large share of both men and women working in informal sector, regional disparities in WWFP etc. Using field survey data collected from Nadia district of West Bengal, which acquires some socio-economic and political characteristics relevant to our study, we develop a model considering that own characteristics of women and their households, empowerment, and some endogenous covariates are the possible determinants of WWFP on the basis existing literature. Our empirical findings, by applying two-stage least square method followed by Probit regression as the appropriate econometric tools, imply that our considered variables are significant determinants of WWFP, and a number of policy initiatives taken by local, state and central governments can help to boost women economic participation in India.

Keywords: Women Work Force Participation, Women Empowerment, Labour, India, Nadia, Two-Stage Least Square, Probit Regression etc.

INTRODUCTION

Women empowerment is a contemporary issue for developing countries like India nowadays. Empowerment as a multidimensional process comprising political, social, cultural, economic and legal empowerment helps one to gain control of their lives by raising awareness. The term 'empowerment' denotes the process of increasing the assets and capabilities of individuals or groups to make purposive choices for transforming those into anticipated acts and their consequential upshots (Chakrabarti and Biswas, 2008). Empowerment means possessing over and access to resources that assist them to increase their self-reliance and enhance their independent rights. Economic development is based on human resource expansion. In human resources

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PARSI BUSINESS TYCOONS: REVOLUTIONARY HARBINGERS OF INDIAN SOCIO-ECONOMIC ENTREPRENEURIAL MILIEU

Ujjwal Biswas(1)^{*}, Oliva Roy^{**}, Debalina Sengupta^{***} and Joydeep Banerjee^{****}

Abstract: Industrial entrepreneurship, start-ups, industry, business, innovations are the sine qua non of economic growth and human development of a country. For this reason, the developed and developing countries of the World are currently focusing on providing its people fertile ground for sprouting entrepreneurship. Parsis, the followers of Zoroastrianism, one of the World's oldest religions, left their homeland, Iran in early 8th century to save them from religious persecution, and migrated to different parts of the World. Parsis, the smallest minority community in India, have, in course of time, evolved as one of the most prolific clans to give birth to the tycoons in the realm of business or entrepreneurship. We have embarked on the venture to figure out the reasons behind this proliferation in terms of spawning the passionate and powerful entrepreneurs in the world of business. We, in this analytical procedure, will thrash out the general determinants of successful entrepreneurship analysing those tenets pertaining to this minuscule community. Our object of prime interest in this article will be to evince and explicate the driving factors leading to the succession of their pursuit as entrepreneurs. We will definitely try to figure out the dominant characteristics of those tycoons, along with the details of other catalytic assistance in their steps of business start-ups.

Keywords: Determinants, Entrepreneurship, Immigration, Management, Social mobility etc.

INTRODUCTION

In the last few decades, views on entrepreneurship activities have gone through revolutionary metamorphoses resulting in a widespread consensus adhering to its importance on financial market. It began to gain significant heed from both the sides of scientists and policy makers, inspiring us to acquire extensive study for comprehending this multi-faceted phenomenon. In this respect, the allied aspects connecting to its to-and-fro are also multi-layered. This diversion is not rare in the field of literature; at the moment of our exploration into the theorem of classic contributors of entrepreneurship along with their modern ones; we find abundance of their practical application both in literary and tangible worlds. Although, to some extent, it is unanimously accepted that the pursuit of entrepreneurship has a paramount role to play in economic progression of a country; both developed or

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Influence of the black hole spin on the chaotic particle dynamics within a dipolar halo

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Abstract We investigate the role of the spin angular momentum of astrophysical black holes in controlling the special relativistic chaotic dynamics of test particles moving under the influence of a post-Newtonian pseudo-Kerr black hole potential, along with a perturbative potential created by an asymmetrically placed (dipolar) halo. Proposing a Lyapunov-like exponent to be the effective measure of the degree of chaos observed in the system under consideration, it has been found that black hole spin anti-correlates with the degree of chaos for the aforementioned dynamics. Our findings have been explained applying the general principles of dynamical systems analysis.

Keywords Black hole · Chaos · Dynamical system

1 Introduction

Investigation of the chaotic dynamics of test particles within accretion discs, or inside the halo surrounding astrophysical black holes, have gained widespread interest in recent

years. Integrability conditions and the possibility of transition to the chaotic motion for charged particles moving under the influence of the magnetic force and strong gravitational fields of compact objects and its magnetospheres (Kopáček et al. 2010; Kopáček and Karas 2014, 2015; Takahashi and Koyama 2009; Kovář et al. 2008, 2010), motion under the influence of the relativistic gravitational field of an accreting black hole systems (Vogt and Letelier 2003; Semerák and Suková 2010, 2012, 2016; Janiuk and Czerny 2011; Semerák and Suková 2013; Witzany et al. 2015), and motion under the influence of gravitational field produced by an extended body (Letelier and Vieira 1997; de Castro and Letelier 2011), have been studied within the general relativistic framework. Post-Newtonian black hole potentials have been used to study the chaotic motion of particles moving inside the halo surrounding a non-rotating (Guéron and Letelier 2001a, 2001b; Letelier et al. 2011; Chen and Wang 2003), or a rotating black hole (Ying and Xin 2012).

Most of the astrophysical black holes are expected to be of Kerr-type (Miller et al. 2009; Kato et al. 2010; Ziolkowski 2010; Tchekhovskoy et al. 2010; Daly 2011; Buliga et al. 2011; Reynolds et al. 2012; McClintock et al. 2011; Martínez-Sansigre and Rawlings 2011; Dauser et al. 2010; Nixon et al. 2011; Tchekhovskoy and McKinney 2012; Garofalo 2013; McKinney et al. 2013; Brenneman 2013; Dotti et al. 2013; Sesana et al. 2014; Fabian et al. 2014; Healy et al. 2014; Jiang et al. 2015; Nemmen and Tchekhovskoy 2014). We thus believe that it is essential to understand how the black hole spin influences the salient features of the chaotic dynamics of the particles under the influence of the gravitational field of black holes.

In the present work we would like to study the chaotic motion of test particles under the combined influence of the gravitational field of a Kerr black hole as well as that of

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