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Navagunjara: An intricate web of life from ethno-ecological perspectives

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Abstract

The Navagunjara, a mythical creature from the Mahabharata, symbolizes the unity of diverse life forms and the divine's manifold manifestations. Appearing before Arjuna during his pilgrimage, it challenges his understanding of reality by presenting a composite form with parts from nine different animals. This episode representing the appearance of an astonishing life form contributes to the spiritual and philosophical growth of Arjuna. Navagunjara emphasizes the principle of interconnectedness for the divine's presence in all life forms, aligning with Arjuna's larger experiences of destruction and renewal in nature.

Keywords: Navagunjara, mythology, interconnectedness, consumer, biodiversity, evolution

Introduction

Since the dawn of human civilization, plants and animals have been venerated by the Indians. Animals like elephants, bulls, cows, monkeys, rats, birds, snakes, tortoises and fishes are worshipped directly whereas deities like *Ganesh*, *Nrusingha*, *Varaha* and *Hayagreeba* are worshipped because they are an inseparable part of nature having animal-like heads and human body in Indian religious practice. Almost all the deities (super-humans) are also associated with one or the other animals (sub-humans) as their mount (*Vahaana*), which is specific for each deity, representing the God in animal form. The personality and nature of the deity symbolize the characteristics of the animal (Vitasaxis, 1977) ^[1]. Animal worship, though symbolic, plays a vital role in the conservation of animals. Particular animal associated with the deities in many instances are not killed (rather conserved) by the sect of worshippers (Padhy, 2009) ^[2]. The cow as the mother is famous in India and commonly people are hospitable to an ox. Likewise, Indians are reluctant to kill a snake, a rat or a cat. It is observed that feeding the crow in the morning before starting the daily hotel business is an outcome of the influence of mythology. In day-to-day rituals of Hindus like *Vaishnavdevapuja*, a major share of food is dedicated to dogs, crows and insects which signify the highest philosophical thought for the conservation of animals (Dash and Padhy, 1998) ^[3].

Navagunjara is a magical legendary creature in the Indian epic Mahabharata, symbolizing the union of diverse forms of life. It is an incarnation of Supreme Lord Vishnu, appearing before Arjuna during his penance atop a hill on quest of knowledge. The creature had the head of a rooster, three legs each from a different animal (elephant, tiger and horse or deer), the fourth being a human hand holding a chakra (Disk) or lotus. It also has the neck of a peacock, the hump of a bull, the waist of a lion, and the tail of a serpent. The Navagunjara-Arjuna scene is sculpted at the northern side of Sri Jagannath Temple, Puri. Also, the Nila chakra disk atop the temple has eight Navagunjara carved on the outer circumference, all facing toward the flag post above (Starza, 1993) ^[4]. Navagunjara is depicted in *Ganjifa* playing cards as the King card and Arjuna as the minister card, in parts of Odisha, mainly in Puri district and Ath-Rangi Sara in Ganjam district. This card set is also popularly known as Navagunjara (Kishor, 2007) ^[5]. Likewise, this mythical animal is a common motif in the *pattachitra* style of painting in Odisha. The motif finds place in *pattachitra* silk handloom sarees as well and is thus highly appreciated being timeless. This paper illustrates Navagunjara, a mythical entity, as a powerful symbol that bridges the gap between ancient wisdom and contemporary understanding, to appreciate the intricate web of life that connects all beings.

Navagunjara from mythology

This concept of Navagunjara is described in a regional version of the Mahabharata, nurtured within the Odia tradition, rather than in the main Sanskrit text (Mahapatra, 1984a)^[6]. The version of Hindu Mahabharata written by 15th century Odia poet Sudra Muni Sarala Das belonging to the village Jhankada of Jagatsinghpur District narrates the legend of Navagunjara, that appeared before Arjuna, the Pandava prince and an accomplished archer, during his pilgrimage in the forest, a time when he was seeking divine knowledge in course of preparation for the impending Kurukshetra war (Dasa, 1977a)^[7]. The encounter occurs when Arjuna is deep in meditation, contemplating the mysteries of life and the nature of the divine (Mookerjee, 1983a)^[8]. In this state of spiritual quest, Navagunjara appears as a composite creature with various animal parts, challenging Arjuna's understanding of reality (Dasa, 1977b)^[9]. The story of Navagunjara is also associated with the burning of the Khandava forest by Arjuna, an event that takes place in the Mahabharata. The burning of the Khandava forest is a separate and pivotal incident where Arjuna aids Agni, the God of fire in consuming the forest, which was the home to many beings including the serpent king *Takshaka* (Ganguli, 1883)^[10]. The Khandava forest blazed in a fierce inferno, with Agni, hungrily devouring trees, creatures and even the smallest form of life. Arjuna with his unmatched archery, wove an impenetrable barrier of arrows around the forest, trapping the terrified animals within leaving them no escape from the relentless flames. As the creatures faced a tragic demise and vibrant tapestry of life disintegrated in the heat, a stunning, mystical figure-Navagunjara suddenly appeared before Arjuna, halting the destruction with its awe-inspiring presence. Initially startled by this strange and terrifying form, Arjuna quickly recognizes it as a divine manifestation, signifying the unity and diversity of the cosmos (Mahapatra, 1984b)^[11]. However, both events occurred in Arjuna's life as significant episodes. This appearance serves as a test of Arjuna's perception and wisdom, illustrating that the divine can take any form, and that all forms, no matter how strange or diverse, are part of the same ultimate reality (Mookerjee, 1983b)^[12]. The episode reinforces the theme of the divine's omnipresence and the importance of seeing beyond appearances to understand the deeper truths of existence (Dasa, 1977c)^[13].



Fig 1: Navagunjara with rooster head holding a lotus

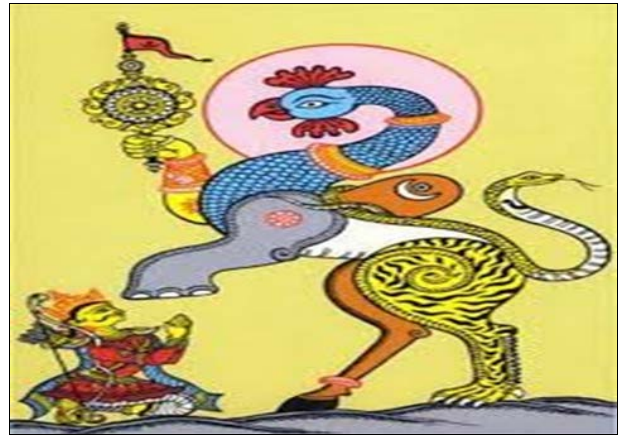


Fig 2: Navagunjara with rooster and parrot beak holding a disk (chakra).

Significance of the Constituent Animals

In some legends and pictures (Fig-1 & 2) one leg of Navagunjara has been represented as that of a deer instead of horse holding a disk (chakra) rather than lotus in human hand. Thus, here the significance of deer and disk have also been outlined.

The Rooster (Head)

Spiritual Significance: In many cultures, the rooster symbolizes vigilance, bravery, and the heralding of new beginnings. The rooster's crowing at dawn is seen as a call to awaken and start anew, embodying the dispelling of darkness and ignorance with the light of knowledge (Smith, 1997)^[14].
Scientific Significance: Scientifically, the rooster's crowing is a fascinating behavior studied in the context of circadian rhythms. Roosters crow at dawn due to their internal biological clocks, which are influenced by environmental cues such as light (Kojima et al., 2011)^[15]. This behavior exemplifies the complex interplay between genetics and environmental factors in regulating animal behavior.

The Peacock (Neck)

Spiritual Significance: The peacock is revered in Hinduism and other cultures for its beauty and grace. It is associated with the deity Kartikeya, the God of war and victory. The peacock's vibrant plumage is seen as a reflection of the universe's splendor and the concept of divine creation (Bhattacharya, 2005a)^[16].
Scientific Significance: From a scientific perspective, the peacock's tail is an example of sexual selection, a concept introduced by Charles Darwin. The lavish tail feathers are used in courtship displays to attract mates, indicating the health and genetic quality of the peacock (Darwin, 1871a, 1871b)^[17, 23]. This phenomenon highlights the role of sexual selection in the evolution of species.

Parrot (Beak)

Spiritual Significance: Parrots symbolize communication and are seen as divine messengers in various spiritual traditions (Taylor, 1988)^[18]. In Hinduism, they are associated with Kama, the God of love and desire (Zimmer, 1990)^[19]. Native American tribes view parrots as symbols of wisdom and spiritual insight (Gill, 1982)^[20].

Scientific Significance: Parrots exhibited advanced cognitive abilities, such as problem solving and language skills (Pepperberg, 1990) ^[21]. They are key indicators of biodiversity and help to maintain healthy ecosystems (Collar and Juniper, 1992) ^[22]. Vibrant plumage of parrots provides insights into evolutionary biology, shaped by sexual selection and environmental factors (Darwin, 1871b) ^[23].

The Bull (Hump)

Spiritual Significance: In Hinduism, the bull is sacred and is associated with Nandi, the vehicle of Lord Shiva. The bull symbolizes strength, fertility, and endurance. It is also a representation of dharma (righteousness) and the steadfast adherence to spiritual duties (Kinsley, 1988) ^[24].

Scientific Significance: Bulls (symbolic representation of Oxen) have been crucial in agriculture, serving as draught animals for plowing fields and transportation. Their domestication represents a significant advancement in human civilization, facilitating the development of settled agriculture and the rise of complex societies (Diamond, 1997) ^[25].

The Lion (Waist)

Spiritual Significance: The lion is a symbol of power, courage, and royalty. In Hindu mythology, the lion is associated with the goddess Durga, who rides a lion and embodies the triumph of good over evil. The lion's majestic presence symbolizes divine authority and protection (Bhattacharya, 2005b) ^[26].

Scientific Significance: In the animal kingdom, lions are apex predators, playing a crucial role in maintaining the balance of ecosystems. They control the population of herbivores, thus preventing overgrazing and promoting biodiversity (Estes, 1991) ^[27]. This role underscores the importance of predators in ecological stability.

The Serpent (Tail)

Spiritual Significance: Serpents hold significant spiritual meaning in many cultures. In Hinduism, the serpent is associated with Kundalini, the coiled energy at the base of the spine that, when awakened, leads to spiritual enlightenment. Serpents also symbolize rebirth, transformation, and immortality due to their ability to shed their skin (Zimmer, 1946a) ^[28].

Scientific Significance: Scientifically, serpents are studied for their unique adaptations, such as venom production and their ability to sense infrared radiation. These adaptations allow them to be effective predators and play important roles in controlling rodent populations, thus maintaining ecological balance (Vitt and Caldwell, 2014) ^[29].

The Elephant (One Leg)

Spiritual Significance: Elephants are highly revered in Hinduism and symbolize wisdom, strength, and loyalty. The elephant-headed God, Ganesh is one of the most worshipped deities, representing intellect and the remover of obstacles. Elephants embody the virtues of patience and stability (Bhattacharya, 2005c) ^[30].

Scientific Significance: Elephants are keystone species in their habitats. Their activities, such as tree felling and seed dispersal, significantly shape the ecosystem. Conservation efforts for elephants are crucial as they help to maintain biodiversity and ecological processes (Sukumar, 2003) ^[31].

The Tiger (One Leg)

Spiritual Significance: The tiger symbolizes power, ferocity and passion. In Hindu mythology, the Goddess Durga is often depicted riding a tiger, representing her strength and ability to overcome evil. The tiger's presence in mythological narratives underscores the balance of power and the importance of righteous strength (Bhattacharya, 2005d) ^[32].

Scientific Significance: Tigers, as apex predators, are critical for maintaining the health of ecosystems. They control prey populations and help to prevent the overpopulation of herbivores. Conservation of tigers is crucial for preserving biodiversity and ensuring the stability of their habitats (Sunquist and Sunquist, 2002) ^[33].

The Horse (One Leg)

Spiritual Significance: Horses are symbols of vitality, freedom, and movement. In Hindu mythology, the horse is associated with the Ashvins (Ashvini Kumars), twin gods of health and medicine, symbolizing speed and agility. Horses represent dynamic energy and the pursuit of spiritual and physical journeys (Kinsley, 1988) ^[34].

Scientific Significance: Horses have played a significant role in human history, particularly in transportation, agriculture and warfare. Their domestication marked a major technological advancement, facilitating trade, travel and cultural exchanges across civilizations (Clutton-Brock, 1992) ^[35].

The Deer (One Leg)

Spiritual Significance: The deer symbolizes gentleness, grace and tranquility. In Hindu mythology, the deer is associated with the forest God Vayu representing purity and innocence. The presence of deer in sacred texts often signifies a peaceful and harmonious environment (Zimmer, 1946b) ^[36].

Scientific Significance: Deer are essential for ecosystem functioning as herbivores. They influence vegetation dynamics and serve as prey for large carnivores. Knowledge of their behavior and population dynamics helps in understanding the health of ecosystems and managing wildlife populations (Putman, 1996) ^[37].

The Human Hand with Lotus

Spiritual Significance: In Navagunjara, the human hand holding a lotus signifies the union of human action and divine grace in the pursuit of spiritual purity and enlightenment. The lotus, symbolizing spiritual awakening, combined with the human hand, represents the potential for individuals to elevate their consciousness through righteous deeds (Kramrisch, 1992) ^[38]. This imagery teaches that while the lotus remains unstained by the mud it grows in, humans must strive to remain detached from worldly temptations while maintaining purity of thought and action. It conveys that spiritual progress is a collaborative process involving both human effort and divine support (Coomaraswamy, 1985) ^[39]. This union illustrates the balance of karma (action) and moksha (liberation), encouraging seekers to rise above material existence toward spiritual fulfillment.

Scientific Significance

The combination of the human hand and lotus also holds biological and symbolic value in science. The dexterity of the human hand, evolved for precise manipulation, is symbolized

through the delicate act of holding a lotus, which reflects humanity's capacity for careful, intentional actions (Lock and Farquhar, 2007) [40]. The lotus, with its hydrophobic properties, metaphorically aligns with the ability of humans to interact with and shape their environment while retaining inner purity (Bar-Cohen, 2011) [41]. This synergy illustrates human resilience and adaptability, as the hand, representing human ingenuity, holds the lotus, which signifies nature's self-cleansing and adaptive powers. Together, they symbolize harmony between human action and the natural world, emphasizing the need for mindful interaction with the environment to foster growth and resilience.

The Human Hand with Chakra (One Limb)

Spiritual Significance: The human hand holding a chakra (discus) is symbolic of divine power and protection. In Hinduism, the chakra is a weapon associated with Lord Vishnu, used to restore dharma and fight against adharma (unrighteousness). The presence of a human hand with a chakra in Navagunjara underscores the divine intervention as well as the moral and spiritual guidance provided by the deity (Bhattacharya, 2005e) [42].

Scientific Significance: The inclusion of a human hand holding a chakra can be interpreted symbolically in the context of human evolution and technological advancement. The human hand represents the development of fine motor skills and the use of tools, which have been critical in the advancement of human societies. The chakra, a symbol of technology and innovation, reflects humanity's unique capacity for creating tools and systems that shape the environment and society (Wilson, 1998) [43].

Chakra (Discus)

Spiritual Significance: The chakra (discus) is a symbolic representation of the eternal cycle of time and dharma. In Hinduism, it is often associated with Lord Vishnu, who wields the Sudarshana Chakra, symbolizing the power to destroy evil and protect righteousness. The chakra embodies

the cosmic order and justice, signifying control over one's destiny and the universe itself (Zimmer, 1946c) [44]. On a spiritual level, it also represents the wheel of life, the continuous cycle of birth, death, and rebirth (Olivelle, 1992) [45].

Scientific Significance: Scientifically, the chakra can be related to the concept of energy centers in the human body, as understood in yoga and Ayurveda. These energy centers or chakras regulate various physical, emotional, and spiritual aspects of human life, emphasizing balance and harmony within the body (Feuerstein, 2001) [46]. The rotation of a disc, like the chakra, can also be seen as a metaphor for the cyclic nature of time and the patterns observed in nature, from planetary orbits to biological rhythms (Capra, 2010) [47].
Lotus

Spiritual Significance: The lotus is a powerful symbol of purity, spiritual awakening, and enlightenment in Hinduism, Buddhism, and other spiritual traditions. Despite growing in muddy water, the lotus blooms untouched by its environment, symbolizing spiritual purity and the soul's journey toward liberation (Eliade, 1969) [48]. The flower is associated with Lord Vishnu and represents the emergence of the soul from the material world into spiritual enlightenment. In many traditions, the lotus also signifies detachment and non-attachment to worldly desires (Cunze, 2013) [49].

Scientific Significance: From a scientific perspective, the lotus is often studied for its unique property of remaining clean, due to the water-repellent characteristics of its leaves, known as the "lotus effect." This self-cleaning property has inspired innovations in nanotechnology and surface science (Barthlott et al., 2001) [50]. Additionally, the growth of the lotus from muddy water to pristine beauty can symbolize resilience and the ability to thrive in challenging conditions (Wagner, 1984) [51].

Table 1: Constituent parts of Navagunjara and their significance.

Animals/ Ayudhas	Sanskrit Name	Scientific Name	Significance	
			Association with God/Goddess	Symbolic representation.
Rooster	Kukkuta	<i>Gallus gallus</i> Linn.	Mercury, Murugan	Vigilance, Bravery and heralding of new beginning
Bull	Vrsabha	<i>Bos taurus</i> Linn.	Shiva	Strength, fertility, endurance, righteousness and agriculture
Peacock	Mayura	<i>Pavo cristatus</i> Linn.	Kartikeya	Beauty, grace and splendor of the Universe
Lion	Simha	<i>Panthera leo</i> Linn.	Durga, Narasimha	Power, courage and royalty
Serpent	Uruga	<i>Naja naja</i> Linn.	Shiva	Kundalini (the coiled energy), rebirth, transformation and immortality.
Elephant	Gaja	<i>Elephas maximus</i> Linn.	Ganesh, Laxmi	Wisdom, strength, intellect, loyalty, patience and stability.
Tiger	Vyaghra	<i>Panthera tigris</i> Linn.	Durga, Shiva	Power, ferocity and passion
Horse	Ghotakah	<i>Equus caballus</i> Linn.	Ashvini Kumaras (God of health and medicine)	Speed, agility and dynamic energy
Deer	Mrgah	<i>Axis Axis</i> Linn.	Vayu, Shiva	Gentleness, grace and tranquility
Human	Manusya	<i>Homo sapiens</i> Linn.	Mirror reflection of God	Free will
Lotus	Kamala	<i>Nelumbo nucifera</i> Linn.	Laxmi, Vishnu, Brahma, Saraswati	Purity, spiritual awakening, enlightenment, detachment to worldly desires and souls journeying towards liberation.
Chakra (Disus)	Chakram		Vishnu	Power to destroy evil and protect righteousness, cycle of birth, death and rebirth.

Navagunjara: At the confluence of Spirituality and Science

Comprising nine different animals, the multifaceted symbolism of Navagunjara stands as an icon of unity amidst diversity, representing a rich confluence of spiritual, philosophical, and scientific insights.

Spiritual Dimensions:

In Hindu mythology, Navagunjara is often viewed as an incarnation of the Lord Vishnu. Vishnu's incarnations are seen as divine interventions aimed at restoring cosmic order (dharma) whenever it is threatened. Navagunjara's appearance before Arjuna is spiritually significant as it underscores the presence of divinity in diverse forms. This encounter symbolizes the idea that the divine can manifest in myriad ways, transcending conventional boundaries and forms (Bhattacharya, 2005) ^[52].

Also from a spiritual perspective, Navagunjara embodies the concept of unity in diversity, a central tenet of Hinduism. This creature, composed of parts from different animals, suggests that all life forms are interconnected and ultimately part of a singular divine reality. This aligns with the Advaita Vedanta philosophy, which posits that all beings are expressions of the same universal consciousness (Sharma, 2000) ^[53].

Scientific Perspectives:

From a scientific standpoint, Navagunjara can be interpreted as an allegory for the principles of biodiversity and evolution. The creature's composite form highlights the diversity of life and the intricate ways in which different species are interconnected. Modern biology recognizes that the diversity of life forms is a result of evolutionary processes that have shaped the development of species over millions of years (Wilson, 1984) ^[54].

Biodiversity and Evolution: Navagunjara's form, combining features from various animals, can be seen as a metaphor for the evolutionary tree of life. Evolutionary biology explains how different species are related through common ancestry and how diversification occurs through natural selection, genetic drift, mutation, and gene flow (Darwin, 1859; Mayr, 1963) ^[55, 56]. The depiction of Navagunjara can thus symbolize the branching and interweaving of evolutionary paths that have given rise to the rich tapestry of life on earth (Futuyma, 1998) ^[57].

Genetic Variation and Adaptation: The concept of a creature composed of multiple animal parts can also reflect the importance of genetic variation and adaptation in evolutionary processes. Genetic diversity within populations is crucial for the survival and adaptation of species in changing environments. This diversity is the raw material for evolution, enabling populations to adapt to new challenges and opportunities (Lewontin, 1974) ^[58]. The different parts of Navagunjara can be seen as representing the genetic variability that is essential for evolutionary resilience and adaptability.

Ecological Interconnectedness

Navagunjara's composite nature also mirrors the interconnectedness of ecosystems. Each part of the creature represents a different ecological niche and their harmonious coexistence within a single entity mirrors the balance required in ecosystems for sustainable existence. Ecosystems are complex networks of interactions among organisms and their

physical environment, where the health of the whole system depends on the well-being of each part (Odum, 1971) ^[59]. This reflects the scientific understanding of ecosystems as intricate webs of interdependencies, where the loss or alteration of one component can have cascading effects on the entire system (Levin, 1998) ^[60].

Systems Biology and Holism: In contemporary science, the concept of Navagunjara can be related to the field of systems biology, which studies the complex interactions within biological systems. Systems biology emphasizes a holistic approach, recognizing that the properties of biological systems emerge from the interactions among their parts. This perspective aligns with the integrative symbolism of Navagunjara, suggesting that the creature's composite form represents the emergent properties of life that arise from the interactions among diverse components (Kitano, 2002) ^[61].

Trophic Levels of the Specified Animals

Primary Consumers

Rooster (Chicken): Chickens are omnivores that primarily consume grains, seeds, insects, and small plants, making them primary consumers in the food chain (Smith, 2015) ^[62].

Peacock: Peacocks primarily feed on plants, seeds, and small insects, placing them in the primary consumer trophic level (Kumar, 2017) ^[63].

Parrot: Parrots are herbivores, primarily consume a plant-based diet like seeds and fruits placing them as primary consumers within ecological food chain (Synder et al.2000; Forshaw, 2010) ^[64, 65].

Bull (Cattle): Bulls, like other cattle, are herbivores that graze on grasses and other plants, making them primary consumers (Stevens, 2014) ^[66].

Elephant: Elephants are herbivores that feed on grasses, leaves, fruits, and bark, placing them in the primary consumer trophic level (Ghosh, 2013) ^[67].

Horse: Horses are herbivores that feed on grasses, grains, and other plant material, placing them in the primary consumer level (Anderson, 2015) ^[68].

Deer: Deer are herbivores and considered primary consumers in food chains as they feed directly on producers, such as grass and other plants (Smith, 2015) ^[69].

Secondary Consumers

Serpent (Snake): Many snakes are carnivores that prey on small animals, insects, or other reptiles, making them secondary consumers (Wilkins, 2018) ^[70].

Tertiary Consumers

Lion: Lions are apex predators that primarily consume herbivores like Sambar, Nilgai and buffalo, placing them at the top of the food chain as tertiary consumers (Jones, 2016) ^[71].

Tiger: Tigers are apex predators that hunt large herbivores, making them tertiary consumers in their ecosystem (Singh, 2019) ^[72].

Human: Omnivore (Primary, Secondary, and Tertiary Consumer) Humans occupy multiple trophic levels due to their omnivorous diet, consuming plants (primary consumers),

herbivores (secondary consumers), and carnivores (tertiary consumers) (Brown, 2020) [73,78].

Table 2: Status of various fauna associated with Navagunjara.

Associated fauna	Scientific Name	Family	Status		
			WPA* (Schedule)	IUCN	CITES (Appendix)
Rooster (Red jungle fowl)	<i>Gallus gallus</i> Linn.	Phasianidae	II	LC	-
Bull	<i>Bos taurus</i> Linn.	Bovidae	-	-	-
Peacock	<i>Pavo cristatus</i> Linn.	Phasianidae	I	LC	III
Lion	<i>Panthera leo</i> Linn.	Felidae	I	VU	I
Serpent	<i>Ophiophagus hannah</i>	Elapidae	II	VU	II
Elephant	<i>Elephas maximus</i> Linn.	Elephantidae	I	EN	I
Tiger	<i>Panthera tigris</i> Linn.	Felidae	I	EN	I
Horse	<i>Equus caballus</i> Linn.	Equidae	-	-	-
Deer	<i>Axis Axis</i> Linn.	Cervidae	III	LC	-

*Wildlife (Protection) Act, 1972 (ammended Act, 2022)

Ecological Balance

Primary Consumers (Rooster, Peacock, Bull, Elephant, Horse or deer): These herbivores are crucial for controlling plant populations and ensuring the flow of energy from producers (plants) to higher trophic levels (Smith, 2015) [74]. By feeding on plants, they help to prevent overgrowth and contribute to nutrient cycling (Kumar, 2017) [75].

Secondary Consumers (Serpent): Snakes and similar predators control the population of primary consumers, preventing overgrazing and promoting biodiversity by maintaining a balance among prey species (Wilkins, 2018) [76].

Tertiary Consumers (Lion, Tiger): As apex predators, lions

and tigers play a critical role in controlling the populations of herbivores and secondary consumers. This helps to maintain the structure of ecosystems by preventing any one species from dominating and ensuring a diverse and balanced ecosystem (Jones, 2016) [77].

Humans: As omnivores, humans’ impact multiple trophic levels. Sustainable practices by humans are vital for maintaining ecological balance. Overexploitation of resources or disruption of any trophic level by humans can lead to ecosystem imbalances, such as overpopulation of certain species, habitat loss, and biodiversity decline (Brown, 2020) [78].

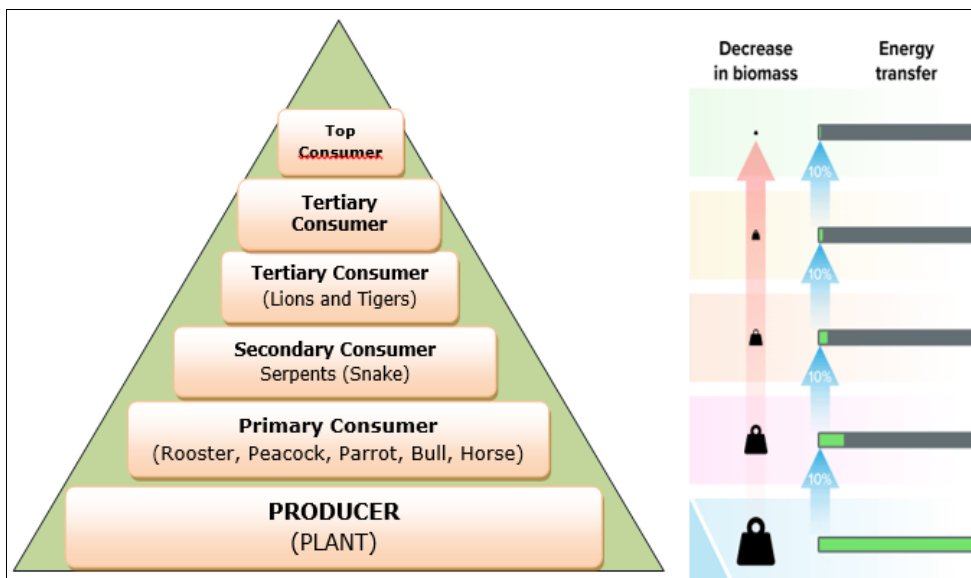


Fig 1: Ecological pyramid structure

Description of the Pyramid

1. Producers (Base level, not specified in the list): Although not listed, plants, grasses, and other autotrophs form the base of the pyramid, supporting all other trophic levels by converting sunlight into energy through photosynthesis.
2. Primary Consumers (Second Level): Organisms like the Rooster, Peacock, Parrot, Bull, Elephant, and Horse (or Deer) occupy this level. They are herbivores or omnivores that feed directly on plants or plant-based materials.
3. Secondary Consumers (Third Level): The Serpent

4. Tertiary Consumers (Fourth Level): Lions and Tigers are at this level. As apex predators, they hunt secondary consumers or herbivores.
5. Humans (Omnivores, Top Level): Humans are unique because they can occupy multiple trophic levels depending on their diet, which can include plants (primary consumers), herbivores (secondary consumers), and even other carnivores (tertiary consumers).

Pyramid Shape

The pyramid (Fig.1) typically narrows from the base to the top, representing the reduction in available energy and biomass at each successive trophic level. Fewer organisms exist at the top due to the energy loss that occurs with each transfer between trophic levels. This structure is crucial for maintaining ecological balance, as it illustrates the energy flow and the interdependence of organisms within an ecosystem.

Discussion

The Navagunjara episode appears in the Odia version of the Mahabharata. It takes place when Arjuna was on a pilgrimage and encounters the divine creature during his period of exile (Mahapatra, 1984) ^[79]. This creature, a manifestation of Sri Krishna, tests Arjuna's perception of reality and understanding of the divine. Navagunjara's appearance emphasizes the idea that divinity encompasses all forms of life, a lesson that complements Arjuna's experiences during the Khandava forest episode, where he witnessed the destruction and rebirth cycles in nature (Das, 1977a) ^[80, 82]. This form represents the interconnectedness and unity of all life forms, a profound concept in Hindu philosophy (Mookerjee, 1983c) ^[81]. The appearance of Navagunjara emphasizes the idea that the divine manifests in various forms, transcending the ordinary perception of reality (Das, 1977b) ^[82]. It has been opined by (Rao, 1993) ^[83] that, Navagunjara can be seen as a representation of the interconnectedness of all life forms and the underlying unity of existence. The creature's composite nature prompts a reflection on the nature of identity and the interconnectedness of all beings. In the Mahabharata, Arjuna's encounter with Navagunjara serves as a reminder of the need to look beyond superficial differences and recognize the underlying unity of all existence. Chakrabarti (1994) ^[84] has also supported this view by stating that Navagunjara challenges the conventional notions of categorization and classification. By embodying parts of nine different animals, it disrupts the rigid boundaries that humans often impose on the natural world. This can be seen as an invitation to embrace a more holistic and integrative worldview, recognizing the fluidity and interconnectedness of all forms of life. All these views have been corroborated by the ancient Hindu scriptures like Srimad Bhagavad Gita and Srimad Bhagavatam.

The Interconnectedness of all Organisms: The Srimad Bhagavad Gita and Srimad Bhagavatam, two of the most revered scriptures in Hindu philosophy, present a profound vision of the interconnectedness of all life. In these texts, all organisms—whether human, animal, plant or the unicellular forms of life are seen as part of a unified cosmic web, woven together by the divine presence that pervades the universe. The interconnectedness described in these texts emphasizes not only the unity of life but also the intrinsic relationship between all beings, the environment, and the divine.

The universal vision of the Srimad Bhagavad Gita: In the Srimad Bhagavad Gita, Krishna teaches Arjuna the essential unity of all existence through the lens of cosmic oneness. One of the most prominent themes is that all beings, regardless of their form, are part of the same divine source. Krishna states, "I am the origin of all; from me everything emanates" Bhagavad Gita (10.8). Here, Krishna is seen as the cause and sustainer of all creation, emphasizing that every organism, animate or inanimate, is intrinsically connected to the divine

and to each other.

The Gita further explains that this interconnectedness is facilitated through the presence of the Atman, or the soul, which resides in all beings. Krishna asserts that the soul in all creatures is the same and that differences in forms are superficial. "The soul is eternal and indestructible, while the body is transient" (Bhagavad Gita 2.20). This teaching indicates that all organisms are united by the commonality of the soul, which is a part of the divine reality. Thus, all beings—human, animal, plant, and even inanimate objects—are part of the larger cosmic whole, interconnected through the same divine energy.

The ecological vision of interdependence: The Bhagavad Gita also touches on the ecological interconnectedness of life. In Chapter 3, Krishna describes the symbiotic relationship between humans, nature, and the Gods: "Through sacrifice, nourish the Gods, and the Gods will nourish you. Thus, by nourishing one another, you will attain the highest good" (Bhagavad Gita 3.11). This verse implies that human beings must recognize their dependence on the natural world and engage in practices that promote the well-being of all life forms. The sacrifice mentioned here can be understood as living in harmony with nature, performing actions that benefit all life forms, and supporting the ecological balance.

Additionally, Krishna teaches that all life is interwoven in a cycle of giving and receiving, and violating this cycle leads to imbalance. "The man who enjoys the gifts of nature without providing anything in return is, indeed, a thief" (Bhagavad Gita 3.12). This underscores the responsibility of humans to respect and reciprocate to the natural world's gifts, recognizing the delicate balance of life and its interdependence. Ecological interdependence refers to the vital interactions among organisms within an ecosystem where producers, consumers and decomposers form interconnected energy and nutrient cycles (Tilman, 1982) ^[85]. In this complex network of relationships, species rely on each other for survival, such as producers supplying energy to the consumers and decomposers recycling nutrients in the ecosystem (Begon et al., 2006) ^[86]. This balance ensures ecosystem resilience, as organisms depend on each other for food, habitat and survival justifying their interconnectedness with disturbances in one part of the ecosystem often leads to wide ranging ecological impacts (Huston, 1994; Naeem, 1998) ^[87, 88].

The cosmic view of the Srimad Bhagavatam: The Srimad Bhagavatam expands upon the themes of interconnectedness found in the Gita, offering a more detailed vision of the cosmic unity of all organisms. According to the Bhagavatam, the entire cosmos is the body of the divine being, and every living creature, whether small or large, plays a role in maintaining the cosmic order. In the description of the universal form (Virat Purusha), the Bhagavatam explains that the different parts of the divine body are composed of various elements of the universe, including different species. "The trees and plants are the hairs of the universal body, and the mountains are considered as bones" (Bhagavatam 3.6.14). This imagery illustrates the idea that all elements of creation, from the smallest blade of grass to the highest mountains, are essential parts of the same divine form.

Moreover, the Bhagavatam speaks of how the Supreme Being sustains and maintains all living creatures. "The Lord is present in the hearts of all living entities, sustaining them from within" (Bhagavatam 2.2.35). This verse highlights the

Bhagavatam's vision of interconnectedness through the divine, where God sustains all beings from within, forming an internal bond that connects every organism at a fundamental level. This view suggests that no organism exists in isolation, and every living being is an essential part of the divine plan.

The Role of Karma and Dharma in Maintaining Balance: Both the Srimad Bhagavad Gita and Srimad Bhagavatam emphasize the importance of living according to dharma or righteousness, to maintain balance in the world. Karma, the law of cause and effect, plays a crucial role in sustaining this balance. According to the Bhagavad Gita, actions taken in harmony with the natural order result in harmony, while selfish actions disrupt the balance. "One who works without attachment, for the welfare of others, attains the Supreme" (Bhagavad Gita 3.19). Here, Sri Krishna stresses the importance of selfless action for the welfare of all beings, reinforcing the notion that individual actions have consequences for the larger web of life.

The Bhagavatam further explores this idea through anecdotes that illustrate the consequences of disrupting the cosmic order. In one such story, King Prithu, considered an incarnation of Lord Vishnu, learns that when rulers and people exploit nature without offering gratitude and care, the earth suffers, and all organisms are affected (Bhagavatam 4.18.5). This illustration emphasizes the interconnectedness of human actions with the environment and all living beings, suggesting that ethical and ecological stewardship is vital for maintaining the balance of life.

Unity through Bhakti (Devotion): The concept of interconnectedness in the Bhagavad Gita and Bhagavatam is further enriched through the idea of bhakti or devotion. In the Bhagavad Gita, Krishna declares, "Whoever offers me with love a leaf, a flower, fruit, or water, I accept that offering of pure love" (Bhagavad Gita 9.26). This verse suggests that even the simplest elements of nature are divine offerings, showing the inherent connection between humans, the natural world, and the divine. The act of offering itself symbolizes the reciprocal relationship between human beings and the universe, where mutual care and devotion form the foundation of existence.

Similarly, the Bhagavatam explains that devotion to the Lord fosters love for all creatures. "One who is a devotee of the Lord has equal vision towards all living entities, seeing the Lord within all beings" (Bhagavatam 11.29.13). Devotion leads to an understanding of the oneness of all life, as devotees see all beings as a fragmented part of the divine, further reinforcing the interconnectedness of life through the lens of spirituality.

Conclusion

Navagunjara, with its composite structure of nine different animals, serves as a profound symbol with deep spiritual and scientific meanings. Spiritually, each animal part represents various virtues and divine aspects, contributing to a holistic understanding of the divine and the natural world. Scientifically, these animals illustrate fundamental principles of biology, ecology, and evolution, highlighting the interconnectedness and diversity of life. By examining Navagunjara through both spiritual and scientific lenses, one can gain a richer appreciation for the intricate web of life and also the profound wisdom embedded in ancient scriptures can be very well understood.

The Srimad Bhagavad Gita and Srimad Bhagavatam offer a

comprehensive worldview in which all organisms are intricately connected to one another and to the divine. These texts emphasize that life is a complex web of interdependence, with every organism playing a role in sustaining the cosmic order. The teachings of these scriptures encourage humanity to live in harmony with nature, respect all forms of life, and recognize the divine presence within all beings. By adhering to the principles of karma, dharma and bhakti, one can contribute to the well-being of the entire cosmos, upholding the balance that sustains life in its myriad forms.

The creation of God is sacred. Every life is vital, as each plays a unique role in the grand ecological web and humanity does not have the right to destroy what he cannot create. While insects, birds and other animals naturally uphold this balance, humans despite of intelligence very often disrupted. His greed and misuse of resources harm essential species and destroy vital ecosystems. Humans have to realize the interconnectedness of living organisms and emphasize the idea of moral responsibility to oneself, one's society and the world. Humans with his awareness and spiritual insight have a special role to contribute consciously towards ecological balance by understanding and embarrassing his interconnectedness with all other life forms. In his cosmic journey humans are involved in countless cycles of births and deaths. Life progresses into higher forms or regresses into lower forms of life basing upon good or bad Karma. Kinship exists among all forms of life and reincarnation warns against treating lower forms of life with cruelty. As Hindu saying goes "as long as earth preserves her forests and wildlife, humanity will thrive". Buddhism teaches that wellbeing of mankind is tied to the well-being of all other organisms and environment as a whole. When human's hearts are good, the world response positively.

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