

VIJISHA P. "IMPACT OF FOLK SCIENCE AND ACCEPTED SCIENCE ON THE SUPER  
HUMANNESS OF RITUAL PERFORMANCES- A STUDY BASED ON THE PERFORMANCE  
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## CHAPTER FOUR

### TESTING OF HYPOTHESIS

#### 4.1 Introduction

This chapter concentrates upon testing of hypothesis. There are nine hypothesis to be tested. Based on the variables and analysis of data, the acceptance/rejection of hypothesis are decided.

#### 4.2 Hypothesis and Variables to be Tested

1. Physicists as scientists of heat and temperature view *Potten Theyyam* as only a risky and adventurous performance with fire and not as a performance of Super humanness . If it is felt, it is with the help of materials used as costume, speed of the performance and mental stamina of the performer. If the thermal conductivity of materials is below 0. 5, rate of speed of laying over the fire is below 0. 5, and positive opinions in favour of mental stamina of the performer, the hypothesis is accepted.
2. There are incidents of burning which are against the Super humanness of the performer. If one case is found out, the hypothesis is accepted.
3. Future prediction of devotees by performers is made only by practice without any formal study of face reading and psychology. If 51% of

the performers have no formal training in future prediction, the hypothesis is accepted.

4. There are precautions while make up and at performance against burning by the performers. If precautions are directly related to reduction of temperature, the hypothesis is accepted.
5. Compared to ayurveda, allopathy doctors will never accept the application of folk science in their treatment. If the responses of allopathy doctors are against folk science, the hypothesis is accepted.
6. Natives of Kannur and Kasargod believe in *Potten Theyyam* as Super human god. If 51% of natives' belief level is positive to Super humanness, the hypothesis is accepted.
7. Ladies are not the performers of Theyyam. If one case is found out, the hypothesis is rejected.
8. *Potten Theyyam* performance is the monopoly of scheduled caste/tribe people. No forward community people are the performers of Theyyam. If one case of person from forward community is found out, the hypothesis is rejected.
9. Trustees prefer to Theyyam performer from traditional community only. If 51% opinions of the trustees are favourable to traditional performers, the hypothesis is accepted.

### **Variables to be tested for accepting/ rejecting hypothesis**

Thermal conductivity of the materials used as costume by the performer. They are –

1. Tender coconut leaves
2. Rice paste
3. Speed of the performance
4. Mental stamina of the performers
5. Incidents of burning to the performers while Theyyam performance
6. Number of trained performers in future prediction.
7. Direct relationship of precautions taken by performers before and at performance with reduction of heat

Precautions before performance -

- (a) Smearing rice paste upon the body mainly front and back of neck to waist

Precautions at performance –

- (b) Heating up of the body by ‘kalasam’ (That is, finale of quick dance and movements of the body) up to sweating

8. Responses of allopathy doctors against folk science. That is smearing of rice paste as a treatment for burning
9. Natives' belief level of *Potten Theyyam*
10. Number of lady Theyyam performers
11. Number of Theyyam performers not belonging to scheduled caste/tribe
12. Trustees' opinions for Theyyam performers

### **4.3 Testing of Hypothesis**

#### **Hypothesis - one**

Physicists as scientists of heat and temperature view *Potten Theyyam* as only a risky and adventurous performance with fire and not as a performance of Super humanness. If it is felt, it is with the help of materials used as costume, speed of the performance and mental stamina of the performer.

#### **Acceptance/rejection criteria**

If the thermal conductivity of materials is below 0.5, rate of speed of laying over the fire /ember as the number of movements per minute is more than 5 times per minute and 51% of positive opinions in favour of variable thermal conductivity & speed of the movements by scientists and 51%

opinion for mental stamina of the performer by psychologists and sociologists, the hypothesis is accepted.

### **Variables**

- a) Thermal conductivity of tender coconut leaves, and rice paste (The materials used as costume by the performer).
- b) Speed of the performance.
- c) Mental stamina of the performers.
- d) Thermal conductivity of tender coconut leaf

### **Assumption**

Leaves of same species have the same thermal conductivity. Changing factors are the thickness, surface of heat and the way of heating (Frequent/continuous).

In two research papers by ( 1. M. AN, AL – Neseerawi, Department of Physics, college of Education Ibn AL-Haithem, University of Bagdad; **Palm Leaf as a thermal insulation material**; IBN AL-HAITHAM J. for PURE7APPL. SCI vol. 21(2) 2008 and 2. Robert L. Hays, **The thermal conductivity of leaves**; Department of Biology, San Diego state University, California 92182, USA, 1974) it is clearly stated that using Lee's disc method thermal conductivity of palm leaf is found out to be equal to  $k=0$ .

03W/mK indicating that palm leaf is a good thermal insulator compared to the other insulators. It was also found that increasing thickness of good insulator leads to increasing both thermal resistance and insulation while decreasing both heat transfer coefficient and thermal conductance until specific point which after it they are not affected by thickness.

Since the tender coconut palm leaf includes in the same species it is assumed as the same thermal conductivity and it is proved by the researcher in laboratories.

That is thermal conductivity of tender coconut leaf  **$K=0.03\text{W/mK}$**

That is **thermal insulation = .97 or 97%**

a) 2 Thermal conductivity of rice paste

Rice paste means rice flour with water content. Based on the research paper, '**Thermal conductivity and diffusivity of rice bran**' (V. V. Sreenarayanan and P. K. Chathopadhyay; Journal of Agricultural research, vol-34, issue-2, June 1986 pp-115-121), the experiment was made, and it is observed that the thermal conductivity and diffusivity of rice bran increased from when there is moisture content.

Water has the thermal conductivity. However, it behaves in a convective manner the moment there are temperature differences in a volume. Thermal conductivity is defined as how quickly heat is transferred to the

liquid, adjacent to the heat source, but convection will dominate what happens to the heat next.

Using a KD2 thermal properties analyzer, it is observed that the thermal conductivity of rice flour increased with increase in temperature, moisture content and in bulk density and thermal diffusivity decreased with increase in moisture content, temperature and bulk density. The thermal conductivity value of rice flour is 0.045 and thermal diffusivity value is 0.094W/mK.

It is to be noted that during the whole time of performance, the Theyyam maintains the water content in his body by way of sweat with the help of speedy movements.

See Table 3.38.

a) Speed of the performance

Speed of the performance is calculated by the number of movements per minute (See in video Appendix 8, time the performer laying over the ember/ fire).

### **Fire**

Time, the performer laying over the fire = 2 seconds to 6 seconds, that is, number of movements in fire per minute =  $60/2 = 30$

### **10-30 Movements per minute**

It is to be noted that the helpers are compulsory pulling up the performer, but the performer pretends to be cold and ready to lay over the fire for any time, which also creates Super humanness to the audience.

### **Ember**

Time, the performer is laying over the ember =6 seconds to 16 seconds.

That is, number of movements in ember per minute =  $60/16$  to  $60/6$

**= 4 to 10**

It is to be noted that at this time of ember, the heating is getting down which may cause more time to lay over the ember.

See Table 3.7.

Among performers, there are different opinions regarding the speed of the movements in Theyyam. They are :

- Nobody moves speedily to escape from fire. The speed of the movement is the part of the performance and according to the rhythms of drums and ultimately according to the will and wish of the god.
- Speed of the movement is necessary for ritual dance.
- According to the peculiarity of the ritual, movements will be fast.

- Either the speed of the movement or quantity of the ember will not help to overcome the fire or burning.

See Table 3.22

See Table 3.25

See Table 3.28

See Table 32 A

## **Result**

The result of variables after analysis and experiment are as follows :-

Thermal conductivity of tender coconut leaf = 0. 03

Thermal conductivity of rice paste (Rice flour+moisture content) = 0. 05

Number of movements as speed = **10-30 movements per minute (Fire)**

**4 to 10 movements per minute (Ember)**

Table 3.7, 22, 25 and 28 show the thermal conductivity of major items in costumes, that is , tender coconut leaf has the thermal conductivity of 0. 03 and rice paste 0. 05 is below 0. 5 fixed as criterion of acceptance and 81% of scientists' and 100% sociologists' (table 3-38) opinions regarding the the role of costumes.

The rate of speed is to 10 and 30 ( Ember and fire) which above the pre fixed criterion of 5 and 56% scientists' view of the role of speed of the movements in showing of the Super humanness (Table 3-7).

The psychologists' positive opinion regarding the mental stamina of the performer for the Super humanness.

### **Hypothesis One**

*Physicists as scientists of heat and temperature view Potten Theyyam as only a risky and adventurous performance with fire and not as a performance of Super humanness. If it is felt, it is with the help of materials used as costume, speed of the performance and mental stamina of the performer - is accepted.*

### **Hypothesis Two**

**There are incidents of burning which are against the Super humanness of the performer.**

### **Acceptance/rejection criteria**

If one case of burning for the performer while Theyyam performance is found out, the hypothesis is accepted

### **Variable**

Cases of burning

## **Result**

See Table 3.16

Among five victims, that is burned cases, only one person (20%) was only severely burned and injured at Mambram, Koothuparamb. (Table 3-16). Since the criterion of acceptance is one case, *the hypothesis there is incidents of burning which are against the Super humanness of the performer is accepted.*

## **Hypothesis Three**

**Future prediction of devotees by the performer is made only by practice without any formal study of face reading and psychology.**

## **Acceptance/rejection criteria**

If 51% of the performers have no formal training in future prediction, the hypothesis is accepted. There are no planned or in anticipatory techniques for the success of the Theyyam.

## **Result**

Performers strongly claim that there is no conscious technology in the prediction of the future of devotees. It is learned from the tradition and experience. Since 100% performers have no formal training in future prediction, the hypothesis is - *Future prediction of devotees by the performer*

*is made only by practice without any formal study of face reading and psychology - is accepted.*

#### **Hypothesis Four**

**There are precautions while make up and at performance against burning by the performers.**

#### **Acceptance/rejection criteria**

If precautions are directly related to reduction of temperature, the hypothesis is accepted.

#### **Result**

Before performance

- Smearing of rice paste at make-up (See video - Appendix 8) at performance
- Warming up of body by 'Kalasam' or quick movements to generate sweat.
- Continuous movements by changing the body positions.
- Adjusting tender coconut leaves to the empty spaces.

All the above precautions are directly related with the reduction of temperature and heat, the hypothesis- *There are precautions while make up and at performance against burning by the performers- is accepted.*

### **Hypothesis Five**

**Compared to ayurveda, allopathy doctors will never accept the application of folk science in their treatment.**

#### **Acceptance/rejection criteria**

If the responses of allopathy doctors are against folk science, the hypothesis is accepted.

### **Result**

Before and after the Theyyam, performers smear rice paste as a precaution against burning. They claim that the rice paste will reduce the wrinkle or smoulder. However, allopathy and naturopathy are dead against this. But ayurveda and kalari people are ready to promote this.

Since 100% allopathy doctors are against the smearing of rice paste as precaution to burning, it is clear that they are against folk science which not backed by any authentic theories. Hence the hypothesis- *Compared to ayurveda, allopathy doctors will never accept the application of folk science in their treatment* – is accepted.

### **Hypothesis Six**

**Natives of Kannur and Kasargod believe in Potten Theyyam as Super human god.**

### **Acceptance/rejection criteria**

If 51% of natives' belief level is positive to Super humanness, the hypothesis is accepted.

### **Result**

See Table 3.17

See Table 3.18

See Table 3.21

More than half of the natives (51. 5%) are atheists. They (54. 3%) are not believing *PottenTheyyam* as god, but they treat it as an adventurous performance with satire. ( Table 3-17,18 and 21).

Hence the hypothesis- *Natives of Kannur and Kasargod believe in Potten Theyyam as Super human god* – is rejected.

### **Hypothesis Seven**

**Ladies are not the performers of Theyyam.**

### **Acceptance/rejection criteria**

If one case is found out, the hypothesis is rejected

## **Result**

There are no female Theyyam performers in any Theyyams whether it is risky or not. That is, 100% Theyyam performers are men. Hence, the hypothesis - *Ladies are not the performers of Theyyam-* is accepted.

## **Hypothesis Eight**

***Potten Theyyam performance is the monopoly of scheduled caste/tribe people. No forward community people are the performers of Theyyam.***

### **Acceptance/rejection criteria**

If one case of person from forward community is found out, the hypothesis is rejected.

## **Result**

See Table 3.9

Table 3.9 shows that the 100% performers are scheduled castes. That is, 91% Malaya and 7% Pulaya communities. No other communities like OEC, OBC or forward are performing this *Potten Theyyam*. Hence the hypothesis - *Potten Theyyam performance is the monopoly of Scheduled caste/tribe people. No forward community people are the performers of Theyyam-* is accepted.

## Hypothesis Nine

**Trustees prefer to Theyyam performer from Traditional community only.**

### Acceptance/rejection criteria

If 51% opinions of the trustees are favourable to traditional performers, the hypothesis is accepted.

### Result

See Table 3.45

70. 8% of trustees prefer to only traditional performers for conducting the *Potten Theyyam*. (Table 3-45). Since 51% is accepting level, this hypothesis *-Trustees prefer to Theyyam performer from traditional community only-* is accepted.

## 4. 4 Chapter Summary

Among nine hypothesis fitted prior to the research, only one hypothesis is rejected that is - **Natives of Kannur and Kasargod believe in *Potten Theyyam* as Super human god.** Other eight accepted hypothesis are-

- Physicists as scientists of heat and temperature view *Potten Theyyam* as only a risky and adventurous performance with fire and not as a performance of Super humanness . If it is felt, it is with the help of

materials used as costume, speed of the performance and mental stamina of the performer.

- There are incidents of burning which are against the Super humanness of the performer.
- Future prediction of devotees by the performer is made only by practice without any formal study of face reading and psychology.
- There are precautions while make up and at performance against burning by the performers.
- Compared to ayurveda, allopathy doctors will never accept the application of folk science in their treatment.
- Ladies are not the performers of Theyyam.
- *Potten Theyyam* performance is the monopoly of scheduled caste/tribe people. No forward community people are the performers of Theyyam.
- Trustees prefer to Theyyam performer from traditional community only.

## CHAPTER FIVE

# CONCLUSION - SUMMARY, FINDINGS AND SUGGESTIONS

### 5.1 Introduction

The last and final chapter is the conclusion which includes the total summary of the research, findings and suggestions of the researcher.

### 5.2 Summary of Research

Folk science is the knowledge attained by the primitive folk through the repeated attempts for the fulfillment of their basic necessities by trial and error method. They originated this idea from the observation of physical objects and try to operate by the compulsion of the physical conditions. The concept and practice were shared by each other among the folk and handed over the collective knowledge from generation to generation. This lore is channelized through the media of day to day activities of the folk, and the mode of exercise of the rituals, customs and life cycle ceremonies.

In the initial stage all these actions had its own ideology and practice. The first part is the doctrine of evolution of idea and the second part is its implementation.

It developed according to the nature of the folk, their life styles, the time of usages or occasions and the environment of the origin. The belief was

moulded by way of folk communications. Then it gradually become the part and parcel of the daily life whether it may be food practices, dress making, hut making, water irrigation system, agricultural technology, application of folk medicines, home management, community sharing of resources and all other activities in the folk life. In folk science, there was no written theory. It was a chain of practice and oral instructions. But later, for different activities based on the primary knowledge, different alternations have been made by way of explorations. It introduced much modification in tools and methodology. Later practices have dominated by the passage of time. The 'vidhi' (The manner of proceedings) means the concept behind the practice has been disconnected. When the social order established different discipline, the subject science get an individuality and it handled with intellectuals with complex laboratories and experiments. The folk science is spreading with common folk. Many branches of science were established. We ignored the traditional practices. But the common folk has continued the old practice. It is folk science.

Science is an institution. In the book 'Science and History', J. D. Bernal defines "science is what scientists do?" But in the case of folk science, no such names of scientists can be claimed. Our ancestors who have kept and handed over to the common men's wisdom through active bearers of the folk knowledge. It is not written and not proved in the laboratory. Nature is their laboratory. Practice is their experiment.

The science has definite methods, regulations, hypothesis and theories and it is proved with the help of scientific tools. Science has its own language and strategy. The leadership of scientific thoughts is depending up on the intelligence of individuals. But in the case of folk science that is net work of folk and their real sharing experience. Hence, the scientists are not known with their name. The traditional folk was viewed that the nature as their laboratory. Modern scientists built up the laboratory with specific tools and technology. The root of the modern scientific theories and practices is in the folk science

Objectives of the study are as follows:

1. To study the people behind the performance and their precautions before and treatments after.
2. To study the difference if any in showing of in Super humanness both in the natural and induced context.
3. To study in brief about the Fire Theyyams of Kerala and the rituals related to Fire Theyyams.
4. To study about the Super humanness in Fire Theyyams with special reference to *Potten Theyyam*.
5. To study the peculiarities of *Potten Theyyam* compared with other Fire Theyyams.

6. Reasons for the non- acceptance of folk science by the pure scientists.
7. To study the sociological and psychological impact upon Super humanism.
8. To study the exceptional incidents against Super humanism.

Respondents from whom schedules collected are :

- A. Scientists (Physicists)
- B. Performers and helpers
- C. Natives and devotees
- D. Foreigners
- E. Academicians
- F. Psychologists
- G. Sociologists
- H. Doctors
- I. Victims (Burned) of Theyyam
- J. Trustees

The research thesis is divided into five chapter as –

1. Introduction 2. Literature review 3. Analysis and interpretation of data  
4. Testing of hypothesis, and 5. Conclusion – Summary, findings and  
suggestion.

The introductory chapter starts with a general introduction and continues with scope and significance of the study, objectives of the study, respondents from whom schedules are collected, hypothesis, select variables for analysis of data, research methodology, data (Primary and Secondary), tools for data collection, period of study, methods of analysis of data, limitations of the study, and organisation of the report.

The second chapter is a literature review regarding the research problem. Both books and journals' themes in brief with the name of author and publishers are mentioned in it.

The third chapter has two parts. Part-A is the analysis of data and the B part is the interpretation of the researcher from the analysis of data.

Fourth chapter is for testing the hypothesis. A total of nine hypothesis are tested here.

The last and final chapter is a conclusion which includes a total summary, findings and suggestions of the researcher.

The chapter review of literature includes the references of both books and journals including literature from abroad. The importance of rituals in

folklore studies, and Super human skills depicted in Eastern and Western literature. It is very essential to note that no direct literature was received in connection with the research problem, that is, impact of science upon Super humanness in Theyyams.

An introduction to the references is as follows - performances may be either folk or classic. Classic performances are very systematic and to be studied under a well trained teacher with discipline. Folk performances are attained by tradition and passed from generation to generation and it is treated as the part and parcel of life like daily routines. In certain classical arts, we can see the application of folk epics. For example, The root of 'Nizhalkoothu' (Kathakali) has in 'Velamahabharatham' which is a folk epic of Vela community. Folk performances of Kerala claims the history from the Sangam period according to Sangam literature. Folk theater includes folk arts and folk drama.

The folklore is the pulse of people having many rituals. It is having a nature of generic change. The black magic and the blind belief is related each other. Folklorists are not the promoters of blind beliefs. Myth is a modified folktale. Ritual is the remedy to avoid tension and anxiety. Sacred, religious ceremony are offering prayer to god. It is a careful action with belief. The origin of ritual is related to the origin of mankind. The life cycle of an human being is full of rituals from birth to death. In India among all people

irrespective of religion and castes, rituals are conducted. In the present research, concentration is given to Hindu rituals which are felt as Super human in the state of Kerala. From among different such rituals, *Potten Theyyam*, an important Fire Theyyam of Kerala is taken as a case to study the nature of Super humanness from the scientific angle. Science is the cognition and recognition of necessity .

The terms ‘Theyyam’ and ‘Thira’ are used synonymously. According to Dr. Lissy Mathew *Potten Theyyam* is a ritual of survivalism and one among ‘Panchamoorthikal’ (Five Magical Theyyams). The knowledge and power spread by the *Potten Theyyam*’s myth and performance is helped to change the rural life. The ascending pattern of social strata and the comparison of little and elite traditions are explained in detail in the Potten Theyyam ritual. *Potten Theyyam* has been studied from differently as its myth, its concept as ‘Advaita’ philosophy, craft, decoration and costumes, method of making its headgear and everything regarding the culture and art of performance. **Till the date, no attempt has been made by anybody to study about the *Potten Theyyam* from the view point of science.** Hence, this study is original and risky that society including performers and their helpers, trustees or owners of temples, devotees and the natives are strictly against this study . *Potten Theyyam* has a very notable short story by Narikkutty Mohan dealing with love story of higher caste woman and lower caste man. *Potten Theyyam* is promoted as a movement

against untouchability. The Thottam Song of *Potten Theyyam* is explaining the oral history of the village Cherupuzha which is keeping the feature of satiric drama. The make up of the Theyyam starts with face decoration which is depending upon the structure and diversity of the Theyyams. The face make up is not applicable in the case of *Potten Theyyam* since it wears mask. The body make up is with rice paste, tender coconut leaf is used as skirt and as long hair with the headgear. It brings out the warm colour which is matched with fire flames and the shining ember.

Indian literature including Vedas, Epics and Puranas states mainly four types of 'Siddhis', namely, Uttama, Madhyama, Adhama and Adhamadhama as Super humanness claiming its happenings as examples through different stories. But abroad literature defines Super humanness as something imaginary. They are as the methods of generating an 'effect' upon humans in energy sourcing, magical powers, and tele kinesis as - super power interaction, personal physical powers, mentally based abilities, extra sensory perception, physical/mental domination, physics/reality manipulation, elemental and environmental powers, energy manipulation, transportation and travel and miscellaneous. Many imaginary 'Super humanness' examples of abroad, are found out as happened in our Indian epics Ramayana and Mahabharatham and Puranas mainly Agni Puranam and Sri Mad Bhagavatham.

The chapter analysis and interpretation of data is divided into two parts A and B. A part is the analysis of data and B part is the interpretation of the researcher.

The performances Parnettu, Elavoorthukkam, Kuthiyottam, Kuthiratheeb, Paathalahomam/Velanpravrithi, Chooralpadayani, Chandattam, Kalarippayattu, Kalapporu, Muttelneendi nercha, Maadanukoda, Parakkumkavadi, Kanalattam/fire walking and Fire Theyyams are showing Super human elements. Fire Theyyam is a unique performance of North Malabar. According to materials used for fire, it may be classified into three- that is Fire Theyyams based on -

- Ember
- Ember and dried coconut leaf, and
- Flam beau.
- Other classification of Fire Theyyams are based on-
- Mother goddess
- Martyr
- Animal
- Hero, and
- Ancestor.

Among Fire Theyyams Theechamundi is using much ember comparing to *Potten Theyyam* and Uchitta. Kandanarkelan Theyyam is using

less ember but more dried coconut leaves. Dhuma Bhagavathy, Kadamgottu Maakkam are wearing flam beau on waist and headgear. There are three kinds of flam beau (Pantham in Malayalam) - Kettupantham, Kuthupantham and Arayadi panthams.

The Theyyam has a bright scope in future due to increasing rate of theists and the promotion of tourism by the government. Thumbakol Ramachandran Panicker, a well known Theyyam performer is the best example of dedicated artists who performed more than 500 *Potten Theyyam* in India and abroad. There are three contexts for Theyyam performance – natural, induced and quasi natural. The application of science by folk (Folk Science) in ritual performances with special reference to *Potten Theyyam* is examined in the present research. The application level of folk psychology is also examined. The term 'folk science' indicates the science studied only based on practical knowledge and training and using without studying any theory on it. The data is collected from 10 groups or strata of people of the society directly connected with *Potten Theyyam*. They are-

- A. Scientists(Physicists)
- B. Performers and helpers of Potten Theyyam
- C. Natives and devotees
- D. Foreigners

- E. Academicians
- F. Psychologists
- G. Sociologists
- H. Doctors
- I. Victims (Burned) of Theyyam
- J. Trustees/ owners of Temples

Scientists view about *Potten Theyyam* as a great and risky effort and there is no Super humanness (Laying over the ember repeatedly but no burning which is impossible for a common man) to the performers. It is due to the science behind the materials they are using as costumes. That is the materials such as tender coconut leaves and rice paste are possessing low thermal conductivity or they are good insulators. Performers' speed of the movements also causes for Super humanness in fire. Leidenfrost effect is not applicable. Fearless mental state of the performer helps to lay over the ember. Other costume materials like plantain fibre chrysanthus, film of areca, cinnabar, sandal paste and cobalt which are used for the name sake, so it is immaterial to experiment the thermal conductivity. Regarding the speed of the movement, the Theyyam lays over the fire 2-6 seconds, gets up, rounds up and again lays over the ember 7-16 seconds. It means that the rate of the

speed that is the number of movements per minute is -  $16/60$  seconds= $0.27$ minutes. The speed decreases with the heat decrease.

Performers and helpers of Theyyam are changing each other. Mostly the helpers are the family members or close relatives. The majority of the performers are from Malaya community. Besides a small percentage of Pulaya community, no other communities including forward communities are performing this art form. Performers claim that they are getting more mental satisfaction from the *Potten Theyyam* for which they are not taking any precaution against burning. According to performers the success factors are penance, diet control, belief in god and mental strength. If burned, the performer communicates the fact to helpers in their ritual language and the helpers who are alert and vigilant always about fire and burning will do needful immediately, mostly smearing the rice paste. Performers themselves are getting a feeling of Super humanness at the time of performance. They don't feel any differences in natural or Induced contexts of performance. Performers never think about the role of costumes against burning. Just like the speed of their movements also. They never purposively speed up the movements, but it is according to the rhythm of drums. The art of future prediction of devotees are studied from ancestors and tradition, also from through experience and practice.

Most of the natives are atheists, that is non- believers of god. According to them the *Potten Theyyam* is different from other Theyyams in the following respects as-magical, Fire Theyyam with satire, adventurous, against untouchability, immediate blessing, highly philosophical, popular, simple, offering and wearing mask. According to them, the secret of the adventure is on costumes and the speed of their movements and luck. There are many cases of burnings. After the make up, the performer thinks that he becomes god. The thick costumes of tender coconut leaves and helpers who will help to make sure that the distribution of equal heat on the surface of the ember.

Outside Kerala people including foreigners who are interviewed did not see such a type of performance earlier. They admit about the adventure behind the performance but never believe about the Super humanness of the performer. According to them, the speed of the movements and performers' mental power are the factors behind the showing of Super humanness.

The majority of the academicians opined that the *Potten Theyyam* has an academic aura. Super humanness is an illusion that created by the performer.

According to psychologists, myth is an unfulfilled wish. *Potten Theyyam* gives the message of an unfulfilled wish of lower caste and downtrodden people of the past time for getting equal status with higher

castes people in that society. Psychologists points out the paradox in wearing the mask to cover the face. In Psychology 'persona' is termed as the cover or hide many things by a human being against his/her personality. But mask is wore by the Theyyam to open up several things of people of the society.

According to sociologists, Theyyam is a religious, communal and regional festival in which the performer has no Super humanness. Costumes play a main role. Apart from that acting, myth, tradition, light effect, rhythm, movements, shining ember, concentrated mind, mask, skill of the performer, timely help from helpers create Super humanness feeling to the audience. Urban people are also accepting *Potten Theyyam* but as a source of entertainment and also as part of tourism. The new generation is not patient enough to watch the entire and lengthy performance of 24 hours with out food and sleep. They want instant performance for a short while.

Even though ladies are working as helpers to the performance of *Potten Theyyam*, they are not permitted yet to perform due to the non-permission from trustees and their physical impurity. More over ladies are unable to take penance due to household responsibilities.

There are no fans for Theyyam performers whatever risky performances they are conducting, just like human gods since they are gods only at the time of performance and the performers are belonging to lower caste and poor communities. Human gods are programmed by rich group of

people not backed by any myth, religion or tradition. They are making their own religion. Unlike human gods, the Theyyam god is never prosecuted before law. Regarding media, compared to human gods, for Theyyam they are giving less marketing or publicity in India and abroad. Theyyam gods after the performance again turned as an ordinary man but a human god lives and dies as god itself.

Fire Theyyams are risky. There are examples of victims, that is, who have burned while performance. It was due to carelessness in handling the fire torch and negligence on the part of helpers and bad luck.

Doctors of allopathy, ayurveda, naturopathy and kalari treatments have studied for burning. Except in kalari, all other three branches of treatment have their own way of treatment. But for burning, surgery is only in allopathy. All prefer to water as first aid for burning. That is, first they wash the burned portions with water of body temperature. There are three degrees for burning- silly, average and severe. Allopathy is only treating severe cases of burning.

Most of the trustees are prefer to traditional performers than new entrants. New performers may be invited only with consultation with traditional performers and astrologers. Trustees claim that they are experiencing positive results by *Potten Theyyam* and they are not bored with the repeated conducting of any Theyyams. The astrologer fixes the good day

and date for the conducting Theyyam. After the performance also, the astrologer evaluates the satisfaction level. The fund for conducting a Theyyam is not at all a matter. If it is in families, family members themselves offer to the head of the family their contribution as offering. if it is outside families or public places, there will be committees to sponsor the performance. In any case whether it is natural or induced context every body is invited by the trustees to participate and watch the performance with food and facilities.

Among eight hypothesis fitted prior to the research, only one hypothesis is rejected that is - Natives of Kannur and Kasargod believe in *Potten Theyyam* as Super human god. Other eight accepted hypothesis are -

- Physicists as scientists of heat and temperature view *Potten Theyyam* as only a risky and adventurous performance with fire and not as a performance of Super humanness . If it is felt, it is with the help of materials used as costume, speed of the performance and mental stamina of the performer.
- There are incidents of burning which are against the Super humanness of the performer.
- Future prediction of devotees by the performer is made only by practice without any formal study of face reading and psychology.

- There are precautions while make up and at performance against burning by the performers.
- Compared to ayurveda, allopathy doctors will never accept the application of folk science in their treatment.
- Ladies are not the performers of Theyyam.
- *Potten Theyyam* performance is the monopoly of scheduled caste/tribe people. No forward community people are the performers of Theyyam.
- Trustees prefer to Theyyam performer from traditional community only.

### **5.3 Findings from the Research**

The following are the major findings of the researcher from the research-

Folk science is the knowledge attained by the primitive folk through the repeated attempts for the fulfillment of their basic necessities by trial and error method. They originated this idea from the observation of physical objects and try to operate by the compulsion of the physical conditions. The concept and practice were shared by each other among the folk and handed over the collective knowledge from generation to generation. This lore is channelized through the media of day to day activities of the folk, and the mode of exercise of the rituals, customs and life cycle ceremonies.

It developed according to the nature of the folk, their life styles, the time of usages or occasions and the environment of the origin. The belief was moulded by way of folk communications. Then it gradually become the part and parcel of the daily life whether it may be food practices, dress making, hut making, water irrigation system, agricultural technology, application of folk medicines, home management, community sharing of resources and all other activities in the folk life. In folk science, there was no written theory. It was a chain of practice and oral instructions. But later, for different activities based on the primary knowledge, different alternations have been made by way of explorations. It introduced much modification in tools and methodology. Later practices have dominated by the passage of time. The 'vidhi' (The manner of proceedings) means the concept behind the practice has been disconnected. When the social order established different discipline, the subject science get an individuality and it handled with intellectuals with complex laboratories and experiments. The folk science spreading with common folk. Many branches of science were established. We ignored the traditional practices. But the common folk has continued the old practice. It is folk science.

The science has definite methods, regulations, hypothesis and theories and it is proved with the help of scientific tools. Science has its own language and strategy. The leadership of scientific thoughts is depending up on the intelligence of individuals. But in the case of folk science that is net work of

folk and their real sharing experience. Hence, the scientists are not known with their name. The traditional folk was viewed that the nature as their laboratory. Modern scientists built up the laboratory with specific tools and technology. The root of the modern scientific theories and practices is in the folk science

The performances Parnettu, Elavoorthukkam, Kuthiyottam, Kuthiratheeb, Paathalahomam/Velanpravrithi, Chooralpadayani, Chandattam, Kalaripayattu, Kalapporu, Muttelneendi nercha, Maadanukoda, Parakkumkavadi, Kanalattam/ Fire walking and Fire Theyyams are showing Super human elements. Fire Theyyam is a unique performance of North Malabar. Among Fire Theyyams Theechamundi is using much ember comparing to *Potten Theyyam* and Uchitta. Kandanarkelan Theyyam is using less ember but more dried coconut leaves. Dhuma bhagavathy, Kadamgottu maakkam are wearing flambeau on waist and headgear. There are three kinds of flam beau (Pantham in Malayalam) - kettupantham, kuthupantham and arayadi panthams.

The Theyyam has a bright scope in future due to increasing rate of theists and the promotion of tourism by the government. Thumbakol Ramachandran Panicker, a well known Theyyam performer is the best example of dedicated artists who performed more than 500 *Potten Theyyam* in India and abroad. There are three contexts for Theyyam performance –

natural, induced and quasi natural. The application of science by folk (Folk Science) in ritual performances with special reference to *Potten Theyyam* is examined in the present research. The application level of folk psychology is also examined. The term 'folk science' indicates the science studied only based on practical knowledge and training and using without studying any theory on it.

- Natives of Kannur and Kasargod believe in *Potten Theyyam* as Super human god.
- Physicists as scientists of heat and temperature view *Potten Theyyam* as only a risky and adventurous performance with fire and not as a performance of Super humanness. If it is felt, it is with the help of materials used as costume, speed of the performance and mental stamina of the performer.
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- Compared to ayurveda, allopathy doctors will never accept the application of folk science in their treatment.

- *Potten Theyyam* performance is the monopoly of scheduled caste/tribe people. No forward community people are the performers of Theyyam.
- Trustees prefer to Theyyam performer from traditional community only.

#### **5. 4 Suggestions of the Researcher**

1. Different areas of folk science and folk technology have to be documented as nation wide.
2. More researchers are needed to connect the folk science with accepted science.
3. Various theories are to be explored for folk technology.
4. More encouragements are needed to explore folk science which consume more time and money compared to other researches.
5. Science clubs of schools, Colleges and Universities have to invite such knowledgeable old persons and to understand what they have to say. All risky Indian traditional performances have to be documented and such performers are either to be motivated or they should give training to other communities also. A detailed research is needed how the caste system acts as a force in the traditional per romances.

6. A detailed research is needed regarding why the women and other castes are not allowed to perform the Theyyam like folk performances.
7. A university is to be started by the government for traditional arts and performances that similar to 'Kerala Kalamandalam'.
8. Science and Research Institutions like IISC, BARK, TIFR and IIT are to come forward to do further research in Indian folk science and Folk technology by granting more fellowship to attract bright scholars.
9. Since poor folk artist especially Theyyam artists are doing very risky and dangerous performances, Government has to come forward to grant them a free group insurance.
10. Finally, folk management systems of each and every traditional art and performance is to be studied in detail and the institutions like Indian Institute of Management have to come forward to include them in the syllabus for new generation managers.