Editorial

*Journal of dbct* started in the year 2014 is the organ of D.B College, Thalayolaparambu aiming at the dissemination and popularization of existing body of knowledge in arts and science among teachers and students.

This journal is a vehicle of propagation of scientific bent of mind among the teachers and students for upholding the methods of Science in all kinds of scientific pursuits. This journal is a peer-reviewed publication that conforms to the guidelines presented by international standards, having its own ISSN

We look forward to an intellectually meaningful association in future with contributors and are extremely thankful to the persistence and hard work of our team of editors and faculty members.

Thalayolaparambu
15.03.2019

Chief Editor
Dr. Ambika A. Nair
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A BRIEF STUDY OF SELECTED THALLOPHYTES OF VAGAMON VILLAGE.

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Abstract

Thallophytes are those miniature groups of plants which are of profound significance from medicinal, nutritional, industrial and ecological points of view. The present study was conducted in Vagamon which is supposed to be one of the busiest tourist destinations of Kerala State. Thallophytes which include Algae, Fungi and Lichens were present in appreciable amounts. Among Algae, Chlorophycean (Oedogonium, Chara, Spirogyra) and Cyanophycean (Chlorogloea, Lyngbya and Oscillatoria) members were abundantly present while Bacillariophycean members (Pinnularia and Navicula) were rarely found. Among Fungi, many medicinally important species were present like Ganoderma lucidum, Lentinus sps and Dictyophora indusiatus. Of these, Ganoderma has proved anti oxidative, anticancer properties while Lentinus sps is used against Cancer, AIDS, Hypertension and Bronchial allergies. Dictyophora indusiatus has proven antioxidative and antimicrobial properties. Of the fungal genera identified, three of them are highly edible- Lentinus sps, Auricularia auricula and Dictyophora indusiatus and has been used in cuisines due to the appreciable quantities of Proteins, Lipids, Fats, Minerals and Vitamins in them. Of the fungal genera identified, only one belonged to Ascomycotina (Xylaria) while all the rest belonged to Basidiomycotina (Auricularia, Ganoderma lucidum, G.applanatum, Lentinus sps, Pycnoporous cinnabarinus, Mycena sps, Schizophyllum commune and Dictyophora indusiatus). The largest
numbers of species reported from among the thallophytes were the Lichen genera. The vast diversity of Lichens may be due to the presence of non pollution in those areas. All Lichens belonged to Ascomycota. Morphologically Cryptothecia sps and Caloplaca granularis were Crustose and all the rest were Foliose type (Collema nigrescens, Hypotrachyna sps, Parmotrema perlatum, P.sancti angelii, Heteroderma speciosa, H.albicans, H.diademata and H.podocarpa). The present study enables us to understand the significance and roles they played in human life as food items, medicines, industrially useful products and as ecological indicators.

**Keywords**: Thallophytes, Algae, Fungi, Lichens, Crustose, Fruticose.

1. **Introduction**

The Thallophytes are a group of plants that never form true roots, stems and leaves. Their undifferentiated plant body is called Thallus. They exhibit a great diversity in the organization of their plant body. Thallophytes include Algae, Fungi and Lichens.

The algae are the chlorophyll bearing plant groups. The algae live in a variety of environments like moist soil, rocks, snow, freshwater, marine water, as epiphytes, epizoic, epiphyllous and even some live as parasites. There are approximately 1800 genera with 21,000 species reported which are highly diverse with respect to their habitat, size and organization. The process of nutrition is autotrophic, in almost all groups of algae like that of green plants. Algae provide much of earth’s oxygen, they are the food base for almost all aquatic life, they are a source of crude oil and they provide direct sources of food and many of them are employed in the production of several pharmaceutical and industrial products for humans like Diatomite, Alginic acid, Algin, Agar-Agar, Abrasives, Nutraceuticals, Antibiotics, Fodder, Space travel and the like. Thus they are useful in varied fields like Agriculture, Industry, Medicine and also used as food and fodder.
The other group of plants coming under Thallophytes are the Fungi. Fungi are a large group of simple, heterotrophic thallophytes, which lack chlorophyll. The vegetative fungal body is a simple thallus. It may be unicellular or multicellular, mycelial and undifferentiated into stems, roots and leaves. Mycelial thallus is an entangled mass of branched, tubular hyphae. Familiar examples of true fungi (Eumycetes) are the Yeasts, Molds, Morels, Toadstools, Earthstars, Stinkhorns, Mushrooms, Polypores, Puff balls, Rusts and Smuts. Fungi can grow in diverse habitats. They are heterotrophic in nutrition—they may be saprophytes, parasites or symbionts. Fungi can be used as edible food, medicinal and pharmaceutical industry and many fundamental findings in genetics have been made with the study of fungi such as Neurospora, Saccharomyces and Aspergiillus.

The next most important group under Thallophytes are the lichens. Lichens are structurally organized entity consisting of the permanent association of fungi and algae. The fungal component of lichen is called Mycobiont and algal component is called Phycobiont. Lichens have worldwide distribution and consist of 500 genera and 1800 species. They generally do not grow on new smoky industrial areas, hence they are indicators of pollution [1]. They can tolerate extreme heat and can survive in snow for long years. Different types of lichens are there according to their thallus morphology. They can be Fruticose, Foliose, Crustose, Leprose, Squamulose and Gelatinous types based on their external morphology. Lichens are usually bright green to olive grey. The colouration is due to the pigmentation of algal partners [2]. Lichens are significant in that they have important nutritional, medicinal and Industrial uses for mankind. Many lichens form food of insects, insect larvae, reindeer and cattle. Evernia and Parmelia are edible lichens used by man. Some lichens are highly medicinal. Cetraria is useful in the treatment of respiratory diseases, Rocella in the treatment of angina, Usnea in the treatment of urinary complaints, Peltigera in the treatment of rabies and so on. Similarly lichens are used in brewing and distillation industries for production of alcohol, dye, litmus paper, cosmetics and perfumes and even in tanning.
The present study is to understand the different groups of Thallophytes prevalent in Vagamon area of Kerala and to understand the different morphological peculiarities, adaptive features, and uniqueness of this miniature group of plant life forms. The present study also dealt with the seasonal fluctuations and the significance of different seasons affecting their abundance and diversity.

2. Materials And Methods

The study of morphology and ecological aspects of different algae, fungi and lichens in Vagamon locality was done.

Fresh water algae were found in water streams, small puddles, and under surface of washing areas and water carrying pipes. They were first taken into collection bottles. Materials were bought into the laboratory and their morphological study was carried out. The collected materials were fixed in 4% formalin. In case of Algal specimens, separate Algal filaments by using needle and water drops were taken by a dropper in the slide and after staining, the slide is mounted and observed under the compound microscope. For unicellular algae, water drops were taken by a dropper, mounted and observed under compound microscope. The peculiar features were noted down. Identification of the material was done in consultation with reference books and photographs were taken using microphotograph or camera. The fungal and lichen specimens were collected from tree branches, barks, logs of decaying wood, in decaying litter and from soil. The fungal and lichen specimens were placed in collection bottles and fixed using 4% Formalin. Identification of the material was done in consultation with reference books and photographs were taken by using camera. Fresh mushroom specimens were taken and the gilled portion kept on a plain black paper and kept undisturbed for a few hours. In the next day spore pattern and colour of the spore print could be identified and photographs were taken.

The algae were arranged as per the classification of F.E. Fritsch [3]. The fungi were classified as per G.C. Ainsworth’s system of classification in 1973 [4]. The Lichen Genera were arranged as per their external morphology.
3. Results

The different Algal, Fungal and Lichen Genera collected from the study area were given below:

3.1 Algal Genera

3.1.1 Oedogonium

<table>
<thead>
<tr>
<th>Scientific Classification</th>
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<tbody>
<tr>
<td>Division : Chlorophyta</td>
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<tr>
<td>Class : Chlorophyceae</td>
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<tr>
<td>Order : Oedogoniales</td>
</tr>
<tr>
<td>Genus : Oedogonium</td>
</tr>
</tbody>
</table>

Figure 1: Oedogonium

*Oedogonium* is exclusively fresh water in habitat. *Oedogonium* species are unbranched filamentous green algae which is often quite long. Cells frequently are wider at one end than the other. Certain cells of the filaments except the apical and basal cell show a number of parallel transverse markings—the cap cells, at their upper ends. Cap cells are the characteristic feature of *Oedogonium*.

3.1.2 Chara

<table>
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<tr>
<td>Division : Charophyta</td>
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<tr>
<td>Order : Charales</td>
</tr>
<tr>
<td>Family : Characeae</td>
</tr>
<tr>
<td>Genus : Chara</td>
</tr>
</tbody>
</table>

Figure 2: Chara

*Chara* is a submerged freshwater form and they grow attached to the muddy or sandy bottom below the water level. *Chara* species are multicellular, macroscopic, filamentous and branched. The erect axis may be 20-30 cm high. The plants are very
rough to touch due to the deposition of calcium carbonate all over. *Chara* usually have unforked branches and a distinctive, unpleasant garlic odour when crushed.

3.1.3 *Spirogyra*

![Figure 3: Spirogyra](image)

*Spirogyra* is a genus named for the helical or spiral arrangement of the chloroplasts that is diagnostic of the genus. The filament is simple, unbranched and uniseriate composed of a single row of cylindrical cells. A single large nucleus is suspended in the center of the cell with the help of cytoplasmic strands. The chloroplasts are characteristic and possess either as smooth or a serrate margin and are arranged a characteristics parietal spiral band. Many small rounded pyrenoids are present in each chloroplast.

3.1.4 *Navicula*

![Figure 4: Navicula](image)

**Scientific Classification**
- Division: Chlorophyta
- Class: Chlorophyceae
- Order: Conjugales
- Genus: *Spirogyra*

**Scientific Classification**
- Class: Bacillariophyceae
- Order: Naviculales
- Family: Naviculaceae
- Genus: *Navicula*
Navicula is a genus of boat-shaped algae—primarily aquatic, eukaryotic, photosynthetic organisms, ranging in size from a single cell. Navicula is a diatom. Valves of Navicula tend to be elliptical to broadly lanceolate in outline. The central sternum is thickened and that thickening may be somewhat asymmetric. The raphe is straight and filiform or lateral in some species.

### 3.1.5 Pinnularia

![Pinnularia Image]

**Scientific Classification**
- **Division**: Bacillariophyta
- **Class**: Bacillariophyceae
- **Order**: Pinnales
- **Family**: Pinnulariaceae
- **Genus**: Pinnularia

*Figure 5: Pinnularia*

Pinnularia is a predominantly fresh-water alga, usually found in ponds and moist soil. Pinnularia is unicellular. The siliceous cell wall or frustules consists of two halves or valves one fitting in to the other like a box and it is overlapping lid. The outer valve is called epitheca and the inner hypotheca. Along the centre of the valve is seen a long line, the raphae. The pyrenoids may be present in each chloroplast.

### 3.1.6 Chlorogloeaea

![Chlorogloeaea Image]

**Scientific Classification**
- **Division**: Cyanophyta
- **Class**: Cyanophyceae
- **Order**: Chroococcales
- **Family**: Chroococcaceae
- **Genus**: Chlorogloeaea

*Figure 6: Chlorogloeaea*
Colonies mucilaginous, multicellular, more or less spherical, hemispherical, flattened attached to substrates (plants, stones), or free living, sometimes forming a large gelatinous mass. Cells irregularly arranged, spherical or oval.

3.1.7 Lyngbya

**Scientific Classification**
- Division: Cyanophyta
- Class: Cyanophyceae
- Order: Nostocales
- Family: Oscillatoriaceae
- Genus: Lyngbya

*Figure 7: Lyngbya*

*Lyngbya* is a genus of Cyanobacteria and forms long unbranching filaments inside a rigid mucilaginous sheath. Filaments free or entangled, forming expanded thallus, with thin or very thick sheath, trichomes single, filaments straight, sometimes spirally coiled with a large number of Hormogones.

3.1.8 Oscillatoria

**Scientific Classification**
- Division: Cyanophyta
- Class: Cyanophyceae
- Order: Nostocales
- Family: Oscillatoriaceae
- Genus: Oscillatoria

*Figure 8: Oscillatoria*

*Oscillatoria* is a genus of filamentous Cyanobacterium which is named for the oscillation in its movement. Filaments in the colonies can slide back and forth against each other until the whole mass is reoriented to the light source. Filaments of Oscillatoria are entangled in masses which float on water. Each filament is slender, unbranched and cylindrical, consisting of a row of short cells.
3.2 Fungal Genera

3.2.1 Xylaria polymorpha

*Xylaria* is a genus of Ascomycetous fungi commonly found growing on dead wood. The genus *Xylaria* consist of funky club like decomposer of wood or plant debris that become black and hard by maturity, reminiscent of coal or charcoal. *Xylaria polymorpha*, commonly called Deadman’s Finger, when young, it is pale bluish or purplish dust of conidia with a whitish tip but eventually black overall and by summer, the mushroom begins to blacken and by late summer it is entirely black and dried out. Fruiting body 3-10 cm tall up to 2.5 cm wide, shaped more or less like a club or a finger, but occasionally flattened. They are Saprobic (on decaying hard wood stumps and logs) in nutrition.

3.2.2 Auricularia auricula

*Figure 9: Xylaria*

<table>
<thead>
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<tbody>
<tr>
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*Figure 10: Auricularia*

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<tr>
<td>Family:Auriculariaceae</td>
</tr>
<tr>
<td>Genus:Auricularia</td>
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</tbody>
</table>
**Auricularia** is a genus of jelly fungi in the family Auriculariaceae. Fruiting body either resupinate or pileate, wavy and irregular, typically ear shaped, 2-15 cm gathered together and attached at a central or lateral position, fertile surface gelatinous, tan to brown sterile surface (usually the upper one) silky to downy, veined, irregular, brown flesh, thin gelatinous rubbery in nature. They are Saprobic on decaying wood and logs in nutrition and the Spore print is white.

### 3.2.3 Ganoderma

<table>
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</tr>
<tr>
<td>Family:Ganodermataceae</td>
</tr>
<tr>
<td>Genus:Ganoderma</td>
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</table>

**Figure 11: G. lucidum & G. applanatum**

*G. lucidum* is an annual polyporus, shelf fungus which generally causes uniform or mottled white rot of dead and living hardwoods and conifers. Fruiting body annual to perennial, sessile, attached with a broad lateral base, sometimes variously lobed to appear like a flower, corky in consistency, woody when dry. Pileus surface is pastel yellow towards margin. Pore surface pale grey or cream, pores almost visible to the naked eye. The spore print of *G. lucidum* is brown.

*Ganoderma applanatum* (Artist’s bracket) is a bracket fungus with a cosmopolitan distribution. The fruiting bodies are up to 30-40 centimeters across, hard woody textured, and inedible, they are white at first but soon turn dark red brown. They are Saprobic on decaying logs and stumps or from the wounds of injured living trees producing white to straw coloured rot of sapwood and heartwood.
3.2.4 *Lentinus* *sps*

**Scientific Classification**
- Kingdom: Fungi
- Division: Basidiomycota
- Class: Agaricomycetes
- Order: Polyporales
- Family: Polyporaceae
- Genus: *Lentinus*

![Figure 12: Lentinus](image)

Most of the *Lentinus* species are edible and used by the people because of the significant amounts of proteins, lipids, fats, minerals and vitamins in them from dietary point of view.

Fruiting body of this fungus is small to large, pileus initially convex with a depressed centre, soon become infundibuliform, becoming dull white and turns pale yellowish white with age. Stipe is usually tapering towards the base.

3.2.5 *Pycnoporus cinnabarinus*

**Scientific Classification**
- Kingdom: Fungi
- Division: Basidiomycota
- Class: Agaricomycetes
- Order: Polyporales
- Family: Polyporaceae
- Genus: *Pycnoporus*

![Figure 13: Pycnoporus cinnabarinus](image)

*Pycnoporus cinnabarinus* is a pretty unmistakable mushroom when fresh, since bright orange colors are fairly rare among the polyporus. Body is semicircular to kidney-shaped planoconvex, 2-13 cm across, up to 2 cm thick, bright reddish orange to dull orangish with age. They are saprobic on the dead wood of hardwoods and rarely on the wood of conifers, causing a white rot.

3.2.6 *Mycena* *sps.*


**Mycena** is an inedible fungus generally has a brown conical cap. Some species are edible, while others contain toxins, but the edibility of most is not known, as they are too small to be useful in cooking. Most are grey or brown and have a translucent and striate cap, which rarely has an incurved margin.

### 3.2.7 *Schizophyllum commune*

*Schizophyllum commune* is a common species of fungus in the genus *Schizophyllum*. Fruiting body 1-5 cm wide, fan shaped when attached to the side of the log, irregular to shell shaped when attached above or below, upper surface covered with small hairs, dry white to greyish or tan, under surface composed of gill like folds that are split down the middle. Instead of gills, they are merely folds in the under surface and they are very distinctively “split” or “doubled. They are saprobic on dead wood or occasionally parasitic on living wood. The Spore print is white.

### 3.2.8 *Dictyophora indusiatus*


Dictyophora indusiatus, commonly called the bamboo fungus, long net stinkhorn or veiled lady is a fungus belonging to the family Phallaceae. It usually grows in rich soil and well rotten woody material. The fruiting body of the fungus is characterized by a conical to bell shaped cap on a stalk and a delicate lacy skirt or indusium that hangs from beneath the cap and reaches nearly to the ground. Mature fruiting bodies are 25 cm tall with a conical to bell shaped cap. The cap is covered with a greenish brown spore containing slime which attracts flies and other insects that eat the spores and disperse them.

3.3 Lichen Genera

3.3.1 Cryptothecia sps
Cryptothecia sps is a genus of lichenized fungi in the family Arthoniaceae. The body of the lichen forms continuous circular crust-like patches on dead wood, readily recognized by the prominent red pigment. Cryptothecia lichen is a crustose lichen because it grows in the form of a surface crust.

3.3.2 Collema nigrescens

![Figure 18: Collema nigrescens](image)

It is jelly lichen found growing on the bark of trees. It is commonly called ‘button jelly’ lichen or bat’s wing lichen. It is blackish green when wet, and dark brownish green to dark olive when dry. The photosynthetic partner is usually cyanobacteria that are spread throughout the thallus. Although foliose in form, like all jelly lichens, the thallus is not differentiated. It has dark purple brown apothecia all over the body.

3.3.3 Hypotrachyna sps

![Figure 19: Hypotrachyna sps](image)
Hypotrachyna is a genus of lichenized fungi within the family Parmeliaceae. 

Hypotrachyna is a segregate of the collective genus Parmelia characterized by narrow apically truncate lobes, a black lower surface and dichotomously branched rhizines.

3.3.4 Parmotrema

<table>
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<td>Parmeliaceae</td>
</tr>
<tr>
<td>Genus   :</td>
<td>Parmotrema</td>
</tr>
</tbody>
</table>

Figure 20: P.perlatum & P.sancti angeli

This is leafy or foliose lichen with a grey-green thallus that is loosely attached to branches or rocks. Upper surface is whitish to pale greyish smooth. Lower surface black and shiny bearing numerous simple rhizines. The surface of the thallus is smooth with black cilia. Apothecia are very rare.

3.3.5 Heterodermia:

It is a cosmopolitan genus of more than 100 species and they grow on rocks, trees, shrubs, decorticated wood and very rarely on soil.
a. **Heteroderma speciosa**

Thallus usually foliar, occasionally subfructicose, continuous and lobate, irregular or forming rosettes, 2-10 cm wide, occasionally combines to form extensive mats. Upper surface is whitish grey to yellowish grey, plane to convex or concave towards the periphery. Photobiont forming a continuous layer. Rhizines white to black, simple to densely branched.

b. **H. albicans**

Thallus foliar, irregularly spreading, comparatively small to 4 cm wide, lobes 3 mm long, usually richly and dichotomously branched. They are usually eciliate. Upper surface is whitish grey, darker at the apices and lower surface whitish to pale brown, rarely dark grey. The most characteristic feature is the presence of lobes with a corticated lower surface. These species occur on barks and more rarely on rocks.

c. **H. diademata**

Thallus is foliar, orbicular to irregularly spreading, adnate to loosely adnate. Lobes 0-5 cm to 2-5 mm wide, plane to weakly convex, dichotomously to irregularly branched. Upper surface is greenish white, whitish to grey, rarely with marginal lobules. Lower surface is whitish to pale brown to dirty brown towards the centre. Rhizines are sparse, marginal, darkening at the apices, and irregularly branched. This species is a common inhabitant on barks and rocks of trees.
**H. podocarpa**

Thallus foliose or subfruticose, small rosettes or irregularly spreading, adnate, lobes 0-5-3 mm wide, sublinear, convex, irregularly branched, ciliate with whitish simple cilia 1-2 mm long scattered along the margins. Upper surface is greyish white or grey. Lower surface is whitish. Rhizines are simple or irregularly branched, whitish 1-2 mm long. Apothecia are very commonly seen.
3.3.6 *Caloplaca granularis*

<table>
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<td>Family—Teloschistaceae</td>
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<td>Genus—Caloplaca</td>
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*Figure 22: Caloplaca granularis*

This is a crustose lichen, composed of a number of distinct species. Members of the genus are commonly called ‘firedot lichens’, ‘jewel lichens’, ‘gold lichens’ or ‘orange lichens’. The body of the lichen is an oily dark brown to grey colour, which means, it can be overlooked against the rock in which it grows. The fruiting bodies are slightly more obvious when they appear being orangey-brown in colour, sometimes bright red though very small.

4. **Discussion**

The present study was conducted in the ponds, water channels, soil surfaces, tree barks and the collected specimens were classified into Algae, Fungi and Lichens. Eight algae, eight fungi, and six lichen genera were collected and studied. The study revealed 8 algal members which were predominantly found in canals, water channels of Vagamon area. Of these, three members belonged to Chlorophyceae, 2 diatom species belonged to Bacillariophyceae and 3 members belonged to Cyanophyceae. The algae belonging to Chlorophyceae were *Oedogonium*, *Spirogyra* and *Chara* and algae belonging to Cyanophyceae were *Chlorogloea*, *Lyngbya* and *Oscillatoria*. The members belonging to the family Bacillariophyceae were *Pinnularia* and *Navicula*. This season has been considered to be suitable, since the water bodies were filled with sufficient water and surrounding areas remaining damp which enriched the growth of several algal members.
The season chosen for study mainly favoured the growth of Chlorophycean and Cyanophycean members. Chlorophyceae showed dominance of algal members in the following order—Spirogyra and Oedogonium, while Chara was obtained from a single area only. Among the Cyanophycean members, Oscillatoria was found to be predominantly present in the water bodies and Chlorogloea and Lyngbya were comparatively less. It is a common observation that the water bodies containing abundance of Cyanophycean members produces a bad odour [5].

Colonial form of algae was represented by Chlorogloea. Filamentous (unbranched) forms of algae observed in this study were Lyngbya, Oscillatoria, Spirogyra and Oedogonium. Filamentous branched forms were completely absent. Most diatoms are unicellular, although they can exist as colonies in the shape of filaments or ribbons or stars. Diatoms like Pinnularia and Navicula are photosynthetic organisms, ranging in size from a single cell. They play an important role in global ecology, producing about a quarter of all the oxygen within earth’s biosphere and serving as keystone species in the food chain on many environments, where they provide a staple food for the diets of many aquatic species [6].

It was also observed that the water bodies which showed the abundance of Oscillatoria were polluted by dead and decaying organic matter. Thus these algae can be considered as indicators of pollution [7]. Generally, running water streams showed more growth of filamentous forms and stagnant water shows predominance of bacillariophycean and cyanophycean members.

The study also revealed 8 fungal members which are predominately found in soil and tree barks of the area under study, of which only one member belonged to Ascomycotina and the rest belonged to Basidiomycotina. The member under Ascomycotina was Xylaria and the rest seven members belonged to different orders of Basidiomycotina. They are Auricularia auricula, Ganoderma lucidum, G. applanatum, Lentinus sps, Pycnoporus, Mycena viscosa, Schizophyllum commune and Dictyophora indusiatus. The genera fall under Ascomycotina comes under the order
Xylariales. The rest 7 genera fall under the orders Auriculariales, (Auricularia), Polyporales (Ganoderma, Lentinus and Pycnoporus), Agaricales (Mycena and Schizophyllum) and Phallales (Dictyophora indusiatus).

Xylariales is a large order of unitunicate, Perithecial ascomycetes. Production of well-developed stromata, perithecial ascomata with thick walls, eight spored unitunicate asci with an apical apparatus, ascospores usually pigmented and possess germ spores or germ slits and may be transversely septate and a mucilaginous sheath are characters unique to this order. The nutrition is strictly saprotrophic. Order xylariales has only one representative—Xylaria. Auriculariales or jelly fungi possess gelatinous basidiocarps. They produce spores on septate basidia. Auriculariales are believed to be saprotrophic in nutrition.

Polyporales, the next highest order, has 3 representatives belonging to 2 families—Ganodermataceae and Polyporaceae. Ganoderma may be saprotrophic or even parasitic while Lentinus and Pycnoporus are strictly saprobic. Ganoderma is often perennial [8]. Since this has extensive uses in traditional medicines they are an important genus economically. Ganoderma lucidum is well known to promote health and longevity, lowers the risk of cancer and heart disease, and boosts the immune system [9].

Ganoderma is inedible while many species of Lentinus are edible and nutritive and has been used because of the significant quantities of proteins, carbohydrates, fats, minerals and vitamins present in them [10]. Many species are used medicinally for several diseases including AIDS, cancer, hypertension, bronchial allergies and is a source of several proven pharmacological projects [11].

Like Ganoderma, Pycnoporus is also inedible, but used industrially as a source of powerful lignolytic enzymes that degrade paper and plastics. A Distinctive feature is its colour ranging from orange to bright red attributed to Cinnabar, Cinnabaric acid like compounds present in them [12].
The next order Basidiomycota which has representatives is Agaricales. They produce the largest fruiting bodies and function as decayers, pathogens, parasites and mutualistic symbionts of both plants and animals. The genera under Order Agaricales belongs to 2 different families—Mycenaceae (*Mycena viscosa*), Schizophyllaceae (*Schizophyllum commune*). Physical features used for the identification of Mycenoid mushrooms include same colour of the cap, stem and gills, and the manner in which the gills are attached to the stem, and the same colour of the edges of the gill and the stems. Mycenoid mushrooms when squeezed produces distinctive odours like that of radish, iodine or mealy. Further Mycenoids generally possess conical shaped cap and a thin stem that is not tough or wiry and is usually sticky in nature. Schizophyllaceae includes members that look very much like an oyster mushroom, but often it assumes one-fifth the size of oysters. The gills turn out to be merely folds on the under surface, they are distinctively split or doubled.

Of the different families in the order Agaricales, Mycenaceae is saprobic in nutrition while Schizophyllaceae is found to be parasitic in nature.

The spore colour of mushrooms presents another criterion for the identification of mushrooms. Mushroom spores are of several colours e.g. white, green, orange, brown cream etc which are the generic features. Spores are produced on basidia formed in gills of the basidiocarp. The spore print is a simple method used for the identification of gilled fungi [13]. Among the mushrooms studied, *Auricularia, Lentinus* and *Schizophyllum* produced whitish spore print, *Ganoderma lucidum* produced brown spore print, *Dictophora indusiatus* produced black-brown spore print and *Mycena* produced creamish white spore print and can be used as a tool for mushroom identification [14].

The next highest order is Phallales represented by a single member—*Dictyophora indusiatus*. Phallales comprise a group of ill-smelling brown capped fungi, the foul smell often attracts insects that carry the spores on their feet and thus
reproduction is carried out. Most genera under the order Phallales are inedible, but *Dictyophora* in dried form is marketed in China and Hongkong.

The Lichen genera includes 6 representatives- *Cryptothecia* sps, *Collema nigrescens*, *Hypotrachyna*, two species of *Parmotrema*, four species of *Heterodermia* and *Caloplaca* granularis all belonging to the division Ascomycota, under the class Arthoniomycetes and Lecanaromycetes. Class Arthoniomycetes has one genera *Cryptothecia* in the order Arthoniales. Arthoniomycetes have apothecia cup shaped or saucer shaped in which the hymenium is exposed at maturity. Apothecia are bitunicate.

Class Lecanaromycetes is classified into Teloschistales(*Caloplaca, Heterodermia*), and Lecanorales (*Collema, Hypotrachyna* and *Parmotrema*). In Lecanoromycetes, the asci release spores by rostrate dehiscence.

Of the several lichens collected, *Cryptothecia* and *Caloplaca* are Crustose and the rest are Foliose type, but can be morphologically distinguished. *Cryptothecia* often forms circular crust like patches with a reddish pigmentation while *Caloplaca* is an oily dark brown or grey colour.

*Hypotrachyna* resembles an aggregate of *Parmelia* characterized by narrow apically truncate lobes, a black lower surface and dichotomously branched rhizines. *Heterodermia* as the name suggests, refers to the contrast between the upper and lower surface of the lichen. The colour of the upper surface is similar to that of *Parmelia*, but is glossy with repeated branching. The lower surface may be white to grey black. The lower surface of this lichen differs from the upper surface in that it is grooved and has powdery or cob web like centre. Rhizines may assume white to black colours and densely branched [15].
Collema often can be distinguished by its resemblance to bat’s wing or buttons. It is blackish green when wet, and dark brownish green to dark olive when dry. Parmotrema on the other hand is easily distinguished by its grey-green thallus that is loosely attached to the substratum.

The diversity in thallophytes is mainly due to the abundance of trees and other flora and cool and shady atmosphere prevalent in the study area. Since some areas are marshy, it provides water necessary for the growth of algae. Due to the rich vegetation, without much cultivation, the dead and decaying logs of wood and other decaying vegetable matter nourishes the growth of mushrooms. Climatic conditions play an important role in the ecology of lichens. Availability of water, sunlight, moderate to cold climate, unpolluted atmosphere, wind condition and the type of substratum are the major factors responsible for the optimal growth of Lichens present in Vagamon area.

5. Conclusion

From the present study, it has become evident that the area selected for the study abodes a good number of Thallophytes in its rich habitats which are getting depleted due to various factors. Among algae, Chlorophycean and Cyanophycean members were equally dominant. Among fungi, Basidiomycetes showed prominence. Majority of Lichens belonged to foliose group. All genera of lichens were under Ascomycota. However, the number of species would be definitely more, since only scattered study was made from this region. Since the area is without much urbanization the number of lichen genera collected were large. The study will help to understand the diversity of Thallophytes better and give us an insight into the status of biodiversity prevalent in the area of study.
References

PHANTOM VOXELISATION AND SIMULATION IN RADIOTHERAPY USING GAMOS

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Abstract

GAMOS which is an imaging technique to diagnose and to conform the incident beams later came to the field of radiation therapy. Using GAMOS you can acquire the size, shape and depth of a cancerous cell. And using that details you could confine the incident beam to the cancerous cell only. Reproduced the whole structure of cancerous cell and the arrangements for the radiation using C++ program in the GAMOS. The specifications for the cancerous cell and beam producer were given as geometry file. We reproduced the whole radiotherapy set-up consisting of a medical linear accelerator, operating at photon energy of 6 MeV. Linac geometry is defined first with target, primary collimator, flattening filter, monitor and jaws xy as its components. Phase space files are generated after each component of the linac. When reading phase space files, a proper management of the original number of events (the number of events in the job that created the phase space) is implemented. The phase space file which is after the jaws is taken into account as primary generator. Scoring on phantom is done. Created the phase space files at 450 and 900 by varying the field size X and Y of the jaws by altering the geometry. By varying the initial displacement, number of voxels, material of phantom and phantom dimensions, changes are analysed.

Keywords: Phantom voxelisation, LINAC, GAMOS, Phase space,
1. Introduction

Radiotherapy uses high-energy rays to treat diseases such as cancer. It can be given both externally and internally. External radiotherapy aims high-energy X-rays and similar rays (such as electrons) at the affected area using a large machine. Internal radiotherapy involves having radioactive material placed inside the body. Radiotherapy works by destroying cancer cells in the area that’s being treated. Normal cells can also be damaged by radiotherapy, which may cause side effects. Cancer cells cannot repair themselves after radiotherapy, but normal cells usually can.

Intensity of incident beams is different in different directions. Since the tumour is not uniform, we have to make the beam confined to the shape of the tumour cell. Inner cells which is of higher density is to be treated more than that at the borders which is of lesser thickness. Due to these all ununiformed structure the exposure of the tumour cells may be so difficult to manage. Any displacement of the target region during the course of irradiation leads to larger inhomogeneity of dose deposition, so that undesirable hot or cold dose spots can occur in tumour and in healthy tissue.

With the development of highly conformal treatment techniques, such as Intensity Modulated Radiation Therapy (IMRT) as well as 3D Conformal Radiotherapy (3D-CRT), the quest for advanced imaging modalities allowing a precise localization of target and organs at risk is increasing. As well known, an accurate patient positioning is crucial to achieve the desired results in radiotherapy (RT) treatments. You can have IMRT on a standard radiotherapy machine, called a linear accelerator (LINAC). The LINAC has a device called a multi-leaf collimator. The multi-leaf collimator is made up of thin leaves of lead which can move independently. They can form shapes that fit precisely around the treatment area. The lead leaves can move while the machine moves around the patient. This shapes the beam of radiation to the tumour as the machine rotates. This means that the tumour
receives a very high dose and normal healthy cells nearby receive a much lower dose. Each radiotherapy beam is divided into many small beamlets that can vary their intensity. This allows different doses of radiation to be given across the tumour. IMRT can also create a U shaped (concave) area at the edge of the radiotherapy field. This avoids high radiation doses to structures that would otherwise be damaged by the radiotherapy. So IMRT can reduce the risk of long term side effects. It is very helpful in areas such as the head and neck, for example to avoid the spinal cord or salivary glands.

VMAT is a new type of IMRT technique. The radiotherapy machine rotates around the patient during treatment. The machine continuously reshapes and changes the intensity of the radiation beam as it moves around the body. Giving the radiotherapy in this way makes it very accurate, shortens the treatment time, and uses a lower overall dose of radiation.

Monte Carlo (MC) simulation method is most used accurate method in Radiotherapy dose calculation. This method uses fundamental physics principles to analyse the propagation of particles. In order to achieve a greater accuracy we have to include a large number of particle histories and that makes the consumption of long computation time.

Simulation of treatment is necessary before beginning the radiotherapy. GEANT4 is a widely used Monte Carlo (MC) system implemented in the C++ programming language for simulating the passage of particles through matter. As a general purpose system, it provides a set of generic tools to model experimental set-ups and to transport particles through them. GEANT4 is extremely versatile, but such flexibility comes with the price of requiring some expertise in C++ and object oriented programming.

Several software frameworks have been developed to facilitate the use of GEANT4 in a specific field by providing pre-compiled applications whose
functionality are accessible through a scripting language, which avoids the need to write C++ code. Among them, we can cite some in the High Energy Physics field, like OSCAR, ATHENA, or GIGA some in the Space Physics field, like MULASSIS and GRAS or some in the Medical Physics field, like GATE, or PTSIM and TOPAS.

GAMOS is a framework to do GEANT4 simulations in different physics fields including Medical Physics. The first objective of GAMOS is to provide an easy, script-based language, architecture that substitute the C++ programming usually required for Geant4 simulations. This scripting language covers almost all the needs in the medical physics domain, so that a normal user would not require to add any extra C++ code to run its application, but only select in the input script file the options GAMOS provides. Nevertheless, in the field of nuclear medicine the Monte Carlo codes are mainly used today for research purposes. Researchers often want to have a deep understanding of the details of a simulation or want to try new things. This is why the authors of GAMOS do not assume that every need of a nuclear medicine simulation user can be covered, as an expert user will likely require sooner or later some peculiar functionality that is not foreseen in the framework. To satisfy this, GAMOS includes as a main objective from its first inception the provision of a flexible framework. We consider that the best way to achieve this is the to base GAMOS on the plug-in technology, so that a user can write a new component, transform it into a new plug-in in a very easy way and then select this new component with a user command in the initial script, mixing it seamlessly with the other GAMOS or own components. Through a modular design, together with a clear documentation and step-by-step examples of each plug-in type (geometry, physics, generator distribution, user actions, etc.) we have tried to make easy the writing of this extra functionality with a minimal knowledge of C++ or Geant4 details.
2. Materials and Methods

In medical field, GAMOS covers all the basic needs for the simulation techniques. The GAMOS is comprised of two layers. Core layer is for medical simulations and the top layer is mainly for the extra functionalities like PET and Radiotherapy. But a general user does not need to choose between these two layers. He/she can use GAMOS according to his/her needs. That is, they can write their own text scripts using different commands. Core components of GAMOS are geometry, physics, primary particles, user actions, signal processing, scoring, histogramming.

GAMOS provides the possibility of building the geometry through a text file. The format is based on simple tags whose meaning is self-explanatory. The user can define the data from Geant4 database. This includes isotopes, elements, materials, solid types, placement of solids and parameters. The Geant4 material database includes all elements from Z=1 to Z=107, all one-element materials from Z=1 to Z=98 plus almost 200 materials common to the nuclear medicine domain. PET and Radiotherapy materials are also included in GAMOS for user convenience. The Geant4 solid type includes shapes such as twisted solids, tessellated solids and boolean operations as well. Also all types of Geant4 placements are supported: simple, division, replica, assemblies and a few parameterisations (linear, square and circular), including the use of reflections. Rotations matrices to be used in placements can be defined in three different ways: by giving the angle of rotation around the X, Y and Z axis, by giving the theta and phi angle of each of the three axis after rotation or by giving the nine elements of the rotation matrix. Colour and transparency can be selected for each volume and the visualisation of a volume can be switched off. The user can also define the parameter as number or string using the text script.
An example for a simple geometry

// Define parameters
:P POSZ 5.
:P Hmass 1.00794
:P Omass 15.999

// Define elements and materials
:ELEM Hydrogen H 1. $Hmass
:ELEM Oxygen O 8 $Omass
:P WaterMass 2.*$Hmass+$Omass
:MIXT Water 1.*g/cm3 2
Hydrogen 2.*$Hmass/$WaterMass
Oxygen $Omass/$WaterMass

// Define and place volumes
:ROTM RM0 0. 0. 0. // unit rot. matrix
:VOLU world BOX 100. 100. 100. G4_AIR
:VOLU "my tube" TUBE 0. 10. 20. 0. Water
:PLACE "my tube" 1 world R00 0. 0.
SPOSZ+10*cm

GAMOS provides a physics list, selectable by a user command that includes all the electromagnetic processes. The use of different models (standard, low energy or Penelope) can be selected for each particle type through a user command. Another physics list provides the needed hadronic processes for simulation of a Hadrontherapy setup. The user may also describe the physics list in the standard Geant4 way, through
a C++ class inheriting of G4V User Physics List. Adding a line before compiling this class will transform it into a plug-in, so that this physics list can be selected through a user command in the input script file.

The GAMOS primary generator supports the creation of several numbers of particles or decaying isotopes in the same event. For each particle or isotope the user may select a different distribution of time, energy, position or direction, or use the default one provided. The most common distributions used in nuclear medicine are available, and the user may easily create a new one with a few lines of code following the examples provided, and after transforming it into a plug-in use it the same way as any GAMOS distribution. The primary generator can be described in the standard Geant4 way, through a C++ class inheriting of G4V User Primary Generator Action. Adding a line before compiling this class will transform it into a plug-in, so that this primary generator can be selected through a user command in the input script file.

2.1 Geometry

We developed a Monte Carlo simulation using GAMOS, a simulation toolkit provided by Geant4, originally developed for high energy physics and currently applied also in the field of medical radiation physics. We reproduced the whole radiotherapy set-up consisting of a medical linear accelerator, operating at photon energy of 6 MeV. Linac geometry is defined first with target, primary collimator, flattening filter, monitor and jaws xy as its components.
2.2 Writing a Phase Space File

Phase space files are generated after each component of the linac. The data generated will correspond to the position at which the phase space file is generated. The phase space file is written according to the International Atomic Energy Agency (IAEA) format, which was created with the aim of becoming a standard in MC simulations. Another set of user commands are available to read back the IAEA phase space files and use them as the source of primary particles.
The writing of phase space can be done automatically in GAMOS by selecting the user action

\[ /\text{gamos/userAction RTPhaseSpaceUA} \]

When a particle crosses any of the planes defined by the parameter

\[ /\text{gamos/setParameter RTPhaseSpaceUA:ZStops Z_1 Z_2 Z_3 ...} \]

its information is stored in a file whose name is given by the parameter

\[ /\text{gamos/setParameter RTPhaseSpaceUA:FileName MY_FILENAME} \]

plus a suffix .IAEAphsp. The default value of this parameter is test. If there are several Z planes, the Z value of each plane will be added to the name, with a “_” in front, so that each phase space will go to a different file. If there is only one Z defined, the Z value may be written in the file name if the following parameter is set

\[ /\text{gamos/setParameter RTPhaseSpaceUA:ZStopInFileName TRUE} \]

If the plane crossed is the one with maximum Z, the particle may be stopped, if the following parameter is set

\[ /\text{gamos/setParameter RTPhaseSpaceUA:KillAfterLastZStop TRUE} \]

The format of the phase space files is the one defined by the IAEA, generated using the official C files from IAEA. First there is a header file, that will have the same name, but with the suffix ‘.IAEAhed.’ The Z value may optionally be stored if the following parameter is set

\[ /\text{gamos/setParameter RTPhaseSpaceUA:StoreZ TRUE} \]

2.3 Reading a Phase Space File

When reading phase space files, a proper management of the original number of events (the number of events in the job that created the phase space) is implemented. The phase space file which is after the jaws is taken into account as primary generator.
2.4 Creating a Simple Phantom

The user may build simple regular phantom geometries without the need of writing a DICOM file by using

/gamos/geometry GmSimplePhantomGeometry

The number of voxels is defined with the parameter

/gamos/setParam GmSimplePhantomGeometry:NVoxels NVOXEL_X NVOXEL_Y NVOXEL_Z

The minimum and maximum extensions in the three axes are defined with the parameter

/gamos/setParam GmSimplePhantomGeometry:PhantomDims MIN_X MAX_X MIN_Y MAX_Y MIN_Z MAX_Z

Then you can divide the phantom in different regions along the Z axis with the parameter

/gamos/setParam GmSimplePhantomGeometry:MaterialZVoxels NZ_1 NZ_2 ...

where NZ_i is the number of voxels along Z of the i region.

Then you can assign the material and material densities of each Z region with the parameters

/gamos/setParam GmSimplePhantomGeometry:MaterialNames MATERIAL_1 MATERIAL_2 ...

/gamos/setParam GmSimplePhantomGeometry:MaterialDensities DENSITY_1 DENSITY_2 ...

2.5 Score Dose in Phantom

Scoring in a phantom shows how much dose is to be deposited on the affected organ. Scoring is different in different regions of the phantom depending on the intensity of tumour. Based on the scoring we could generate a depth dose curve. The scoring of the dose in the phantom volumes can be done using the scorer GmG4PS Dose Deposit and selecting as detector the voxels that are named as patient.

/gamos/scoring/create MF Detector Dose Det patient
2.6 **Scoring on the Generated Phantom by the Phase Space Produced**
Scoring is done by the specific input programs and result is noted.

2.7 **Generation of Test Phase Space Files at 450 and 900**
We created the phase space files at 450 and 900 by varying the field size X and Y of the jaws by altering the geometry. By varying the initial displacement, number of voxels, material of phantom and phantom dimensions, changes is analysed.

3. **Results and discussions**

**Test 450**
Here the phantom created is of water. The number of Z voxels is 100 and the phantom dimension is 
-100 100 -100 100 -100 100. The initial displacement of the phantom is 500. The depth dose curve obtained for these peculiars is given below.

This is how scoring of a dose is pictorially represented. The dose profile along the z axis, ie, the propagation axis, is symmetric about the initial displacement given in the input since the phantom dimension is given symmetric to zero (-100,100). If the phantom dimension started from zero, then the dose profile

**Fig 3.1 Dose curve**
starts from the initial displacement. The test phase space file is at 450. The radiation falling on the phantom is not uniform. It becomes maximum at 470 here and further decreases while going into the phantom.

Jaw size : 1*cm 1*cm    // FIELD_X_RIGHT FIELD_X_LEFT
1*cm 1*cm    // FIELD_Y_RIGHT FIELD_Y_LEFT

Test 450

Jaw size : 10*cm 10*cm    // FIELD_X_RIGHT FIELD_X_LEFT
10*cm 10*cm    // FIELD_Y_RIGHT FIELD_Y_LEFT
Test 900

Jaw size : 1*cm 1*cm // FIELD_X_RIGHT FIELD_X_LEFT
1*cm 1*cm // FIELD_Y_RIGHT FIELD_Y_LEFT
4. Conclusion

We developed a Monte Carlo simulation in GAMOS, in order to reproduce the operation of a medical linac coupled with a medical imaging technique, and we implemented a phantom which can be replaced by the cancerous tissue in practice, in order to quantify doses to the main organs at risk. Our simulations confirmed that the scattered radiation during therapy (MV range) is larger than that diffused by CBCT by one to two orders of magnitude. With these results it should be assumed that the daily use of CBCT to verify the correct positioning of the patient during radiotherapy sessions, on one hand allows to optimize the dose delivery and on the other one it does not cause excessive dose absorption to the organs at risk.
Using GAMOS we voxelised and viewed the geometry which is evolved during the phantom voxelisation through a viewer. The VRML file helped to visualise the position, shape and size of the components of the linac. By the use of PhysicsList obtained from the database of GAMOS we generated the phase space file which led to plotting of dose profile. Dose profile gives you the variation of dose to the depth of the infected tissue.

Analysing the dose profile, we got the idea that how the parameter changes affect the dose intensity distribution. By defining jaws’ field size as 1x1 or 10x10 different dose profiles were obtained accordingly. Using a 1x1 field size, the generated dose profile is different than that of 10x10 since we could confine the incident beam more precisely. For 10x10 the dose profiles are different since the dimension is greater.

By changing the number of voxels and initial displacement the dose profile is found to change. By increasing the number of voxels, the decrease in dose distribution is more notable. While for a lesser number of voxels, the change is not abrupt. That is, the dose absorption rate in the inner region is not much different from the surface.

The change in the phantom dimensions also cause a change in the dose profile. If the phantom dimension is changed from lower values to higher ones, the dose intensity changes abruptly. While in the former case, the change in the dose intensity is gradual.

The different combinations of phantom such as water alone, lung and water etc. results in different kinds of depth- dose profiles. The dose profile is varying according to the character of the material used in the phantom. The dose distribution curve of the combination water- lung- water is not as smooth as water alone since lung is denser than water. That is there is a difference in the rate of absorption of the radiation for each material. Lung absorbs radiation differently than water.
Therefore GAMOS gives an idea of how radiation affects different materials. Using GAMOS database we can analyse the dose profiles of different tissues and organs. This helps to improve the radiation therapy and to calculate the needed dosage of radiation for a particular region/tissue/organ. And also helps to save the normal tissues from the exposure of radiation during the therapy.

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CORPORATE GOVERNANCE PRACTICES OF THE FMCG SECTOR IN INDIA:
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Abstract
The integration of countries into the world market in the liberalized economic environment and the continuous occurrence of scams and frauds in the corporate sector increased the relevance of corporate governance. The study aims to find out the corporate governance practices of FMCG sector and also analyse its influence in the overall financial performance of an organization. FMCG sector is the fourth largest sector in the Indian economy and therefore it has a vital role in the overall economic growth of our nation. Corporate Governance Disclosure Index (CGDI) is used for identifying the corporate governance compliance status and Karl Pearson’s Correlation Coefficient is used to study the extent of correlation between corporate governance practices and financial performance of the selected organizations. The result shows that there exists substantial degree of positive correlation between corporate governance and financial performance of all the selected companies in the FMCG sector. Therefore it is concluded that the corporate governance compliance status greatly influence the overall financial performance of the organizations in the FMCG sector.

Keywords: Corporate governance, FMCG sector, CGDI, Financial performance
1. Introduction

Corporate governance has become the latest buzz word in the corporate sector in the world. At present, corporate sector cannot ignore the importance of corporate governance due to the integrations of country into world market in the liberalized economic environment. Several frauds and scams occurred in the corporate history of the world. One after the other collapses of leading companies like Robert Maxwell, Enron, Satyam and other scams due to the poor corporate governance and due negligence of responsibilities by board, pulls the attraction of investors towards corporate governance.

Corporate governance is concerned with set of principles, ethics, values, morals, rules, regulations and procedures etc. corporate governance is the mechanisms, processes and relations by which a corporation is controlled and directed. It means carrying the business as per stakeholder’s desires. Corporate governance establishes a system whereby directors are entrusted with duties and responsibilities in relation to the direction of the company’s affairs. It is actually conducted by the board of directors and the concerned committees for the benefit of company’s stakeholders. It is all about balancing individual and societal goals, as well as, economic and social goals. Corporate governance concept emerged in India after the second half of 1996 due to economic liberalization and deregulation of industry and business. Corporate governance is the interaction between various participants consist of shareholders, board of directors, company’s management in shaping corporation’s performance and the way it proceeding towards.

Good corporate governance in the changing business environment has emerged as powerful tool of competitiveness and sustainability. Good corporate governance is a key factor in underpinning the integrity and efficiency of a company. It is very important at this point and it needs corporation for one and all i.e. from CEO of company to the ordinary staff for the maximization of the stakeholder’s value
and also for maximization of pleasure and minimization of pain for the long term business.

Indian corporate bodies having adopted good corporate governance will reach themselves to a benchmark for rest of the world; it brings laurels as a way of appreciation. The importance of corporate governance lies in promoting and maintains integrity, transparency and accountability throughout the organization. Under the present scenario, stakeholders are given more importance as to shareholders, they even get chance to attend, vote at general meetings, make observations and comments on the performance of the company. Corporate governance from the futuristic point of view has great role to play. The corporate bodies in their corporate have much futuristic approach. They have vision for their company, on which they work for the future success. They take risk and adopt innovative ideas, have futuristic goals, motto and future objectives to achieve. With increase in interdependence and free trade among countries and citizens across the globe, internationally accepted corporate governance are of paramount importance for Indian companies seeking to distinguish themselves in global footprint. The companies should always keep improving, enhancing and upgrading themselves by bringing more reliable integrated product and service quality. They should be transparent in their conduct.

As, In India the emergence of Corporate Governance took place in the year 1996. Many committees formed and issued various recommendations to comply with CG norms voluntarily like CII (Confederation of Indian Industry), Kumar Mangalam Birla Committee by SEBI, Naresh Chandra Committee, Narayan Murthy Committee, etc. Finally in the year 2001, SEBI (Securities & Exchange Board of India) mandated the recommendations given by Kumar Mangalam Birla Committee as a new CG Code of Conduct in the listing agreements with stock exchange, also known as Clause -49.

Fast Moving Consumer Goods (FMCG) sector is the fourth largest sector in the Indian economy with household and personal care accounting for 50 percent of
FMCG sales in India. Growth of FMCG sector has a vital role in the overall economic growth of our nation. Corporate governance practices influence the overall performance of the organization. So the corporate governance practices in the FMCG sector have a great influence in the growth of our Indian economy. In this context, the present research study titled “CORPORATE GOVERNANCE PRACTICES OF THE FMCG SECTOR IN INDIA: AN EVALUATIVE STUDY” is undertaken.

2. Review of Literature

2.1 Rajesh Chakrabarti and Mandar Kagade in their study “CORPORATE GOVERNANCE-EVOLUTION AND CHANGES IN THE NEW COMPANIES ACT” (2014) noted the major differences brought about in the Companies act 2013 from the much amended version of 1956. From the study, it has been concluded that the Companies act, 2013 reflects and regularizes several developments that have gradually in the country and in the world of financial market and corporate governance and necessitated the modernization.

2.2 Deepinder Kaur and Tajinder Kaur (2015) in their study “CORPORATE GOVERNANCE DISCLOSURE PRACTICES OF PUBLIC AND PRIVATE SECTOR BANKS: A COMPARITIVE STUDY” analyze the corporate governance practices of five banks each in public and private sector. The main objective is to make a comparative study of corporate governance disclosure practices in public and private sector banks. Disclosure index was used as a tool for the study. From the study it has been found that State Bank of India (public sector bank) and Yes Bank (private sector bank) are making the most disclosures and thus complying with clause 49 to a great extent regarding the disclosure of important parameters in their corporate governance report.

2.3 Meenu Maheshwari & Sapna Meena (2015) in their study “CORPORATE GOVERNANCE PRACTICES: A COMPARATIVE STUDY OF SBI AND
HDFC BANK” identified and compared the effectiveness of corporate governance between SBI and HDFC bank. The main objective is to critically examine the corporate governance practices prevailing in the banking sector of India. From the study, it was observed that SBI is keen implementing best practices with regard to corporate governance practices.

2.4 Taruna and Arpit Shailesh (2015) in their study “A STUDY ON CORPORATE GOVERNANCE PRACTICES IN INDIA” analyzes the situation of corporate governance practices of 100 companies from ten diverse industry sectors in India. The main objective is to explore and examine the corporate governance mechanisms in India during 2015. From the study, it has been concluded that firms in India following good corporate governance practices as per mandatory and non-mandatory guidelines of clause 49 of listing agreement. One way ANOVA was used as a tool for the study.

2.5 S. Gayathri (2015) in her study “A COMPARATIVE STUDY OF THE CORPORATE GOVERNANCE PRACTICES OF SELECTED PUBLIC AND PRIVATE SECTOR COMMERCIAL BANKS IN INDIA” analyze the disclosure practices of ten banks have been made for a period of five years. The main objective of the study is to review the existing system of corporate governance in Indian banking sector by analyzing the disclosure practices and to make suitable suggestions for its improvement. Corporate governance disclosure index was used as a tool for the study. From the study, it was found that HDFC bank is ranked first, second rank obtained by ICICI, third rank by Bank of Baroda, fourth and fifth places by Kotak Mahindra and Axis bank, PNB is ranked sixth, Federal bank is ranked seventh, last three places by Canara, SBI and Bank of India.

2.6 Sonal Nena (2015) in her study “A COMPARATIVE STUDY OF CORPORATE GOVERNANCE PRACTICES BETWEEN State Bank of
India (SBI) and United Bank of India (UBI)” measure the compliance to the disclosure norms in the selected companies by applying corporate governance index. The main objective is to know the concept of corporate governance in general and in relation to Indian public sector banks in particular. From the study it has been found that both of the banks complied with CG code of conduct as per clause 49 of listing agreement for the year 2012-13 but SBI score more than that of UBI due to non-compliance with the ‘Chairman-CEO Duality’.

3. Statement of The Problem

Corporate governance is the application of best management practices, compliance of law in true letter and spirit and adherence to ethical standards for effective management and distribution of wealth and discharge of social responsibility for sustainable development of all stakeholders. Corporate governance is concerned with ways of bringing the interests of investors and manager into line and ensuring that firms are run for the benefit of investors. FMCG sector companies now accounts for about 50% of total rural spending and about 40% of urban spending and become the fourth largest sector in the Indian economy. Corporate governance practices in the FMCG sector influence the overall performance especially financial performance of the sector. As FMCG sector is the fourth largest in the Indian economy, it has a vital role in the economic growth of our nation. In this present situation the corporate governance practices of the selected companies and their impact on their overall performance was evaluated.

4. Significance And Scope of The Study

Corporate governance basically relates to enhancement of corporate performance and ensures proper accountability for management in the interest of all stakeholders. Compliance with the corporate governance norms is itself discloses the transparency and accountability of the organization. It is mandatory as per the clause 49 of the listing agreement to comply with the CG norms. Some code of conduct is
mandatory where as some are voluntarily to adopt. Corporate governance ensures organization is managed in a manner that fits the best interest of all and it also minimizes the wastages, corruptions, risks and mismanagement. It is to be evaluating how efficiently the organizations in FMCG sector comply with the CG norms i.e. to evaluate whether the corporate governance practices in the FMCG sector enhances the corporate performance.

The study was confined only to the selected companies in the FMCG sector. The corporate governance disclosure index developed in this study can be applied to the companies in other sectors also. Companies can utilize this CGDI for improvement in the corporate governance practices as well as their overall performance. Findings of the study are useful for the prospective investors, regulatory authorities and other institutions for appropriate decision making.

5. **Objectives**

- To identify the corporate governance practices of the selected companies in the FMCG sector.
- To measure the corporate governance compliance status of selected companies in the FMCG sector.
- To analyze the relationship between corporate governance compliance status and overall financial performance of the selected organizations in the FMCG sector.

6. **Hypothesis**

- $H_0$: There is no significant relationship between the corporate governance and financial Performance
- $H_1$: There is significant relationship between the corporate governance and financial performance
7. Research Methodology

7.1 Source of Data

The complete study is based on the secondary data, which has been taken from the reliable sources like corresponding company’s websites, Annual reports, corporate governance reports, business responsibility reports, journals and other online sources were the major source of the data.

7.2 Sample

The sample for the study comprises 6 companies in the FMCG sector. On the basis of stratified sampling, FMCG sector was classified into two strata namely- large cap and mid cap. From each stratum, 3 companies were selected using purposive sampling method. Capital and net profits were the criteria used for purposive sampling.

The list of selected companies from FMCG sector is as follows:

LARGE CAP FMCG COMPANIES
- Hindustan Unilever Limited (HUL)
- Dabur India Limited (DIL)
- ITC ltd

MID CAP FMCG COMPANIES
- Britannia Industries ltd
- Marico ltd
- Jyothy Laboratories ltd

7.3 Statistical Tools For Data Analysis

In this research, following statistical tools are used:
• CORPORATE GOVERNANCE DISCLOSURE INDEX

CGDI is used to study the compliance of corporate governance norms of SEBI and Companies act, 2013 by the companies in FMCG sector.

• KARL PEARSONS CORRELATION COEFFICIENT

It is used to find out the degree and direction of relationship between two variables i.e. corporate governance and financial performance and thereby testing the hypothesis.

7.4 Period of The Study

The study is confined to a period of seven years i.e. from 2011-12 to 2017-18

8. Data Analysis And Discussions

Corporate governance compliance requirements are studied by developing a disclosure index after carefully studying the annual reports of the selected companies by taking certain corporate governance requirements as key parameters for corporate governance and assign value to such parameters on the basis of their relevance. The compliance of companies towards the norms of corporate governance can be studied through this index. For content analysis, firstly the annual reports were analyzed and then the disclosure index has been prepared by considering the following key parameters:

• Company’s philosophy on corporate governance.
• Board of directors.
• Annual board meetings.
• Audit committee.
• Chairman and CEO duality.
• Remuneration committee.
• Shareholders/ investors grievance committee.
• Risk management committee.
• Special committee for monitoring frauds.

• Nomination committee.

• Disclosures related to related party transactions, whistle blower policy, subsidiary companies, contingent liabilities, CEO/CFO certification, compliance information, auditor’s certificate on corporate governance, director’s responsibility statement, risk management and internal controls.

• Communication means such as quarterly results, newspaper where in results published normally, any website, display official news and presentation made to institutional investors or to analysts.

• Quarterly report related to CSR and average profit percentage spends on CSR activities.

Corporate governance disclosure index has been calculated for each company in every year and at last find Out the Corporate Governance Disclosure for Each Company during Seven Years by Applying the Following formula

\[
\text{CORPORATE GOVERNANCE DISCLOSURE INDEX} = \left( \frac{\text{TOTAL CGDI OF SEVEN YEARS}}{\text{MAXIMUM POSSIBLE CGDI INDEX OF SEVEN YEARS}} \right) \times 100
\]

Financial performances of companies were analyzed through Profit After Tax (PAT). In order to testing the hypothesis, Karl Pearson’s Correlation Coefficient is used.

a) Measure The CGDI of Each Company In Each Years And During The Seven Years
TABLE No: 2.1
CORPORATE GOVERNANCE DISCLOSURE INDEX MEASUREMENT

<table>
<thead>
<tr>
<th>Sl no</th>
<th>Companies</th>
<th>Corporate Governance Disclosure Index</th>
<th>CGDI of 2011-18 (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>HUL</td>
<td>29</td>
<td>29</td>
</tr>
<tr>
<td>2</td>
<td>DABUR</td>
<td>27</td>
<td>30</td>
</tr>
<tr>
<td>3</td>
<td>ITC</td>
<td>27</td>
<td>28</td>
</tr>
<tr>
<td>4</td>
<td>BRITANNIA</td>
<td>27</td>
<td>27</td>
</tr>
<tr>
<td>5</td>
<td>MARICO</td>
<td>27</td>
<td>27</td>
</tr>
<tr>
<td>6</td>
<td>JLL</td>
<td>24</td>
<td>30</td>
</tr>
</tbody>
</table>

Source: Compiled from annual reports of respective companies

CGDI of all the selected companies in the FMCG sector shows an increasing trend in the compliance status of corporate governance.

FIGURE No: 1
CGDI OF SELECTED COMPANIES IN FMCG SECTOR DURING 2011-12 TO 2017-18
b) Financial Performance Analysis

Table no: 2.2
Pat of selected companies in fmcg sector

<table>
<thead>
<tr>
<th>Sl No</th>
<th>Companies</th>
<th>Profit after tax</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>HUL</td>
<td>2599 3314 3555 3843 4116 4490 5237</td>
</tr>
<tr>
<td>2</td>
<td>DABUR</td>
<td>645 763 914 1066 1251 1277 1354</td>
</tr>
<tr>
<td>3</td>
<td>ITC</td>
<td>6162 7418 8785 9608 9328 10201 11223</td>
</tr>
<tr>
<td>4</td>
<td>BRITANNIA</td>
<td>186.74 233.87 369.83 622.41 763.31 843.69 947.89</td>
</tr>
<tr>
<td>5</td>
<td>MARICO</td>
<td>317.1 395.9 485.4 573.5 711.5 798.6 814.5</td>
</tr>
<tr>
<td>6</td>
<td>JLL</td>
<td>83.52 44.04 106.11 142.79 162.36 202.05 160.54</td>
</tr>
</tbody>
</table>

Profit after tax of all the selected companies in the FMCG sector show a steady increase from 2011-12 to 2017-18.
c) Testing The Hypothesis

TABLE NO: 3

KARL PEARSON’S CORRELATION COEFFICIENT

<table>
<thead>
<tr>
<th>COMPANIES</th>
<th>CORRELATION COEFFICIENT</th>
</tr>
</thead>
<tbody>
<tr>
<td>HUL</td>
<td>.841</td>
</tr>
<tr>
<td>DABUR</td>
<td>.928</td>
</tr>
<tr>
<td>ITC</td>
<td>.933</td>
</tr>
<tr>
<td>BRITANNIA</td>
<td>.970</td>
</tr>
<tr>
<td>MARICO</td>
<td>.867</td>
</tr>
<tr>
<td>JLL</td>
<td>.596</td>
</tr>
</tbody>
</table>

Source: Compiled from secondary data

Coefficient of correlation between corporate governance and financial performance revealed that all the companies have a positive correlation. It denotes that the increase in corporate governance improves the financial performance also. Therefore reject the null hypothesis. There is significant relationship between the corporate governance and overall financial performance of the selected companies in the FMCG sector.

In the case of large cap companies, ITC has the highest correlation (0.933) and in the case of mid cap companies, BRITANNIA has the highest correlation (0.970). BRITANNIA shows the highest value in correlation coefficient (0.970) and JLL has the lowest value in correlation coefficient (0.596) between corporate governance and financial performance in the case of all the selected companies in the FMCG sector.
9. **Findings**

a) **COMPLIANCE STATUS OF CORPORATE GOVERNANCE THROUGH DISCLOSURE INDEX**

Corporate governance compliance status was revealed through Corporate Governance Disclosure Index of each selected company in the FMCG sector shows betterment in the corporate governance practices year after year from 2011-12 to 2017-18. Based on the CGDI score

- HUL is ranked first with a score of 89.39%.
- The second rank was obtained by Dabur Ltd with a score of 88.57%.
- ITC Ltd and Britannia are ranked third with a score of 86.94%.
- The fourth and fifth positions are occupied by Jyothi Laboratories Ltd and Marico with scores 86.12 and 82.86 respectively.
- There is no much variation among large cap and mid cap companies in the compliance of corporate governance requirements.

b) **FINANCIAL PERFORMANCE ANALYSIS**

- The overall financial performance shows an increasing trend year after year.
- PAT of HUL, DABUR Ltd, ITC Ltd, BRITANNIA and MARICO shows an increasing trend from 2011-12 to 2017-18.
- But in the case of JLL, PAT shows an increasing trend up to 2016-17 then suddenly decreases in 2017-18.

c) **RELATIONSHIP BETWEEN CORPORATE GOVERNANCE AND FINANCIAL PERFORMANCE**

- Karl Pearson’s Correlation Coefficient shows that there is a positive correlation among corporate governance and financial performance in case of the selected companies in the FMCG sector.
• It gives a clear picture about the influence of corporate governance in the financial performance of the companies.

• Corporate governance disclosure index are positively correlated with the financial performance of the companies in FMCG sector whether it is large cap or midcap companies.

10. Suggestions

• The compulsory enactment of regulations related to corporate governance may improve the corporate governance compliance status.

• Development of CGDI helps in the self-assessment or self-evaluation of the corporate governance compliance status.

• Better corporate governance practices ensure an ethical business environment.

• Increasing the awareness of ethics in business life may help in the betterment of corporate governance practices.

• Availability of information regarding corporate governance practices helps in assessing more useful information regarding corporate governance practices.

11. Conclusion

The importance of corporate governance lies in promoting and maintains integrity, transparency and accountability throughout the organization. The FMCG sector plays a vital role in the overall economic growth of our nation, as it is the fourth largest sector. So the study was conducted to evaluate the influence of corporate governance in the overall performance of the selected organizations in the FMCG sector. The yard stick for corporate governance disclosure in this study is the provisions of Companies act, 2013 and the clause 49 of SEBI deals with mandatory requirements. The study of six companies from the FMCG sector shows an impressive Corporate Governance compliance status at the end of 2017-18 whether it is large cap or mid cap companies. The MCA, SEBI, ICAI, Stock Exchanges etc creates a potential for regulatory ambiguity and weakens the scope for scam and other
malpractices. The corporate governance compliance status comparison before and after the Companies act, 2013 shows the influence of regulatory authority’s governance rules in the compliance status of corporate governance. Therefore the proper enactment of compliance requirement by regulatory authorities will improve the corporate governance compliance status of the organizations.

Corporate governance compliance status greatly influenced the overall performance of the companies. This study aims to serve as a beginning to promote independent assessment of the compliance status of corporate governance requirements in the Indian companies. Scope exists for further studies by expanding the size of sample as also coverage of issues. The legal and regulatory system of the country plays a crucial role in creating an effective corporate governance mechanism in the country, the development of markets and economic growth. The regulatory bodies of India have proposed comprehensive and rigorous Corporate Governance reforms which lay emphasis on the significance of the credibility and integrity of the companies, protection of stakeholders, comprehensive disclosures etc. however there are certain gaps and lapses in the compliance requirements leads to the weakness in the corporate governance mechanism and the sustainable growth.

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CYBER SECURITY FRAMEWORKS FOR THE DIGITAL AGE

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Abstract

In the digital age of today, cyber security is more important than ever. With more and more users joining social networking platforms and using cloud computing services to store their personal information and confidential files, attackers are devising sophisticated strategies such as malware and ransomware to compromise the integrity of computer networks and systems. This assessment traces the origins of cyber security as a concept, documents its evolution and explores the modern trends that are associated with it. Moreover, it also discusses the facet of cyber security for home and office users and defines the strategies that they can employ for making their digital life safe and secure.

Keywords: Cyber security framework, cyber security awareness, cyber security companies, cyber security news.

1. Introduction

The unparalleled reign of all things ‘virtual’ has surpassed the expectations of many. From social media, cloud computing to artificial intelligence, all of us are exhibiting a growing preference to live the digital life which somehow seems more intriguing or enchanting and less complicated. In essence, there is nothing inherently wrong with having this wish. The online community of today has reached a colossal size where interconnectedness between humans has led to the elimination of geographical boundaries and limitations of time.
According to an estimate presented by United Nations, the number of global internet users surpassed 3 billion people as of 2015 [1] of which one-third are a part of the popular social networking platform, Facebook. Moreover, photo sharing application, Instagram which is arguably one of the most trendy social media services amongst youngsters, boasts of a user base of 800 million individuals and businesses [2]. Accordingly, Google’s flagship cloud storage service, Google Drive has staggering 1 billion users worldwide and stores an astounding 2 trillion files on its servers [3].

So what is the bottom-line of it all? The sheer scale of the virtual arena has expanded to a point where it has transformed into the nerve center of user information. The presence of sensitive and private data on the internet makes it the ideal hunting ground for preying cyber criminals to find their next unknowing target. How can users escape from the clutches of modern day criminal masterminds? The answer to this question lies within the comprehensive cyber security frameworks and their effective application to help organizations and individuals combat the menace of cybercrimes.

2. Materials and Methods

The assessment which has been conducted in this article has employed the findings of secondary sources and scholarly articles related to the subject. Cyber security covers a range of mechanisms, tools, technologies and systems that are developed to safeguard computer infrastructures, sensitive data and networks from impending attacks by hackers and offenders that have malicious intents. Tracing back the origins of cyber security, it can be noted that the concept first emerged in the academic arena, when a researcher by the name of Bob Thomas discovered the possibility for a computer program to travel across a network and leave behind a shadow of its path. This finding led to the birth of ‘Creeper’, the world’s first computer worm that had the ability to duplicate itself on several computers [4].

As the arch nemesis of the Creeper, Ray Tomlinson or the ‘father of the e-mail’ created ‘The Reaper’ which was a software that could also make its way to the computer systems, detect the presence of ‘Creeper’ and effectively remove it from the network, for good. ‘The Reaper’ embodies the first every cyber security framework to have been established by researchers in an attempt to thwart off the dangers posed by a virus.
This began in the late 1970s when the threat of cyber-crimes was low to the point of being inexistent, only to pick up massive pace in the mid-1980s when an unexpected attack on the Pentagon’s computer networks shook the United States government. The architect behind this attack was Markus Hass who became the first ever perpetrator to actively use his cyber prowess for advancing a political agenda.

Since then a range of computer viruses have pestered users across the globe in unimaginable and even creative ways. From the infamous Anna Kournikova virus launched in 2001 that enticed individuals to click on it by using pictures of ravishing tennis stars to break into their Outlook contact list, the Koobface virus of 2008 that more specifically targeted users of social networking websites and the more recent Backoff malware which was intended to hack into POS systems for unlawfully securing consumers’ credit card information. Just as the execution of cyber-crimes has become more sophisticated in recent years, the weapons needed by users and enterprises to fortify their cyber warfare arsenal also need to become stronger.

3. Results and Discussion

Since the inception of the first anti-virus enterprise in 1987, cyber security companies have completely changed the dynamics of the industry. Moreover, the latest innovations in the field merge advancements in machine learning to help devise cyber security frameworks related to home privacy and regulating online content for children.

3.1 Deep Learning and Artificial Intelligence (AI)

Data analytics is the rage in 2018. Unlocking the trends and patterns indicated by the abundance of information help predict behaviour and upcoming activities as well but how can this innovation be applied to the combat online crimes? Well, cyber security companies have come to the valid realization that if AI models are made to face the right information, then they can detect inconsistent or irregular behaviours across networks which are essentially a representation of impending security threats. The most standout aspect about this trend is that AI frameworks do not require any human guidance to counter cyber threats but have the unmatched capability of creating their own solutions for averting potential attacks [5].
The spread of this cyber security news has come across as an exciting message for industry analysts and gurus that are looking forward to the possibilities that it can bring with itself. Moreover, the efficacy of this innovation can prove to be even more fruitful in large-scale enterprise and governmental settings where the wealth of personal files and records are at a much greater risk of falling prey to hacking attempts.

3.2 Early Detection and Warning Systems

Warding off an incoming cyber-attack before it happens is better than countering it when it has crept within the computer networks and its broader systems. The development of early detection and warning systems is a fairly new development with reference to cyber security frameworks but is progressing rapidly, given the incomparable benefits that it can offer to sectors such as banking and defence.

Renowned cyber security companies have already shared their prototypes which have been developed to eradicate the onset of what are known as ‘fileless attacks’. However, early detection and warning systems are capable of detecting traffic patterns and decoding metadata to rate platforms and networks that have a much higher chance of being subjected to an attack. The delivery of this notification, allows enterprises to prepare for the looming threat or strengthen their current capabilities to successfully eliminate their emergence.

The foundation of these systems however, lies in the development of effective algorithms which have the capability to make use of characteristics such as webpage and file system structures to help companies detect where their shortcomings are present. In more ways than one, these systems can also play the role of evaluating current cyber security frameworks that a company has in place and helping them transition towards platforms that are far more effective and competent at their job. Moreover, network traffic analysis (NAS) solutions are a part of this technology [6].

3.3 Central Cloud Portals and Boundless IT Services

The functionalities and capabilities of central cloud portals can be assimilated with early detection and warning systems to create a fool-proof cyber security framework. The premise of this argument is based on the view that through the integration of cloud technologies, IT teams that are based in any part of the world can deploy mechanisms for
countering an attack as soon as it seeps within the network. The notion of boundless IT services with the support of central cloud portals makes it viable for IT personnel to guide their systems no matter where they are present. Accordingly, this development also carves a pathway for traditional techniques of cyber security to take a backseat. Therefore, tools such as firewalls and prevention systems are expected to be replaced by the emergence of virtual firewalls whose engine is cloud technology. The best about this innovation is that it is very much a reality of today, data center security services provided by leading companies such as Amazon are a testament of this advancement.

3.4 Cyber Security for Home and Office Users

Cyber security should not have to be a complex conundrum. In fact, it is imperative for average home and officers users to have an idea about protecting their own information and ensuring that their personal data is not handed over to criminals which will ultimately use it for malicious purposes. If you think about it, cyber security awareness is no less than a life skill in the digital age of today. To guarantee that you never become a victim of the criminals lurking the web, here’s what you should never do.

3.5 Avoid Opening Links from Untrustworthy Sources

Sometimes users receive emails from organization that seem legitimate and provide lucrative offers such as a chance to travel the world or handing out job vacancies. Regardless of how enticing or real an email looks, users should never open links provided by sources that are unverifiable. In most cases these are elaborate scams which have been designed to steal personal information.

3.6 Update Your Arsenal

Users often come across with those software notifications asking them to update to the latest version, however, most individuals tend to avoid these messages until the very last day but it is important to understand that complying with them is very beneficial. These updates enhance the ability of anti-virus software and similar platforms to deal with the most sophisticated malware and spam on the market.
3.7 Know the Risks

Having sufficient cyber security awareness is fundamental. On an enterprise level, organizations have a number of mechanisms to make sure that their employees are prepared to combat any cyber threats, from hands-on induction training, drills to periodic training sessions [7]. Nonetheless, home users should also become more mindful of these possibilities and take out the time to educate themselves about cyber security. From MOOCs to free online courses and one-step guides there are a number of free resources that can be used to gain insight on the subject matter.

4. Conclusion

In the current scenario, cyber security frameworks are an undeniable necessity for internet users. Keeping with the latest cyber security news will inform users about the emerging threats across the web and how it has become more important than ever to understand how they affect them and their families. Being well-prepared and taking the essential preventive measures to avert these attacks is critical to secure personal data and have an internet experience where none of your information is compromised or left out in the open for attackers to use.

With each passing day, the nature of cyber-crime continues to evolve and become more sophisticated, this is why, it is important to remain two steps ahead of those who are responsible for these crimes.

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Disguised politics and the Politics of resurrection in Perumal Murugan’s *Poonachi*

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**Abstract**

The article attempts to analyse Perumal Murugan’s work *Poonachi*. It is the first fictional work he published after his self imposed exile. This paper tries to find out the hidden politics and the antidemocratic ways of the government in this rural story. The work also tries to reveal how Perumal Murugan resurrects as a writer after the controversies related to his work *One Part Woman*.

**Keywords:** Surveillance, Resurrection, Coma population, Ordinariness, Spatiality.

*Madhorubhagan*, Perumal Murugan’s controversial book published in 2010. The translated version *One Part Woman* came in 2013. Only in 2014 it attracted the attention of the hindutva leaders and right wing politicians. They protested against the old tradition of consensual sex outside marriage in the novel. They argued that the novel hurt the sentiments of the Gounder caste. During the controversy and agitation announcing his literary suicide he wrote on his Face book page “Perumal Murugan the writer is dead. As he is no God, he is not going to resurrect himself. He has no faith in rebirth. As an ordinary teacher, he will live as P.Murugan. Leave him alone.”

He had to leave his home town and live in Chennai as a refugee for many months. Because of the caste politics and vote bank the state government didn’t come to his rescue. But later Madras High Court in its judgement to uphold the freedom of expression, speech and writing had declared that there was nothing obscene in his novel. In the concluding judgement the court commented “Let the author be
resurrected to what he is best at. Write.” This concluding sentence was a revelation to the writer and he began to write with new josh. In one of his interviews he says he don’t want to comment on the controversy. “I am not defined by controversy; I am defined by my writing.”

_Poonachi or The story of a Black goat_ (2016) is undoubtedly the resurrection of the Perumal Murugan after his self imposed exile in connection with the problems related to his novel One Part Women. Even though he called himself a “Coward” (_Songs of a Coward_) throughout his work one can see how relentlessly PM disguises his political views inside the goat saga. His cowardice itself shows his very nature to rebel. “A coward joins no political party, abides by no ideology and is loyal to no leader...” _Poonachi_ is a political saga as his many other works are and it goes beyond the political correctness. Sarcastic tone of the preface itself leads the readers to the memories of the history of the novelist. How the right wing terrorised the author and how the author was mercilessly attacked by the hooligans.

How far a creative writer can express his thoughts on the religious matters? To what extent a writer can depend on the oral tradition and folklore? These were the most significant questions before Perumal Murugan when he began to write again and _Poonachi_ is an answer to those. _Poonachi_ is his first fictional work after the controversy. The most significant thing in his writing is that he is very much conscious in selecting the plot and the execution of his art. There is a deliberate effort to keep distance from all those things which might create any type of headlines for the very wrong reasons.

_Poonachi_ like George Orwell’s _Animal Farm_ and the Aesop tales is a well-crafted work incorporating the animal world. How the so called democracy in our country mocks the common people and in what all ways these people are being looted by the government itself can be seen in this. His nature of rebellion is well portrayed through the goats. In the preface he states that goats are full of energy and he finds a scope of narration in them. The confrontation of the right wing politics through the
story of a black goat itself is a choice of brilliance. The black colour of Poonachi becomes a major issue when the ear piercing time came. “Since they could not be recognised in the dark when engaged in any criminal activity, the regime had, it was rumoured, deliberately wiped them out”.

After his self impose exile he somehow found a fondness for the ordinary. This ‘ordinariness’ is the significant area of his resurrection. From the multitude he purposefully chooses the very ordinary characters and plot for Poonachi. In The Poems of exile and Poonachi one can find this expressive nature of ordinary lives. He chooses to narrate the story of the ordinary, that is how the novel begins. There won’t be any trace of the ordinary. He states that ordinary life never leaves any trace. From the very ordinary Perumal Murugan pictures a saga. The protagonist is a farmer from the community of Asuras. He got Poonachi from Bakasura who told the old man that “she came from a line that can deliver a litter of seven”. Seeing Poonachi’s fragile body nobody believed it. Survival also holds a major part in this. The ordinary people strive for survival. The change in the climate and the occasional visit of the rain makes water a precious thing. How the common people strive for the survival and instead of helping them how the government treat the fear stuck farmers and impose more burden to them is also well portrayed in this. There is a paradigm shift from a larger canvas of reviving the age old folklore tradition and ritualistic spectacles to the very ordinary rural life of the animal world.

Throughout the novel he constantly reminds us that there is a space for the ordinary people in this world. The nuance of the village life affected by the drought and the struggle of ordinary people with nature and with their own self is picturised by the author. He reminds us about the rights of the citizens. Those ‘rights’ everyone in this country have; Right to live with dignity. In his works the fundamentals of the life itself is being celebrated. The essence of the rural life, the rapport between the humans and animals, the love and care of the common people the inability of the farmers to lead a normal life all come under the review of this writer.
The spatiality in *Poonachi* is that of a village. It is not the grandeur and pompous lives of the valorous people but of the common lives he chooses. As in his many other writings in this piece of writing also he reminds us that there is a space for the ordinary people and the agonies of their daily routine. There is nothing romantic or great in their lives but still the setting of the rural village and those people are a part of a larger trajectory. The journey of the old couples to their daughter’s village gives the narration an additional charm. It’s only then Poonachi gets a chance to explore new geographical areas and the experience of entering into a forest and loneliness she felt without her herd.

Perumal Murugan juxtaposes the sheep and goats in this work. Sheep is always submissive they never instigate any trouble. But in the case of goats they are full of energy and are trouble to their masters by violating the unwritten laws in the pasture fields. He wonderfully depicts the subtle nature of these animals. Goats are rebellious in nature. Murugan’s selection of the goats as the lead character itself is because of this rebellious nature. Goats always try to break the rope. The author himself shows this rebellious nature in many of his writings. “They always stood with their heads high. Goats never enjoy being in shackles. But sheep will never make an effort to free themselves. None of the sheep had their neck and forelegs bound together with a rope. That was only done to proud goats, who were forced to look at the ground as they walk”. Sheep are ever free, because they never show any rebellious nature. Murugan comment on this “If it was in your nature to bow down, why would anyone shackle you”. And he continues “They had no inkling that to bow was to be shackled”.

In *Peril* Morrison says “Writers – journalists, essayists, bloggers, poets, playwrights – can disturb the social oppression that functions like coma on the population, a coma despot’s call peace; and they stanch the blood flow of war that hawks and profiteers thrill to”. Sheep in Poonachi is the representation of this “coma population”, those who are eternally passive in nature and are ever reluctant to stand
up and fight for their rights. In our society those who shows the nature of rebellion and try to speak or act against the regime is silenced. They are attacked or kept behind the prison bars. The regime tries to wash out those who are rebellious. Those who simply obey commands without any hesitation will get their share. Poonachi always dislike the lambs because of their ever bowing nature. They always had their heads down. Most of us are like the lambs always reluctant to stand against the authority we simply bow down to the system and try to follow others.

Somewhere in life every one of us might have experienced how to behave in a queue or rather how to wait patiently in a queue and what others are expecting from us when we are in a queue. It might be a queue in a cinema hall, supermarket or in religious centres. It can be seen as a disciplined way of dealing things. In our educational system itself the queue is important. In the assembly students are required to line up in the queue according to their heights. For instance, in the novel the people opines about the ‘queue’. Why the queue is important, why the regime is keen on to participate the common people in this activity. They find interesting queries. Some says “Queue will make us patient” another one commented that “Queue will make us tolerant”. Common people are expected to be disciplined and obedient. Queue is a major tool of the regime to make their subjects submissive. When you are patiently waiting for something in a queue you are following certain rules. You are trained to be patient and tolerant obviously. You are already showing you submissiveness to the authority. You think that it is a fair system, a democratic system which is there for your own good.

Ours is considered as the largest democratic country. Through this work the writer sarcastically commented on the ‘democratic’ ways of our system. How the officials treat the ordinary farmers and in what all ways the speculation about the regime is spread. How the fear works as an oppressive mechanism in the regiment. Lines are part of democracy those who come first should be served first. But how the regime manipulates it and how these lines become part of degrading the common
people is well manifested in the work. Cutting in line is wrong whether it is done by a common man or someone who possessed wealth. Here only those who are underprivileged are forced to stand in the queue, under the blistering sun to get sanction from the officials. Those who have money and possess hundreds of goats did never come to the doors of the officials. The officials themselves went to their farm and gave sanctions and the ear piercing of those goats are also done by the officials. They humbly accept bribe from those landlords.

What makes some people privileged in a democratic society? Is it the caste, education or the wealth one possess? The plight of the underprivileged is well pictured in this work, where a lot of common people come to the regime and they waited for so long under the sun that many of them fainted and are taken to the shades by others. Even then the officials show no mercy they came out and threaten the poor farmers. The voice and choice of the common people is very much limited. They don’t even protest against the bureaucrats. They are in constant fear. The rights of the citizens are unheard in the village. This constantly reminds us about the urgency of the establishment of better opportunities for the rural people to get education.

It is a fable of the fragile lot. Poonachi herself is very much weak as compared to other goats in the herd. Even though it is expected from the beginning that this goat will litter seven in a line but no one believes it. Seeing her one would barely think that she would ever give birth to at least one. Her masters the old couples are also very weak and old. Perumal Murugan’s purposefully chose these fragile beings against the very energetic Uduman, Oothan and Kaduvayan. When Kaduvayan shows the urge to have sex with female goats in the pasture fields the old man decides him to get castrated. How humans are controlling the sexuality of the animals also discussed. After castrating Kaduvayan and Peethan the boatman says “My sin is bigger than the sin of homicide”. We can feel the helplessness of a man in his words. He also cries by saying “Sinner. I am a sinner and a wretch”. The pain of Kaduvayan is unbearable. Throughout the novel we can see the double role of the humans as the hunter as well
as the protectors. The same people who gave food and care for the herd will castrate them or kill them. Poonachi is always confused with this nature of protection and killings. The same old woman who fed her and always protected her from all harm curses her and sell her kids to the butcher.

It is compulsory for all the children and domestic animals to get their ears pierced. “After registering the details of name, age and address the government would organise the ear piercing”. It also reminds the readers about the Adhar card and the issues related to the privacy. The regime is like the ‘Big Boss’ who watches everything, it is omnipresent and omnipotent. The people have to take their children as well as domestic animals to the office to get their ear pierced. They should also register the details of name, age and address to the authorities. The officers are very keen on this process. As Foucault remarks in Discipline and Punishment “Surveillance is permanent in its effects, even if it is discontinuous in its action”. Nothing can escape them.

It is an artistic venture against the regime. How the authoritarian society and the government insist the ordinary lot to suffer and make them to bow down before the people in governance. The system and the machinery structure are insensitive and deaf to the problems of the common people. They infiltrate terror into the ordinary humans. The ignorance and illiteracy of these people are well manipulated by the people in power. Common people are always afraid of the authorities. They say that the regime has ears on all sides. “There is an old saying that the regime is deaf. It’s deaf only when we speak about our problems. When we talk about the regime, its ears are quite sharp”. How the governments curtailed individual freedom and privacy is also sarcastically pictured by the author. He states “These days, even if you fart, you have to register with the government”.

In Poonachi he disguises his political views and his democratic stands. By placing the major plot revolving around the animal world the author carefully woven the fabric of his own politics inside the work. Meesagaran is the only God reference
in *Poonachi* and the festivities and ritual portrayals compared to his early works is less visible in this. In *One part woman* the main plot itself is related to the ritual, but in the preface of *Poonachi* the author states it clear that now he is in a state that he had grown fearful of writing about humans, even more fearful of writing about gods. There is only minor interference of gods in *Poonachi* compared to his earlier works. But still *Poonachi* is an answer to those who believe in democracy, freedom of speech and expression because it gives answers to some fundamentals of being a creative writer. He resurrects.

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Abstract:
Art and life have always had a mutually borrowed existence. So has cinema and society and conceptions of disability are no excuse to this phenomenon. This paper is an attempt to trace the themes with which disability has been portrayed in Indian Cinema (Hindi, Malayalam, Tamil and Telugu) from the early 1990s to the present. It is acknowledged that this analysis is limited to the movies the author has been subjected to hitherto.

Keywords: Cinema, Disability, Redemption, Punitive, Mythology, Disequilibrium, Caricature, Differently-abled, Details, Lived experience, Emotions.

The 2009 Bollywood movie Lafangey Parindey is the life of a dancer who loses her sight before a major performance. She is brought back to vigour by the thug who is responsible for her loss. He convinces her that by honing her listening skills she could make her disability into nothing and achieve her dreams. The movie wipes out all the other possibilities but the will of the individual to overcome any disability and this path here has to be shown to ‘a weak woman by an enlightened man’.1 Here is also the idea of serving the disabled as a way of

1 http://www.phalanx.in/pages/article_i009_Portrayal_Disability_Indian_Cinema.html
redemption which appeared in many older movies like Mera Dost Mera Dushman (1984) where the transformation of a dacoit comes from having to live with a blind woman and Dushman (1971) where an alcoholic is reformed after having to pose as a blind woman’s son.

Disability as an enduring punishment or as being punitive is a recurrent theme in Indian cinema. In Mehboob Ki mehendi (1971), Sholay (1975) and Roudram (2011) the theme of disability becoming a bigger punishment than death is conveyed. The protagonists in the movie decide to amputate their enemies than killing them because disability serves as a lifetime punishment unlike death which does not last. Thus what is being articulated is that disability is a greater torture than death itself. In Jeevan Naiya (1936) the protagonist who abandons his wife for having ignoble parents loses his sight and is eventually taken care of by his own abandoned wife thus setting him at the same level as his wife. Koshish (1971) turns its antagonist blind for his ruthless actions whereas the Tamil movie Netrikkan (1979) turns its protagonist onto a wheelchair for being lascivious (he is thus also desexualised). The drug addict in Jalte Badan (1973), the evil father in law in Aadmi (1968) and the proud rich arrogant atheist of Dhanwaan (1981) are turned blind. Kasam (1988) punishes the chieftain who heads a village of criminals by disabling him. In the 1954 Tamil film Ratha Kaneer, the protagonist becomes a leper for flagging western ideals like promiscuity, alcoholism, hatred for traditional values etc. In all these films either tolerance of disability is portrayed as a purifying path to enlightenment from days of sin or is showcased as a punishment for cruelty depicted earlier in life. Gandhari from Mahabharata is the epitome of the former theme since she raises from being a mere human being to a God after she blind folds herself as an act of ultimate Sati to her blind husband Dritarashtra. A similar scene of self-giving is acted out by the heroine in 1965 film Arzoo when she places her own foot on a chainsaw in an attempt to equal her amputated husband.
The idea of punitive disability has its roots in Indian mythology in the stories of Shurpanaka; Ravana’s sister; who is reborn as a hunchback for her vanity and lust, Ajamukhi who is a Brahmin’s wife cursed for her lust by sage Durvasa, Ashtavakra (meaning eight deformities) who is punished for filial impiety of correcting his father before he was even born. Disability as a derivative punishment is depicted in the story of Ambika’s repulsion to sage Vyasa’s looks. She closes her eyes during their intercourse resulting in their son Dritarashtra’s blindness. In *Moondru Mudich* (1976) the protagonist proud of her looks is disfigured in a fire and in *Arangetram* (1973) the prostitute becomes insane.

Though attempts have been made to show how disabled can live independently through films like *Athmakatha* (2010) where the blind protagonist lives peacefully with his life, films like the 1964 *Dosti* portray the dangers lurking everywhere in the daily existence of a disabled if without someone to depend on. In 1972 the film Koshish portrayed disabled leads whose infant dies because they could not hear it cry and whose brother cheats and steals money from them picturing them as helpless and kind-hearted unfortunates further underlining the dependency factor of disability. In 1996 Malayalam film *Ee puzhayum kadann* the heroin’s deaf and dumb sister is married to a man who is not so owing to the dependency that follows disability.

Portraying disability as disequilibrium is also a common practice in Indian cinema. It is something that can be cured; that will go away. In 1995 Malayalam film *Mazhayethum Munpe*, Uma, a dancer, suffers from stroke which they continuously strive to overcome. Their efforts are shown in a manner of bringing her back to life, to get back the fuller version in her.

The mythical stories of the hunchback Manthara who manipulates Kaikeyi to sent Rama on exile and the crippled uncle Shakuni who causes the war between the Kauravas and the Pandavas render yet another angle to the perception of
disability. They are social maladjustments who are the cause of evil in both the stories. Similarly is 2013 malayalam movie Memories where the antagonist has a limp and is a murderer who takes revenge on a few women who troubled his life before. Also in 2015 telugu epic film Baahubali, Bijjaladeva (father of the antagonist) is the one who inflicts all the evil into his son in revenge for losing the kingdom to his brother owing to his disability.


Bollywood comical dramas like Golmaal have shown disability a mockery. However others like Guzaarish evoke a sense of utter pity towards the disabled hero who is constantly at wars with the court for his euthanasia. He himself has denied his existence. The female finally helps him poison himself and redeem his soul from all the pain and human-less existence.

Malayalam cinema like Naghakshathangal, Meerayude Dukhavum Muthuvinte Swapnavum and Kalyanaraaman portrays its heroine or atleast of its lead ladies disabled. Through the film we see the characters almost demanding pity and remain helpless. The feeling of something missing in them and thus incomplete is projected. Sargam portrays its female lead becoming disabled as if a punitive act or redemption for her crimes. She is lifted of the curse once her man returns and they finally are together again.

The Malayalam movie Beautiful is one of the very few movies that tell us of the way the life of a disabled is to be lived. The male lead is bedridden and has a female nurse and a friend who constantly visits him. The man does not seem to be in despair. He has accepted his state and remains open and strong towards whatever is to come. The film shows us his daily routines, the way he is nursed
etc. He constantly talks his emotions to his friend. Finally we see him motivating his friend after a heartbreak. At this juncture we wonder who the stronger man is. The Malayalam movie *Artist* however showcases a different angle to the disability acquired by its male lead. He pursues his painting careers after the blindness and in fact attains fame then. He is shown as a man steadfast in his vision and determined to move forward. It also closely shows us the frustrations associated with acquired disability- for the disabled and his family. In this context it is a new road in Malayalam cinema in dealing with disability. Rather than just brushing off the disability, it has now started to delve deep into the way it is experienced and felt, the emotions associated with it and the influence it has on others.

**Conclusion:**

Whereas pre-2000s portrayed disability in the view of creating a caricature, it has now started appearing in very different contexts altogether, opening up the space for more discussions and thoughts. Films like Paa (2010), My Name is Khan (2011), Fanaa (2007), Pithamagan (2003), Thanmathra (2005) have won awards for the actors portraying the disabled characters taking disability itself to transform into a space that is being awarded for the talent inherent in it. Disability has started to be ‘normalised’ is what is a take-away from the movies now. We also see the transformation in the way cinema is also shifting along with the society at large from references like ‘disability’ to ‘differently-abled’. The broader picture towards the future appears welcoming.
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सारांश
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व्यास सम्मान से अलंकृत होनेवाली चंद्रकांता का उपन्यास कथासतीसर कश्मीर के दर्द का दस्तावेज है। इस उपन्यास में लेखिका ने प्राचीन पुराण गाथाओं, आधुनिक कब्रिस्तान हमलों, देश विभाजन के कारण दुःखों, आतंकवाद और विस्थापित कश्मीरियों के दर्द को अपने सीने में समेट लेती है। प्रस्तुत उपन्यास सन 1931 से लेकर 2000 तक की घटनाओं तथा विस्थापन का तंग झेलनेवाले कश्मीर निवासियों के दर्द का दस्तावेज है। प्रस्तुत उपन्यास में वादी में चौदहवीं सदी में सिकंदर द्वारा जो विस्थापन आतंक मचा गया उसमें विस्थापित पंडितों को सूचना प्राप्त है। आज वहीं दौर जारी है। लेकिन आज बाहर से आया हुआ नहीं भाई भाई को घर से भगा रहा है। इसका तात्पर्य यह है कि राजनीतिक कारणों से विस्थापन शाताब्दियों से चल रहा है। कश्मीर में हिन्दू-मुस्लिम लोग आपस में मिलकर रहने थे लेकिन मजहबी सिस्टम ने इस सम्बन्ध में फर्क डाल दिया। कश्मीरियों को हिन्दू-मुस्लिमों की राजही विरासत मानती है। लेकिन इतिहासकार के कारण वादी में विनाशकारी परिस्थितियाँ पैदा कर दी है। जिनके कारण अपने ही घर में कश्मीरी पंडितों को रह पाना असंभव हो जाते हैं। इस पृष्ठभूमि में लेखिका ने कश्मीरी पंडित अजोध्यानाथ के परिवार की तीन पीड़ितों के चरण के साथ मजहबी आतंकवाद से विस्थापित कश्मीरी पंडितों की पीड़ा को ‘कथासतीसर’ द्वारा प्रस्तुत करती है।

मूल शब्द : विस्थापन, जासोदी, दस्तावेज, कश्मीर पंडित, मजहबी।
प्रस्तावना

डा एन. मोहन ने अपने ‘समकालीन हिंदी उपन्यास’ नामक पुस्तक में विश्वास की परिभाषा इस प्रकार दी है - ‘मनुष्य के अपने जन्मस्थान और निवास स्थान छोड़कर एक नए स्थान की ओर गमन करने की प्रक्रिया को विश्वास कहा जा सकता है।’१ उनके अनुसार विश्वास के कारण अनुगामन न करना और घरेलू घर में ही रहना लंबे समय तक जिसके लिए यह विश्वास स्टेट्स और समाज के अंतर्गत लाइब्रे का निर्माण करना जरूरी है। अब इसके संगठन और समस्त उपयोगी का निर्माण करने के साथ-साथ विश्वास की स्थापना के लिए आयोजित होना आवश्यक है। इस उपन्यास के लिए भर्ती विभागों में चंद्रमा का मुख्य स्थान है।

‘विश्वास की आदर्शी का दस्तावेज : कथासतीसर’ नाम इस शाखाप्रा में हिंदी पाठ्य की संदर्भों प्रमाण के द्वारा अपनाने का प्रयास किया गया है। व्यास समाज से अलगलग लेखिका चंद्रमा जी द्वारा रचित ‘कथासतीसर’ कमर्ज की पृथ्वीभूमि पर आधारित बृहत उपन्यास है। आकार, विचार, विवरण और विचार की वृत्तियों से बृहत्तत मुद्रा में विश्वास का निर्माण करने के लिए लेखिका ने विश्वास, सत्य तथा अनिप्पत्ति की उपस्थिति में कमर्ज के सामाजिक, सांस्कृतिक, धार्मिक, तथा सांस्कृतिक परिवर्तनों जो परिवर्तन हुआ है जिसका सत्ता भूमि पर सवित्री का निर्माण सहजता से किया है। लेखिका ने अलग, विकास और भविष्य के रूप में चंद्रमा के साथ ही अपनी स्वस्थता को टूटो-टूटो या प्रयास किया है। आंध्रवाद और विश्वास से संबंधित दो ही बातें हैं जो भी भी चंद्रमा की कहानी के गायब है। प्रत्युत्तर उपन्यास के आयोजन में लेखिका निश्चित है कि ‘यह कथा उन बेबर-बेनाम के नाम, जिन्हें, ग्यारह वर्षों के निर्णय के साथ भी समझ नहीं आता, कि वे अपने पत्र क्यों नहीं लौट सकते।’२

कभी औरंजेरे के समय में कभी अभिनव काल में शेख, सीधे और इलाम की सांख्य विरासतों से रची कमर्ज वादी में कई कलिन्द द्वारा आ चुके हैं। लेकिन ललचन और अमृत व्रत की जरूरत पर भी ध्यान लगाता है, कंभताज में अपनी संस्कृति और संस्कृति से जोड़े हैं। चंद्रमा उसी साथ में सुन्ना सिद्धांतकार ने आतंक, हंगाम और विश्वास का दौर चलाकर कमर्ज की अवधि भूमि को उजाड़ दिया और तुरंत बनाया। इस वादी में पंडितों के कुल यात्रा गृह बढ़ गए थे। लेकिन उसी दे सोन चंद्रमा जूनुनाबदनों ने विश्वासित पंडितों को समस्मान पर दौड़ता था, पद-प्रतिमा दी और संसारीय सदभाव की साझेदारी की कायम की और ‘बड़ाशाह’ कहाया। कथासतीसर की स्थापना में लेखिका कहती है कि यहाँ कमर्ज का इतिहास संदिग्ध से आक्रमणों, घड़ीयों, अत्याचार-आतंक और विश्वास के हास्यों से अंत तक पड़ा। विषय ए. सिद्धांतकार ने ठीक ही कहा था कि “विषय में कुछ क्षेत्र ही शायद, शायद के नियम में, कमर्ज से अवगाह, इतिहास यहाँ बार-बार लीटिंग है। महादक्षिण काल से बीस वर्ष पूर्व, गानूंदे राजा के शासन काल से लेकर इक्किसस तक के इस अरम्भिक दौर तक विनिर्देश, तो बना हो जापुरा कि कमर्ज का इतिहास पुनर्जीवितों का इतिहास है। यह सच जांब आशयर और दृष्ट का भाव जगाता है, वही, मन के किसी अर्धो कोने में उम्मीद की फिरने भी।’३ चंद्रमा जी सुंदरता करना चाहती है कि बाहा यक़ीद, भूतपूर्वाचार, लक्षण राजनीतिक और शासकों की महत्त्वाकांक्षाएँ जिन्हें रोक जा सकता था, धर रोका न गया। इस उपन्यास का नाम
कथासतीसर क्यों चुना? इस पर स्वयं लेखिका कहती है कि - “भूलों तो लगता है, हमारा इतिहास बार-बार नेपाल से झारखंड हमारे पास लौटता रहा है। तभी तो आज सतीसर में जलोदभव राक्षस दोबारा आतंक मचा रहा है, बल्कि नई शक्तियों में। मानवों पूर्व नाग पिता काव्य वाचिक के प्रायोजन से, सतीसर प्रदेशवादी आतंककुल हो गया थे। आज क्या कोई काव्य, कोई ‘बड़ाश’ इज्फ़ौरेसी सरों के इस दोर में जन्म लेगा जो नवीन की मुफ्त का कारण बनेगा।’4 चंदकुला ने उपन्यास में तथ्य का यथार्थपूर्ण छिल्लेन केवल 18 घंटों का अध्ययन किया है। जिसका निकुट उन्होंने रचना के प्रारंभ में किया है। जिसमें से प्रमुख है - नीलमत पुराण, कहान - जातिरिपणी, डिस्कवरी ऑफ़ इंडिया, क्राइसिस इन कम्प्री, द कम्प्री पीड़ित आदि। लेखिका हारा इन पुस्तकों का अध्ययन इस बात का सबूत है कि प्रस्तुत उपन्यास सिफर कल्पना पर आधारित न होकर तथ्य सत्यों पर आधारित है।

कम्प्री और कम्प्रीतिक के प्राणायाम बनकर चंदकुला ने ‘कथासतीसर’ को रचना की। उन्होंने महसूस किया है कि एक सच्चे साहित्यकार मानवीय यात्रा का अनेकशंक नहीं कर सकता। इसलिए उन्होंने समय के सच को साहित्य में दर्ज करना चाहती है, इतिहास में नहीं। क्योंकि उनके अनुसार इसमें मंथन और उसकी यात्रा केंद्र में है, राजनीति नहीं। उपन्यास में लेखिका ने अनोखानुष्ठान कहते और उनके संकेत परिचार के माध्यम से आतंकवाद और विश्वास के हुमरायाओं का इतिहास किया गया है। आतंकी घटनाओं के माध्यम से उन्होंने अन्य कथाओं का भी तना-बाना बुना गया है। 13 जुलाई 1931 का दिन आतंक का साया लेकर आया जब अबूल कादर फतान ने भड़काऊँ भाषण दिया। इसके परिणाम स्वरूप मजबूत हो गया। इस दृढ़ और शक्तिका तरह मिल-जुलकर रहते हैं। मुस्लिम भाईयों के बीच अङ्ग्रेजी दीवारें खड़ी हो गयीं। यहाँ में ‘मुस्लिम कांग्रेस’ का गठन हुआ। 1942 में जिज्ञासा साहब कम्प्री आये तो उन्होंने ‘मुस्लिम कांग्रेस’ की सभा में भाषण दिया - “भाईयों, मुस्लिमों का एक मंच है, एक खुश, एक कल्पना। सभी इस झड़े के नीचे आते अपने हकों के लिए लड़।”5 गांधीजी और नेहरू ने जिज्ञासा साहब से मिलकर मुस्लिम लीग और कांग्रेस की समस्याओं मिल बैठक आये जब मुसलमानों के मुक्तांग की। लेकिन जिज्ञासा साहब तो हिरासत नीति पर आड़े रहे। उन्होंने कहा कांग्रेस को हिंदुओं और लीग को मुसलमानों की संस्था मानों तभी बात होगी। जिज्ञासा साहब की जिंदा 15 अगस्त 1947 को देश दो दुकाड़ों में बंट गया - भारत और पाकिस्तान। दोनों तफ़ायकों, लुट, आग, नीचे शुरू हो गये। ‘सुना है अमृतसर - लाहौर से लायों से पत्ती रेतागियों दिल्ली आ रही है और दिल्ली से कटी-पिटी लाये जबाब में पारस्ट का जा रही है। टेट्ट के टेट्ट लोग पोटली-बुगच उठैये रातो-रात बार छोड़कर भाग निकले हैं। हे रामा, कैसी आजादी मिली।’6

सबसे बड़ी दयानीय स्थिति में थे कम्प्री लोग। उनका पता नहीं था कि भारत में रहे या पाकिस्तान गए। 1990 गांधी के पंडितों के लिए सबसे अभिशाप भरा वर्ष रहा। वादी से पंडितों का सामूहिक विवादन इस वर्ष में हुआ था। करोड़ों की संपत्ति छोड़कर करीब एक लाख पीड़ित वादी छोड़कर बनिहाल पर चले गए। वादी छोड़कर चले गए पंडितों के कई घर जला दिये गए हैं, कईयों
लेखिका के इन शब्दों में विस्तापन की भविष्यवाणी हम देख चुके है - “एक बार पेश उगाए सीं के भी बदले जीवन जीते, कमों, दड़ों में रहने-सड़कों विस्तारों से पूरा, कि तो छोटा कैसा होता है? भीमारियों, अपमानों और मनोरोगों के बीच जीते, अन स्वास्थमानी लोगों से धुएँ, लू के धरपड़ों, बिचुँ-सयों के बीच जीते लोगों से पूरा, उन्हें अपने उन्हें के धरने छोड़ने पर मजबूत माँ कैसा है। आत्मी घटनाओं के माध्यम से उन्हें अन्य कठोरों का भी तना-भाणा जना गया है। 13 जुलाई 1931 का दिन आतंक का साथ लेकर आया जब अज्ञात कादर गप्तने भड़ककर भाषण दिया। जिसके परिणाम स्वरूप महजबी दंगे भड़के और चारों और उसका बातचित्र बन गया। गैर मुस्लिम लोगों के पर जला दिया गया। दुकानों लूटी। शासकों के द्वारा इस घटना से भाई भाई का दुष्कर्णि बन गया। इसके परिणाम स्वरूप वादी में दंगे और आतंकवादियों की नींव मजबूत हो गये। पूरा और शक्ति की तरह मिल-जुलकर रहते हिन्दू मुस्लिम भाईयों के बीच अदृश्य द्वंद्व दूर हो गया। घटी में ‘मुस्लिम कांग्रेस’ का प्रदर्शन हुआ। 1942 में विजय साहब कमेठर आये तो उन्होंने ‘मुस्लिम कांग्रेस’ का सभा में भाषण दिया - “भाईयों, मुस्लिमों का एक मंच है, एक खुदा, एक कलम। सभी इस झंडे के बीच आकर अपने खड़े के लिए लड़ा।” गांधीजी और नेहरू ने निजाम साहब से मिलकर मुस्लिम लोग और कांग्रेस की समस्याओं में मिल बैठकर आपस में सुलझाने की पेशकश की। लेकिन निजाम साहब तो हिरास्त नीति पर आड़े रहे। उन्होंने कहा कांग्रेस को हिन्दूओं और लोगों को मुस्लिमों की संस्था मानों तभी बात होगी। निजाम साहब की नजी 15 अगस्त 1947 को देश दो दुकानों में बंट गया - भारत और पाकिस्तान। दोनों तरफ माराक्षत, लूट, और जीवन शून्य हो गया। “सुना है अमृतसर - लाहौर से लोगों से पट्टी रेलगाड़ियों विलिय आ रही है और विलिय से कटी-पटी लाओं जबन में पासल की जा रही है। ठूलों के ठूलों लोग पोटली-वुगचे उठाओ सात-सात घर बार छोड़कर भाग निकलते हैं। हे राम, कैसी आजादी मिली।”

सबसे बड़ी द्विगति स्थिति में थे कमरीजी लोग। उनको पता नहीं था कि भारत में रहे या पाकिस्तान गए। 1990 घाटी के पहले के लिए सबसे अभियान भरा रहे रहा। वाइस से पहलों का समाप्त निकास्थान इस वर्ष में हुआ था। करोड़ों की संपत्ति छोड़कर करीब एक लाख पैदल वाहिनी छोड़कर निवास पर चले गए। वाहिनी छोड़कर चले गए पंडितों के कई पर जला दिये गए हैं, कई चश्चे
पर आंकियाँदिवस ने कहा कर नियम है। वहाँ किसी के दरवाजे पर मेरे हांदी का पेंक रखा मिलता तो खड़कते समझ लेते कि जोहार के उनकी बेटी से विवाह करना चाहते हैं। कमला-विमला के वस्त्र काटकर, कान में डंगरों की तरह लटका जा रहे थे, गाँव के टुकड़े से ईंट गांव की बुझारी को भोगने का बाद, जिसमें ही आर्थी से दो हिस्सें में कटा जा रहा था। ईंट नासन में लिंग-एफेल की गाँवी पर उन्नति से ने बेम फूंका। मोदु, मोदुलार्ड, मार्गरीगुड़, सस्ताएं नए अवधारियों से फटने लगीं। जब भी सर पर छल विद्वा, पंडितों ने धरी, टाट-चढ़रे बांधकर आई कर ली। वे शाराँई दिल्ली और जन्म में बनाये सिंवियों में अपनीकाय जिन्नें जीने के लिए विवाह हो गए। रिलाइफ फूंक से उन्हें अब मिल गया। पर अभ में भी समयें है। इमेलिका लैंडने के माध्यम से अपना ही दुःख प्रकट करती है - "पर के अर्थ वही जानता है, जिसका पर छोटा गया हो, पर छिन्नां, अपने भूखों, अपने इंतजाम और अपने स्पृह संसार से कट जाना होता है। पर कोई किसी के इशारे पर अकरण ही नहीं छोड़ सकता।"7

उपन्यास के आरम्भ में एक सूचक परिवार के खुशहाल का चित्रण हुआ तो अंत तक आते-आतें वह पूरा परिवार निरंत-निरंत हो जाता है। विस्मायण से एक सूचक परिवार में हुए दरां तलीनी के यह कथन द्वारा लेखिका पाठकों के सामने प्रस्तुत करती है। बुझापे में लौकी को अपना जनमभूमि छोड़कर न्यू जेसी जाना गया। उसकी चाह है कि मरने से पहले वह अपना मिस्टरी नोट आएगी। अपनी बेटी से वह कहती है कि "नब्बे वर्ष पुराना चाला बेहाल खिचाए इंतज़ार का साथ नहीं निभा पायेगा।"10

निकृष्ठ

कथा सतीश अपना है व्यायांक लेखिका भूमि में कहती है - "कोई भी कथा पूरा नहीं होती। वे सब ही, जैसे कोई भी खोज गया सब अर्थम सत्य नहीं होता और न ही कोई परंपरण मुक्तसमल।"11 अब 2018 आ चूका है, लेकिन कस्मीर घटी के दर्श का कोई अंत नहीं। कस्मीर
समस्याएँ आज भी अखबारों का मुख्य विषय है। लेखिका ने पात्रों के माध्यम से पृथ्वी के स्वर्ग कमीर को नरक बनाने के जिम्मेदार शासकों और राजनीतिक नेताओं की भूमिका, असाधारण थे और हत्त-मूल नीतियों को पर्याप्त करने का प्रयास किया है। कमीर से विदेशवाद का अंतरा मिट जायेगा फिर घाटी में स्वेच्छा होगा। यही उम्मीद के साथ चंद्रकांता जैसे कमीरी पंडित जी रही है।

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विवर्तपरिणामयोः साम्यवैषम्यविचारः

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भारतीयदर्शनेनेथ शून्यं - आरम्भ - परिणाम विवर्त चतवारो वादा:
कार्यकारण भावविध्ये प्रसिद्धः। तत्र माध्यमिकवौङ्ख्तात् शून्यमेव परं तत्त्वम्।
जान्ते जातृ भावमय सम्पूर्णविष्ण्यां प्रति तेषां “सर्व शून्याः” इति सिद्धान्तः।
न्यायदेशेषिकस्वीकृतः आरम्भ वादम्। यत्र आरम्भवादाः प्रायेण
कार्यमनागतमार्थायते। न्याय कार्यकारणवादनुसारे कार्य कारणात्यूर्णरूपेण
भौमम्। सांख्यदर्शने प्रपञ्चः त्रिगुणात्मकप्रकृते: परिणामो चर्तते। अह्मेतमते
प्रपञ्चः ब्रह्मविवर्तस्यितः।

अह्मेतदान्तिनां मध्येपरिप्रविधि पश्चः स्त:-

- परिणामाध्वेति: विवर्तमङ्गकिष्टते। तत्र भास्कर-भूत्त्वपञ्च -
यादवप्रकाशादयः परिणामाध्वेति:। तेषु भास्कर: उपाधिपरिणामस्वीकरताः।
बृहदारण्यस्य व्याख्याताः भूत्त्वपञ्चः ब्रह्मसूत्र भास्करप्रविधिता यादवप्रकाशशृंग
स्वरूपपरिणामवादमेव स्वीकर्तु:। विवर्तमङ्गकारस्य श्रृंग.राचार्यसम्मतः। तत्र
परिणामो नाम उपादानसमस्तकान्यथाभावः। विवर्तस्य उपादान
विषमसताकान्यथाभावः इति।

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परिनामवाद:-

परिणामाद्वैतिनां मते ब्रह्म सतिष्ठष्टमेव। विजीतविशेषणां च ब्राह्मण
अभ्युपगमत्। परं तु एतेषां मते वस्तु: जीवब्रह्मणोऽभ्युपगमात्
स्वाभाविकभेडस्वीकारच्च सजातीया: विशेषा: परं न स्वीकिर्यान्ते। एतेषां मते
उपादानोपादेशयोऽभ्युपगमात्: तत्र भेद: तत्त्वविधानं च समानाधिकरणम्।

आचार्या: रामानुजाचार्या: अपि परिणामाद्वैतमेव उपस्थापयामासुः। तत्र
एतावान् भेद:–

सिद्धान्ते हि जीवब्रह्मणोऽन्य: स्वाभाविकभेडाभ्युपगमात् भेदस्य
सुधिरत्त्वेन सजातीयविशेषाः अति स्वीकिर्यान्ते इति सजातीय: विविध ब्रह्म इति।
तत्सात् एते आचार्या: विविधाद्वैत तत्प्रावरणविचारः इति प्रथं प्राप्तः।

विवर्तवाद:–

विवर्ताद्वैतिनो हि मन्यन्ते अश्रेष्टविशेष प्रत्यनेकं प्रत्यक्ष स्वरुपं
धिरति: चिन्मात्र ब्रह्मवेदचरमार्थः। तद्व्यतिरिक्तं सर्वं मिठया। “एतत् सत्यकाम परं चापरं
च ब्रह्म”2 है निःशुद्धितत्वः।”3 इत्यादि श्रुत्येनुसारं परमपरं चतुष्टि विविध ब्रह्म
आन्तर्भवनं भवति। तत्र परविविधाविषयः परं ब्रह्म निविषयमुः। तत्सातच
नित्याधिकारणम्। अपरविविधाविषयः अपरं ब्रह्म निष्ठगामसुः। नदुपसं च
गतिकारकं च तमभाववासवेलाषानं क्रममुक्तिहेतुं च। तं तथा यथार्थमात्रे तदेव
भवति हि वचनेन उपासनानुरुग्येन्यूः फलस्य निर्णयताः।

ब्रह्म च विवर्ताद्वैतमेव। तत्र विवर्ताव नाम उपादानविषयमस्ताकः
अन्यथाभात: इति प्रारंभमक्षमुः। ब्राह्मणः परमादिकसतातवचात् प्रपञ्चस्य च
व्यावहारिकसतातवचात् उपादानाध्य प्रकाष्ठविविधमस्ताक्षमुः। जगदाद्रोऽच आत्मा
एक एवासी। स च व्योमादिसेक्षक प्रपन्न रूपमें परिणति। यथा वा बीजं 
वृक्षरूपमें।

विवर्त्तपरिणामोदित: -

विवर्त्तपरिणाम: मते समानस्पिर वर्तमान। विवर्त्तवादिते प्रपन्नः

प्रभाप्रवन्ताविषयी। तेनेन साकं ह, अनिवार्यम् माया - परिणामस्पिर।

परिणामवादिते प्रपन्नः: तिरुगुणात्मकप्रकृति: परिणामो वर्तमान।

विवर्त्तवादितमानसंसारेण कार्यप्रपन्नाः कविकर्मकार्य सत्य सत्यव्यस्तमोगुण

तत्कस्तथा विशुद्धो विषयी। कारणरूपः भूम गुणातीतिम, अविशुद्ध वाच्यविभासित।

कार्य सत्सीमं तथा कारणमसीममाति तथाकारणमणिम वर्तमान। नास्तुभयोरभ्रेष्ट

इति। कार्य मिथ्या मायापरिणामो अस्ति। मायाध्यमः शुद्ध ग्राम न स्तूष्णमि।

विवर्त्तपरिणामो: भ्रेष्ट - विचार।

विवर्त्तपरिणामयोलक्षणानि च आचार्यः परस्पर भिन्नरूपाणि व्याख्यातानि

-“वस्तुनस्तत्तसंसन्ताकोशल्यथा भाव: परिणामः, तदसमस्तायो विवर्तः इति वा,

कारणलक्षणोंकोशल्यथा भावः परिणामः, तद्भित्रकर्म: विवर्तः इति वा, कारणमित्रं

कार्य परिणामः, तद्भेदं विनेत्र तदमय्यतंतं दृष्टिं कार्यं विवर्तं इति वा।⁴

इत्यत्मेव वेदान्तपरिभाषा ग्रन्था उपिणामविवर्त्त्योलक्षणानि कृतानि विधन्ते

-“परिणामो नामपादादन समस्तकार्यापूर्वं विवर्ताः नामपादानविषयमस

ताककार्यापूर्वं।⁵ उपादान समानजातीयं कार्यं विवर्तं इति, तथा उपादानविषयम
जातीय कार्य परिणाम इति, यथा दृष्टस्य परिणामो दशीति, तथा शुक्रियायो शुद्धकृिव इति।

अद्वैतदांत्यां विवर्त्तां, परिणामवादि मतसंकार्यवादे नैकतः विलक्षणार्द्दस्ति। परिणाममतानसारेण कार्यकारणव्याख्या साधु निरूपयित मुखार्द्दस्ति। तत् अनुसारेण कार्य कारणतुल्यस्तनात्मकस्ति। अद्वैतसिद्धि नापयतु कारण सदिति प्रतिज्ञानांस्ति। अयं संक्षितवाद इत्यापि व्याख्यायते।

दृष्टिगण्य तत्कार्यवादस्तथार्थभवादाकै त्वाद्वर्त्तक्ष्या च भूतिकादमस्ति - "प्रतिद्वित्ते स्मिन् परिणामवादि स्वयं समावाति विवर्त्तां:") आरभवादः परिणाम वादशेषेति विवर्त्तक्ष्या भूतिकादमस्ति। 6 श्रीसंकराचार्यस्य कथनमस्ति यत् द्रष्ट - दृश्व - भोक्त - भोग्य नातुस्य - कार्यकारणांदि विभागो इत्य समदि व्यावहारिकः स्त्राघि वस्तुतां स्थ्य पारमार्धिकं महत्वं नास्ति। परमार्थसन्तु एकं भ्रानस्ति। अन्यस्तुस्तता तदर्थी नैवास्ति। समुद्रतरङ्गां यथा समुद्रद्भिस्त्रा न सन्ति, मृत्याग्राणि तदिभिस्त्रा सन्ति, सुवर्णाभूषणानि सुवर्णां भिस्त्रा न भवान्ति, तदवद् प्रपूनाप्रणार्द्द कारणादृं भ्रास्त्रो भिस्त्रा नास्ति। वाचार्यानि घटाध्यानो न वस्तुरुपेण सन्ति, तत्र, तु मूर्द्वास्ति। तद्वद् आपाततां भ्रास्त्रो प्रपूनाद्राणि नामनामो विवृतते। परमार्थसन्तु केवलं भ्रास्त्रौ 7 आकाशदायं धृष्टि यां च आधानस्तत्तेत् सदिति विभाव्यते। वस्तुतां भ्रास्तिरिकं द्वितीयं सन्तासि।

अत्र पूर्वपक्षी वदति कथं चिन्मात्रं भ्रास्त्र जडरुपण परिणामं लभते इति चेत्त, न। भ्रास्त्रं परमार्थं: कार्य्यात् परिणामो नाम नास्ति। वस्तुतं अपरिणामवेषमेव परिणामविशेषभिभवत। एकमेवं सत् अनेकदेवं च
श्रीवाचस्पतिश्मृशैरूक्ते यतः ‘न खलव नन्याक्ष्मित्वष्ट्रेभेदं भ्रमः’ - किंतु भैंदे
व्यासेश्यामः। 15 अर्धाणन्त्यार्थां नास्त्यवेदः, अथि तु असि भैं निषेधं इति।
इवमस्य तात्त्वः, चत्कारणस्तात्मानस्य कार्यसत्ता नासि। मृतिकेत्येव सत्यम्’
अस्य व्याख्यायाम् ‘‘आचार्यश्रृङ्खल प्रशीभवत् नास्ते पादेश्चर्कम् यथृतावस्य तात्त्वः
कारणत्रत्वविशयकमंति। कारणमसि भ्रूवेश्च चतत्त्वत्रिकलावाद्धितमसि।
नामधोषस्थात्मानये नित्यम्’’ 16 अर्थेव विवर्तवादस्य व्याख्यायां भगवत्यादेश्चर्कम्,
घटाकाशो यथा महाकाशाभिभ्रो न भवति, नधर्मेव विश्वप्रपञ्चायोऽपि
अयोरामणुपादानारात्मान्यज्ञदिति। वर्णादिव्यस्तूति नित्यानीति विप्रतिश्चिद्मेतद्।
यतिृत्वं तदसि जिकालाबाध्यम्। यतृ वाध्यते, तदनित्यम्, यथा रामवासर्यः।
प्रकाशपुरुःसर्वानि रज्जवं मिथ्यविलेश्वरणि न दृश्यते, इत्थमेव तत्त्वानि सति
ब्रह्मसाक्षात्कार्य प्रज्ञान विलीयते। अतो वाधितत्वाय प्रज्ञाय नासि सत्यः।
सांख्यशास्त्रस्य भ्रममात्र चत्कारणात्तत्त्वस्य व्यतिरेको नासि तदसः तत्सि
इत्थमेवासात्तत्त्ववादस्य भ्रममात्र चत्कारणात्तत्त्वस्य व्यतिरेको नासि तदसः तत्सि
इत्थमेवासात्तत्त्ववादस्य सिद्धान्तो सत्त्वाय चत्कारणात्तत्त्वस्य व्यतिरेको नासि
तदाव्रो विनिमयमुपयते,
अस्त्र दत्तामस्ति। यताहि वस्तुरुपण कार्यसत्ता कारणसत्ता न व्यतिरिच्छाते।
किन्तु अहं तत्त्वमः कार्यसत्ता आकाशकु मुनिसत्तावदलीकापि न भवति। यताः अन्नकस्य
न भवति कदाचिप्रतीति: विश्वपरमपो वन्यामुनिग्रहेण नस्लि। अहं तत्त्वमः
कार्यं मिथ्याधिनिर्भचनीयमन्यते। श्री वाचस्पति मिथ्येण प्रपञ्चमिथ्यायेव सूमानं
पदितम्।’’येषां वस्तूनां प्रत्यक्षरुपण बाध्यो दृष्टां तानि नित्यानि न भवन्ति,
यथा मृगाश्वाणाय न इत्यत्वं सकलो योग्य प्रपञ्चो स्तितिमध्या। वस्तुद्देत्तु तत्
श्रीकल्ल सदृश्वनि, यथा चिदात्माः।’’17 अनेनेदेमायानि यत्सत्यामिथ्या
प्रकाशान्ध्यकारवदु विरुर्मस्ति। नासित ह्योरंदृशवन्यं अतो श्रीतिभि: कार्यं
कारणास्वत्तत्त्तत्तति न स्वीकृतंम्।

सांख्या यत्परिणाममलेन नित्यामिथ्या - चक्षुः,
नैवाचिकार्योन्त्या धृत्वन्तनानित्यामि लुप्तिमिथ्यि तदेवाद्वैतिनासी मिथ्या कि
वा नित्यावंच्यमिथि चादिरचन्ति। व्यावहारिंक सत्त्वं, अद्वैतिनोपेय मन्यते।
परमार्थरुपण प्रपञ्चसत्ता ब्रह्मां अतिरिक्त न भवति। ‘‘नाभाव उपलब्धं।’’18

वेदक्षेत्रस्य न स्वप्नार्दवत्19 अन्याः: सुषुधाविष्णुनवादिमतक्षणे
प्रपञ्चस्वात्त्विकवस्त् यवनार्दवित्वात्त्विभासिकमिथ्यात्त्वस्य खण्डनम् अयो सिद्धति।
आचार्यो श्रीशाक्तसुभगवत्पादिः सत् विवेकपरम: स्वप्नार्दवित्वात्त्विति
सामविकः; नयम चाँदक प्रतिितियत। यावद् - ब्रह्मसान्य प्रपञ्च वित्वानिवारण
कर्तुमसंभवमिति।20
उपरिनिद्देश विचारप्रक्रियायां ब्रह्मविवतापादानं तथा माया परिणामपुपादानन्तरत्नमं धर्मसं निधनतमः। विवतापादानं ब्रह्म भवायोपहिंतं सहितमिट्टकरणं मन्यते। ्’चतो या इमानि, मायिन्तु महेश्वरं, तदैःक्षत्, एकाकी न रमते, एकाः बहु स्वाम्” इत्याविभिक्षते ब्रह्मविवतापादानन्तरत्नमं सिद्धयति अत एवाते तमते ब्रह्माभिङ्ग निधनपादानन्तरत्नमं स्वीकितयते। विवतापादे श्री सवस्तय सवस्तकितस्वत्यत्वस्य स्थानमसित। स ईश्वरः मायोपहिंतो वर्तते, उक्तिद्विती पुरस्तादेव। मायोपहिंतोक्तेन एव मायाधीश ईश्वरः एव सृष्टिकारःमहिति। विशुद्धे चतन्ते कर्त्तव्यविधयम् न भवन्ति। शुद्धे ब्रह्माणि शुभा अशुभा वा को श्री गुणा न सम्भवन्ति।

श्रीमाणि न को श्री धर्मः अस्ति, निष्ठमक्त्वात्। कृष्णस्थालिनै नित्यशुद्रवृद्धमुक्तस्वभावव्याच। आहुश्च श्रष्ट करारायायः बृहदारण्यका परविष्यस्तभाष्ये - “न च निरञ्जनं विक्रियमाणं दृष्टं क्वाचित्” 21 इति। अन्यज च - “न च निरञ्जनं (अनौपाधिक) अनेकधर्मं तस्मां दृष्टान्तस्ति” 22 इति।

च। सर्वसात्म मुनिनिरपि अवमेय सिद्धान्तः प्रतिपदितो इति।

संक्षेपशारीरके - विवतापादस्य हि पूर्वभूमिः बंदान्तरादे परिणामवादः।

व्यासिते समौ परिणामवादे स्वयं समायाति विवतापादः। 23 इति。”

परिणामवादः श्री विवतापादीपिकः एवेति विशारदकृतम्। अमुमेव सिद्धान्तः पुरुषस्य कल्पतरुकारः एवमहः - वाक्यकारीहि - नासता
निपाध्यात्मक, प्रवृत्त्यानर्थक्यं तु सत्वाविशेषात् इति प्रपञ्चस्य सदस्त्रप्रसन्निरसनेन पूर्वपक्षं प्रदर्शय संविधायामात्रत्वः” इति प्रपञ्चस्य अनिपरस्परार्यतः सिद्धान्त्यति इति।संख्यापरिसरसंग्रहके अधिकां ई जैतमेव राजस्वलि वाक्यका:’’ इत्याभिगृहीति। तथा च ई “स्वयंज्ञातिः प्रत्यावस्तुनः एकबुद्धनिष्ठम्परागुरुद्विग्यत्वमेव नेन घटते” 24 इति वातावरकद्र सिद्धान्तोठि विवेचनावादनकूल एवेतेन निर्णयः सुलभं: भवति।

उपसंहार

समञ्चयोपस्वरूपयं श्राकराचार्यं एवं उक्तम् “किञ्चित्र परिणामनित्यम् किञ्चित्र कर्मस्थलनित्यम्। इति तु पारमाधिकं कर्मस्थलनित्यं व्योभवतस्य सवर्ण्यस्वर्णविविधारिततें नित्तुष्परि निरविचक्षणं स्वयं ज्योतिः स्वभावम्” 25 इति। एतद् भावविवाहणाय प्रचूर: वाचस्पतिमिश्राः अधि: परिणामतिरताःः भेदाभेदविकल्पनेन अनिर्विष्टत्वमेव इति प्रकटीचकृः। किञ्च सूर्यार्पी वादिभ: मोक्षस्य नित्तुष्परि नावदं: गीतिचित्ते तत्तचेत् पारमाधिकं कर्मस्थलनित्यस्विचक्लाभागें: स्वरस्त्र: श्रागच्छते। संपल्लुवादे कर्मस्थलवें गीकारे नित्तुष्परि नावदं: गीतिचित्ते श्रागच्छते इति अन्य श्राधीलत्वमें मोक्षस्यमायिपुपाद्यितः न शक्यते। अत: ग्रहण: परिणामस्यपादानित्यं नेत्रम युक्तं इति विवेचनावादनेचारः।

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(പുന്നുസ്സ്) മലയാളം ഭാഷയുടെ പ്രാക്ടീസ് കൊണ്ടുള്ള പ്രശ്നങ്ങളുടെ മൂലക്കാരന്റെ ഭാഷാരേഖയിൽ അടക്കാനാവുന്നത് സാംസ്കാരികശൈലയും മലയാളം ഭാഷയുടെ പ്രഭാവത്തെ സാമൂഹ്യശൈലിയും പഠിക്കുന്നതിൽ പ്രാസാദിക്കപ്പെടുന്ന അവസാനിക്കുന്ന ഭാഷാവിഭാജനം മലയാളം ഭാഷയുടെ പ്രാണികരെയും പ്രാണികമാരുടെ സാംസ്കാരികകാലാവധിയും പഠിക്കുന്നതിൽ. പ്രായാനിക ഭാഷാരേഖയിൽ പഠിക്കുന്നത് മലയാളം ഭാഷയുടെ പ്രാണികരെയും പ്രാണികമാരുടെ സാംസ്കാരികകാലാവധിയും പഠിക്കുന്നതിൽ. പാരമ്പര്യീകരണാവറഡ്നു മൂലത്തെ പഠിക്കുന്നത് മലയാളം ഭാഷയുടെ പ്രാണികരെയും പ്രാണികമാരുടെ സാംസ്കാരികകാലാവധിയും പഠിക്കുന്നതിൽ. പാരമ്പര്യീകരണാവറഡ്നു മൂലത്തെ പഠിക്കുന്നത് മലയാളം ഭാഷയുടെ പ്രാണികരെയും പ്രാണികമാരുടെ സാംസ്കാരികകാലാവധിയും പഠിക്കുന്നതിൽ.


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നിരവധി പ്രപഞ്ചാലങ്ങളിൽ വിഷക്കിയിലെ പൊതുവായ പ്രാപ്തി. പ്രകൃതിയുടെ പ്രസ്ഥാനത്തിലെ (Taxa) ആണ് കാനികിനാരകയുടെ പ്രത്യേകിച്ചായി ഉറപ്പുവെള്ള സാംസ്കാരികശാസ്ത്രമേഖലയിൽ മത്സരം സന്നദ്ധപാരമ്പര്യം ഇക്കാനന്തും മൂലഭിത്തിച്ചായിരിക്കുന്നു. ഇതിൽ പ്രത്യേകമായി കാനിക ലളിതപദാർത്ഥത്തിന്റെ ചില വിഭാഗങ്ങളുടെ പല പ്രത്യേകതകളാണ് പ്രസ്താവിക്കുന്നത്. ഇതിൽ കാനിക പ്രദേശം ഒഴിവാക്കാൻ ഉയർന്നു പ്രവര്‍ത്തിക്കുന്നു. എന്നാൽ കാനിക ലളിതപദാർത്ഥത്തിന്റെ ചില വിഭാഗങ്ങളുടെ പല പ്രത്യേകതകളാണ് പ്രസ്താവിക്കുന്നത്.
നിരക്കിട്ടിയ ഭാഷയിലുള്ള പദങ്ങളും വാക്യങ്ങളും കാണാൻ നല്ല സൗന്ദര്യമുള്ളതും

നിരക്കിട്ടിയ ഭാഷയിലുള്ള പദങ്ങളും വാക്യങ്ങളും (Traditional Ecological Knowledge-TEK) എന്ന് നിരക്കിട്ടിയ ഭാഷയിലുള്ള പദങ്ങളും വാക്യങ്ങളും പ്രതിമാനം നൽകുന്നു. എന്നാലും ഇവ വിവരിക്കുന്ന പദങ്ങളും വാക്യങ്ങളും ഉപയോഗിക്കുന്ന ഭാഷക്കുറിപ്പിന് പ്രത്യേകതയുള്ളതാണ്. അതുകൊണ്ട് ഒരു പോലെ ഭാഷയിലുള്ള പദങ്ങളും വാക്യങ്ങളും ഉപയോഗിക്കുന്ന പദങ്ങളും വാക്യങ്ങളും ഇവ ഉപയോഗിക്കുന്നതാണ്. ഏതാണ്ട് അതുകൊണ്ട് ഒരു പോലെ ഭാഷയിലുള്ള പദങ്ങളും വാക്യങ്ങളും ഉപയോഗിക്കുന്ന പദങ്ങളും വാക്യങ്ങളും ഇവ ഉപയോഗിക്കുന്നതാണ്.
അവയവതാവ് കൊണ്ട്. കൂടാതെ ഇത് ഇന്നത്തെ രാഷ്ട്രങ്ങളിൽ അന്തർമുന്നലിക്കുന്ന കാന്തി അമ്ലാഭയായ സൈരാക്കായത്തെ (Dominator Culture) ജനിതസ്വാധീനതയെ അനുഭവപ്പെടുന്നുണ്ട്. കൂടാതെ അന്തർമുന്നലിയെ ഡമിനാട്രാക്ക്ഷ്യയിലെ ബീറ്റേഴ്സിന്റെ പൻസാമ്പിലും കൊണ്ട് പൊരുതയാവാതെ ആയിരുന്നതെന്ന് കൊണ്ടേത് നോക്കുക. തുടർന്ന് സൈരാക്കായത്തെ സാമൂഹ്യമുന്നലി ആരാധനാമുന്നല്‍ത്തില്‍ പ്രധാനപ്പെട്ടു. എന്നാല്‍ ഇതിന്റെ ഫലപ്രദമുള്ള പാരമ്പര്യം വളരെ വലുതാണ്. 

ഉദ്ദിഷ്ടമായി എന്തും സന്ദർശനം ഉള്‍പ്പെടുത്തിയിരിക്കുന്ന എന്ന് പറയപ്പെടുന്നതാണ്. തുടങ്ങിയ പാരമ്പര്യശേഷിക്കുന്ന കാര്യാലയത്തില്‍ പ്രധാനപ്പെട്ടു. തുടങ്ങിയ പാരമ്പര്യശേഷിക്കുന്ന കാര്യാലയത്തില്‍ പ്രധാനപ്പെട്ടു. 

ഇത് പ്രധാനമായും രാഷ്ട്രങ്ങളുടെ പാരമ്പര്യം വളരെ വലുതാണ്. 

എന്നാല്‍ ഇത് പാരമ്പര്യശേഷിക്കുന്ന കാര്യാലയത്തില്‍ പ്രധാനപ്പെട്ടു. 

കൂടാതെ ഇത് ഇന്നത്തെ രാഷ്ട്രങ്ങളിൽ അന്തർമുന്നലിക്കുന്ന കാന്തി

(102)
(അക്കൃടാശ്ചാരാചാരാത്മ (Otherness) എന്നതിന് അല്പം കാരണം ആഘോഷികർത്താൻ ഉപയോഗിക്കുന്ന ഒരു പ്രാംബന്ധപ്രകാരം കാണപ്പെട്ടിരിക്കുന്നു. അക്കൃടാശ്ചാരാത്മത്തിന്റെ അതിജീവിതതയ്ക്ക് പ്രാംബന്ധിക്കാവുന്നതിനായി അവയുടെ പ്രകാശക്തിയിൽ കൂട്ടം കാണപ്പെടുന്നു. അതുകൊണ്ട് അവ മനോഹരമായ വായനയുടെ വിഭാഗമായി ഉപയോഗിക്കുന്നു. "Biophilia" എന്ന പുസ്തകത്തിന് എഡ്വാർഡ് ഓ. വിൽസൺ പ്രഖ്യാപിച്ചു. മനോഹരമായ പുസ്തകമായി അവ അടക്കം അതിജീവിതമായ പ്രതിഭാസങ്ങളും ഉണ്ടാക്കുന്ന പ്രതിഭാസങ്ങളും പ്രതിഭാസങ്ങളും പ്രതിഭാസങ്ങളും 1960 ലെ എഡ്വാർഡ് ഓ. വിൽസിൻ പ്രഖ്യാപിച്ചു. മനോഹരമായ പുസ്തകമായി അവ അടക്കം അതിജീവിതമായ പ്രതിഭാസങ്ങളും പ്രതിഭാസങ്ങളും പ്രതിഭാസങ്ങളും പ്രതിഭാസങ്ങളും പ്രതിഭാസങ്ങളും പ്രതിഭാസങ്ങളും പ്രതിഭാസങ്ങളും പ്രതിഭാസങ്ങളും പ്രതിഭാസങ്ങളും പ്രതിഭാസങ്ങളും”. 

(ഭോജസാധനം പ്രതിഭാസത്തിന്റെ അന്താരാഷ്ട്രാചാരാചാരാത്മം ഇന്റർസ്കെപ്റ്റേഷൻ എന്നാണ് സൂചിപ്പിക്കുന്നത്.)
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3. ഭൂ.ജെ തുരുര്വാസനൻ, പി.പി.ജയൻ, പി.പി. മണ്ണപ്പാട്, പ്രഭാഷണം, മുമ്പായി തിരുവനന്തപുരം, 2010
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MM Youle; DA Hawkins; P Collins; DC Shanson; R Evans; N Oliver; Lawrence A. Lancet, 1988, 2, 341.

A book
Author’s Initials Surname. Title, Edition, Publisher, Place of publication, Year of publication; page no.

A thesis
Author’s Initials Surname. MSc/PhD/DSc thesis, University (town, country, year of publication).

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Patents: AB Inventor1, CD Inventor, (Holder), Country Code and patent number (Registration year).

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