

Ancient Science of India 5: Scientific Insights in the Vedic Age Compendium Manusmritithat Demands Worldwide Pre-eminence – A Cumulative Review

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ABSTRACT The various impacts of Manusmriti, outstanding with social, cultural, administrative, judiciary and many more insights of the facts in the Indian way of lifestyle, became so complementary that one follows it conceptually, knowingly or unknowingly even to date. In addition to its glory, the epic is also resourced with many scientific facts like, the creation and dissolution of the universe, the geological time scale, ecological factors, the origin of life and expansion of biodiversity, ecological indicators, food chain of the nature and flow of energy, aspects of pollution, contamination and their prevention, maintenance of salubrity, ethics for conservation of biodiversity, basis of Varna division and its genetic relevance, conservation of genetic traits, proposing the basic principle of binomial nomenclature, ascertaining consciousness in plants, and a scientific basis for the classification of the plant and animal kingdoms including human beings as well as information about the Vedic plant Soma. The Smriti had primarily formulated the environmental laws to overcome problems of pollution, contamination and conservation of biodiversity.

INTRODUCTION

The *Smriti* are regarded as the law books formulated by saint and sage scientists like Manu and others. These are post Vedic and no date can be definitely assigned to these scriptures. *Smriti* are traditionally supported to be based on the Vedas. As per Hindu concept, Vedas are primary and *Smriti* are secondary authority to disseminate knowledge. They record civil laws, social obligations, ceremony, performance of births and deaths, marriages, daily rituals, customs of several castes envisaged by people of different stages of life. In this context, *Smriti* are more close to society, human lifestyle and activities signifying the human and environment relationship (Padhy et al. 2001a). The purpose of *Smriti* is to add all humans to attend highest spiritual development and to guide the society in the right perspective.

Manusmriti is the first ethical compendium on human jurisprudence presented by Maharshi Manu and construed to be the highest doctrine for the formulation of human ethics (Goldstucker 1977). Its contents are original and based directly on the thoughts of Veda, and subsequently, the other *Smriti* writers of ancient India have followed the footprints of Manu. The present day research considers the compendium as a source of inspiration and pattern

for all codes given by the various law givers of the ancient civilisation and a monumental work of encyclopaedic range with deep insights into human psychology, eugenics, metaphysics, genetics and ethics (Murthy 1994).

It is worthy to mention here that the modern day environmentalists of the world over have seriously started considering the diversified aspects of the role that religion can, rather must play in saving the natural environment (Editorial 2002). This view is sufficient to pinpoint the importance of research on ancient literatures, which are mostly religious based.

Aim

The aim of the present communication is to focus over the scientific insights of Manusmriti in a cumulative form.

METHODOLOGY

The epic Manusmriti has twelve *Adhdhaayas* (chapters) that deal with a wide spectrum of aspects of human life, from creation (*Srushiti*) to transmigration (*Mokshya*), which are depicted in 2,685 *Sloka*. The analysis of the *Sloka* is done by many elites, but for the present study the book of

G. Buhler, "The Laws of Manu", from the series, "Sacred Books of the East" (Ed. Max Muller 1886) is followed, which is an extract of the Sanskrit commentaries of the Indian authors like Govindaraj, Kulluka Bhatta, Nandakarya, Medhatithi, Narayana, Raghavananda and a Kashmir copy, the author being unknown. The other books taken for reference are Roy (1968), Acharya (1993), Das (1995) and Swain (1997). The present work was carried out following the "Literary Research Techniques" of Ethnobiological Research (Padhy 1998; Padhy et al. 2015) and the findings of the ancient science in the epic are presented in diminutive form in the text.

OBSERVATIONS AND DISCUSSION

Manusmriti is written in the Sanskrit language and the facts are presented in hymns (*Sloka*). Proper analysis of Sanskrit terminology reveals the primary scientific ideas of ancient Indians, thousands of years ago when the humanity of the whole world was in the dark of such wisdom. They are as follows.

1. The **theory of creation**, equivalent to the "Big Bang Theory" and "Pulsating Universe Theory" of Modern Physics is profound in the epic, and has explained the condition of the universe before the onset of the creation, not perceived by modern science as yet (Mohapatra et al. 2001c).
2. The **age of the present creation** dates back to 197,29,49,100 years and the existence of creation in the dormant stage (cosmo-atomic) is evident since 629,12,21,100 years. The total cosmo-creation period as calculated by Manu, is to be $31,104 \times 10^{10}$ earthy years (Mohapatra et al. 2001c).
3. The **universal time concept**, as explained in the *Smriti*, with the narrowing of the time units as 360 earthy years is equal to one divine year and 12×10^6 divine years is equivalent to 12 hours of Brahmaa, the creator, which signifies Einstein's theory of relativity as "if someone moves with the speed of light to space, the time factor runs in the opposite direction" (Mohapatra et al. 2001c).
4. Manvantara, a ruling period of Manu, equivalent to $30,672 \times 10^4$ earthy years, is used as a **yardstick to measure the geological time scale** (Mohapatra et al. 2001d).
5. Analysis of the Sanskrit names of the seven Manus, the rulers of the universe, namely,
 - a. Syayambhu Manu or **Self Revelation**: Creation of the universe occurred due to self-exposure (Big Bang)
 - b. Svarachisa Manu or **Self Identification**: Formation of galaxies, planetary world and the earth in it
 - c. Auttama Manu or **Self Contribution**: Expanding of the universe moving away from the centre
 - d. Taamasa Manu or **Self Restraining and Binding**: Solidification of planets (earth, as well) from a gaseous state
 - e. Raibata Manu or **Self Producing Potentiality**: Growth of the plant world, evolution of chlorophyll and other pigments, biogeochemical cycle
 - f. Chaakshusha Manu or **Self Visioning Potentiality**: Creation of the animal world with eyesight or power of cognisance
 - g. Vaivassvata Manu or Present Ruler or **Self Realising Potentiality**: Evaluation of man with rationality appeared during this ensuing creation, reveals the chronological sequence in the geo-biological evolution of the universe and the earth in it (Mohapatra et al. 2001d).
6. **Life has appeared in the water medium**, interacting with other ecological factors associated with the momentum of the hydrological cycle. The concept of creation of life by Manu (explained through *Samkhya* Philosophy), is associated with the evolution of psychological characters along with the biological developments, and is more rational compared to theory of modern science, with the latter is being based on a biochemical background (Mohapatra et al. 2001e).
7. Manu, **the father of biological classification**, has proposed the division of the plant kingdom into flowerless (Cryptogams) and flowering (Phanerogams) similar to modern botany (Padhy and Dash 2000) and classified the animal world including man on the basis of birth (*Janmani*) (Dash and Padhy 1997b). Human beings are further categorised into three groups like *Rakshasa*, *Pissaaacha* and *Manushya* on the basis of food habits and cultural activities.

Moreover, the animal classification of Manu has influenced Indian mythology as evident from the popular deity *Panchamukhee Hanuman* (Padhy et al. 1999).

8. **The plants are declared to have internal consciousness** (Padhy et al. 2020), with the experience of feeling pleasure and pain. Probably no ethical jurisprudence scriptures in the world, so far, has suggested a punishment to be inflicted for injuring a plant and asked the human beings to observe a penance for cutting of fruit trees, shrubs, creepers, lianes and any plant either of agricultural or springing up spontaneously for no good purpose (Dash and Padhy 1997b, 1998a).
9. The ethics for the **conservation of biodiversity** with a manifold approach from ethical, social, sympathetic, administrative, dietetic and religious points of view, with the basic theme of non-violence to subhuman beings and vegetation, stands as the concrete phenomenon to save the depleting biological ecology as of today (Dash and Padhy 1998c,d; Padhy 1999; Padhy et al. 1998).
10. **The various ecological perspectives** in Manusmriti, along with the biological evolution, other basic psychological characters like power of concentration, power of communication, sex for pleasure, power to acquire, and power to show reaction/retaliation are expanded as secondary manifestations and such characters are not only to be attributed to human beings, rather possessed by all animates too (Mohapatra et al. 2001e).
11. **The whole processes of creation and evolution have occurred systematically in the order of nature's law**, and not at random. The ecological niche of an organism is specified in Manusmriti, pertaining to its identity, working principle and ecological possession. The aforesaid concepts are holding well with modern environmental science (Mohapatra et al. 2001e).
12. Other ecological facts such as identification of an ecological indicator to ascertain a conducive environment (Padhy and Dash 1995; Padhy et al. 1997a), designing a food chain to trace out the movement of energy (*Praana* or the vital spirit) in the ecosystem (Padhy et al. 1997b), coining different maxims (dicta) to overcome **pollution and contamination** (Dash and Padhy 1998a), and dealing with the topic salubrity from ecological, ethical, social and health points of view, uplifts the seer scientist **Manu, as an Apostle of ecological knowledge** (Padhy 2000). The ecological insights of Manu, in toto can be traced out from multifarious aspects, such as socio-ecological niche, academic environment, family atmosphere, social interaction, Solubrity and ethical protection of biota (Padhy et al. 2001a).
13. Modern biological taxonomy claims its priority for the system of **binomial nomenclature** (the principle to name the plants and animals with two parts of genus and species, introduced during 1753). In this context, Manusmriti is the pioneer to introduce the nomenclature phenomenon based on phylogenetic principles with social and ecological implications (Mohapatra et al. 2001b).
14. The Varna division in Indian scenario, which is based on *Guna* (quality) and Karma (action) of a person, but not as a matter of birth right as adapted by Manu. Discouraging production of *Varnassankaras*, attempts for **conservation of genetic traits** and looking forward to more **evolutionary eugenics** are the different aspects concerned to genetic studies in Manusmriti, which are wrongly interpreted and misunderstood from a non-scientific point of view. Moreover, the recovery of a pure line trait from the *Varnassankara* offsprings, backcrossing with the pure line *Varnas* up to six generations, is a rational approach for the conservation of the genetic pool in human beings. The modern findings based on anthro-social genetic studies have indicated that there has been a lot of movement of genetic material between different castes through the female trait, by marrying to males of higher castes, and this is in conformity with the Manu's experimental design (Dash and Padhy 1998e; Padhy 2001, 2010).
15. The biology of **artificial insemination** can be traced out in the epic, which was expected to occur under restricted natural conditions of physical, social, psychological and ethical

environments, and the process named as *Niyogo Pratha* was prevalent in ancient Indian society (Mohapatra et al. 2001a). This is a positive step towards genetic conservation.

16. It is evident from the depictions of Manusmriti that Vedic age Indians were much more conscious of the environment. They had formulated **environmental laws** to overcome problems of pollution and contamination as well as for the conservation of biodiversity. The environmental laws of the then time were more of ethical significance and didactic, used to pursue subjects not to commit any offence of spoilage (wrongdoing) of the ecology. There is another category of the laws which provides an option to a committer to undertake penance for a default. The aim of the penance was to make someone conscious of their misdeeds thereby preventing them from repeating the mistake with an internal theme of self-realisation. However, the king was also empowered to punish offenders, acting against the environmental principles. The environmental laws of Manu formulated during 5000 BC are beyond imagination compared with that of the modern era, where the latter came to perception only during the recent century, that is, 2000 A.D. The most important feature to be focussed on here is that the then environment was free from pollution and contamination with much less population, and free from unwanted cruelty towards biodiversity. The formulation of the environmental ethics so minutely based on observations being watched during that time, it was indicating, rather highlighting, on the strong foresight of the Vedic people. Most probably, they had formulated the laws and environmental ethics not only for themselves, but with a futuristic, that is, all time consideration and hence of value even under the present environmental scenario (Padhy et al. 2006c).
17. Facts relevant to Vedic age plant **Soma** with special reference to Manusmriti and further research in this line is of interest (Dash and Padhy 1997a, 1998b; Padhy and Dash 2002, 2004, 2019; Padhy et al. 2001b).
18. The eco-friendly, scientific Heritage of **Five Great Sacrifices** (*Pancha Mahaa-Yajnya*)

presented in the epic Manusmriti is further reflected in the Bhagavad Gita, *Tantraphilosophy*, Indian festivals, Yoga and Bible, and is discussed separately (Padhy 2021).

The ancient Sanskrit epics of India are divided into seven categories such as *Veda*, *Upaveda*, *Vedaanga*, *Upaanga*, *Smriti*, *Tantra* and *Puraana*. These epics are enriched with the Ancient Science of India with extensive description of nature, ecology in addition to social and spiritual aspects. These wisdoms are ever fresh, ever appropriate and everlasting above the limitations of time, place and action, and beyond the range of doubts, disbelief and danger. There are 20 major *Smritis*, and about fifty minors are available. Out of them the Manusmriti is the biggest and highly regarded one. The various aspects reflected in this communication focus on the scientific ideas of ancient Indians during the Vedic age period and need a worldwide propagation.

CONCLUSION

Manusmriti has focused the ancient science starting from the Cosmic Ecology of the Universe upto the Origin of Life on the Earth. This epic is the first Ethical Law Book of India/World and contains the guiding principles for the whole humanity from different point of view.

RECOMMENDATIONS

The ancient Sanskrit epics of India are enriched with scientific thoughts of Vedic age people, needs to be rediscovered in the present context.

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