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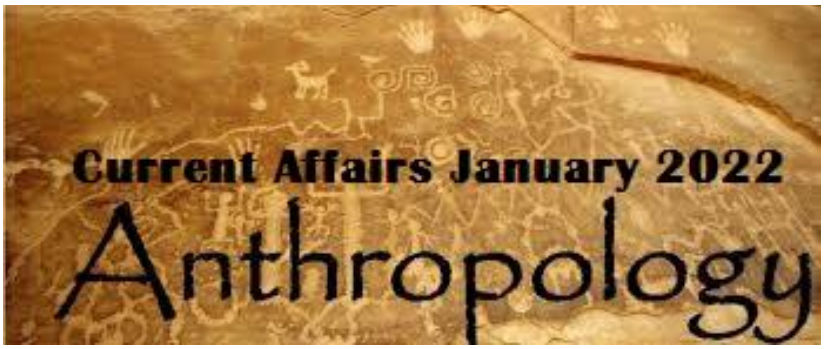

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CONTENTS

PAPER -1

PHYSICAL & ARCHAEOLOGICAL ANTHROPOLOGY

SOCIO – CULTURAL ANTHROPOLOGY

PAPER - 2

INDIAN & TRIBAL ANTHROPOLOGY

1. The Human and Environmental Costs of Hydropower: Loktak Lake

2. 'Pathshalas' making change in tribals' life

3. TRYST WITH THE TRIBES: An IAS officer's journey towards bettering lives of tribals.

4. No Means No: Kinnaur Tribals Oppose Hydropower Plant to Protect Fragile Ecology

5. Under police's initiative, 300 tribal youths in Naxal-hit Gadchiroli get jobs in different fields

6. Giri Poshana is the war waged against hunger

7. TRIFED signs MoU with Rambhau Mhalgi Prabodhini- Nation First Policy Research Centre (RMP-NFPRC) to leverage knowledge, expertise and institutional strengths

8. National growth without tribal dev is a myth

9. Odisha: Shanti Devi Dies at 88, Worked to Uplift Tribal Girls, Known for Peace Efforts in Maoist-hit Areas

10. A tale of 2 villages: How Dhinkia & Nuagaon have fared different between 2 steel projects

11. Implementation of PESA Act

12. The Anatomy Of Love: Mating And Marriage In India's Tribal Culture

13. Panna tribals denied forest entry in the name of animal conservation

14. Ancient Irula 'Snake' Tribe Makes Most of India's Anti-Venom

15. Van Dhan for Jaan and Jahaan: The Story of Shahapur's Katkari Tribe

PHYSICAL & ARCHAEOLOGICAL ANTHROPOLOGY

1.Breakthrough Using CRISPR to Target Fat Cells in Genetic Study of Obesity

Topic in Syllabus : Application of anthropology paper 1 chapter 12

Fat—it is vital for life but too much can lead to a host of health problems. Studying how fat tissue, or adipose, functions in the body is critical for understanding obesity and other issues.But structural differences in fat cells and their distribution throughout the body make doing so challenging.

"Fat cells are different from other cells in that they lack unique cell surface receptors and only account for a minority of the cells within fat tissue," said Steven Romanelli, Ph.D., from the Department of Molecular & Integrative Physiology at the University of Michigan.

In a new paper published in the Journal of Biological Chemistry, Romanelli, Ormand MacDougald, Ph.D. and their colleagues describe a breakthrough using CRISPR-Cas9, a tool that has transformed molecular biological research, but whose use in the study of adipose tissue had been elusive.

It's a gene editing technique comprised of an enzyme called Cas9, which can break strands of DNA, and a piece of RNA that guides the Cas9 enzyme to a specific site in the genome for editing. The tool has been successfully used to study heart, liver, neurons, and skin cells, to name a few, but never a certain type of adipose cells known as brown fat.

Using the technique, the team was able to successfully target brown fat, a specialized adipose tissue used to generate heat and protect core body temperature.

Using their adeno-associated virus CRISPR-Cas9 components, they knocked out the UCP1 gene that defines brown adipose and enables it to generate heat, in adult mice. They observed that the knockout mice were able to adapt to the loss of the gene and maintain their body temperature in cold conditions, hinting at other pathways involved in temperature homeostasis.

"The biggest challenge in terms of adipose research to date has been that if you want to study a gene's function, you have to commit a considerable amount of

time, resources and money into developing a transgenic mouse," said Romanelli.

The traditional way of developing mouse models involves breeding mice with a desired mutation to delete or introduce certain genes of interest, which can take more than a year and tens of thousands of dollars.

CRISPR-Cas9 has revolutionized this process.

"What we've been able to do is take that whole process and distill it into anywhere from two weeks to a month to generate a transgenic mouse, reducing the cost to less than $2,000. Not only does it reduce time and cost, it democratizes the research so that any lab that is familiar with molecular biology techniques can adopt this method and do it themselves," said Romanelli.

They were also able to use this method to delete multiple genes simultaneously, a fact that could help researchers better understand important molecular pathways.Though these results are exploratory, the breakthrough represents an important step forward in studying fat.

2. Rituals of birth and death, social organisation and religious beliefs of Himba tribe.

Topic in syllabus : Paper 1 Chapter 5 Religion (Myth and Rituals)

The Himba live in Northern Namibia, they refuse modern progress and Western culture and still live according to ancient traditions.The villages have a circular shape and are generally enclosed by a fencing made up of mopane branches, for protection against any type of danger and to delimit the village borders.The huts are circular in shape, too, and are built using mud, excrements and mopane branches. Access is via a small opening on one side and the interior is plain.

Huts are arranged around the central fencing, called kraal, where the cattle is kept. A sacred fire, the okuruwo, is lit at the centre of the village, close to the headman's hut. The Himba society is matriarchal. Women play a fundamental role in the Himba society and do most of the duties, such as the collection of water, the construction of homesteads and the care of the children.

It is up to the eldest woman of the village to tender the sacred fire. The fire must be kept lit at all time to protect the inhabitants from demons. This sacred fire is considered the spirit protecting the good. Men mainly look after the cattle and take it on long transhumance, in search for better pastures. Anthropologists, who have studied the Himba social structure, have stated that they are characterized by a double, or bilateral, lineage, that can be found in other ethnic groups who live in extreme environments.

Double lineage means that each Himba belongs to two clans at the same time, the matriarchal and the patriarchal, this enables them to rely on two family groups when in need. The patriarchal clan, oruzo, passes the residence down to new generations, the matriarchal one, eanda, which is much more important, hands down the property of land and cattle.

The importance of being able to count on an extended family is confirmed by a tribal teaching that says: "Do not built your village starting with cattle, start with people". Polygamy is permitted in the Himba society, each man can marry more than one woman, the first marriage is usually arranged by the village elders whereas the following ones are free, the only thing required is the consent of all the spouses. The different clans living in a village are led by a headman who establishes rules and prohibitions, such as the ban for menstruated women to eat the meat of a certain animal or to milk cows.

The Himba are animists, their religious beliefs revolve around the god Mukuru and the cult of ancestors. Each family must keep the ancestral fire lit to communicate with Mukuru through the intercession of the ancestors. The Himba

also believe in witchcraft, omiti, and "black magic", and think that those who practice omiti can even cause illness or death.

Another belief is related to the so-called fairy circles, the Himba believe they are the prints left by gods when they go to certain spots to pray, when a Himba gets sick, he or she is brought to the centre of the circle of fairies for healing.

Rituals of birth and death

The Himba don't count their years from when they were born, nor from when they are conceived, but from the day that the child was a thought in his mother's mind.

According to tradition, when a woman desires to have a baby, she goes off the village and sits under a tree by herself, and she keeps silent until she can hear the "birth song", or the "song of the child".

After hearing the melody she comes back to her village to physically conceive the baby, although it is already a reality in her mind. When the woman is ready to give birth, she is accompanied outside the village by a group of elderly women who assist her during the labour.

After the child is born, the mother and child spend a week inside a special shelter, used solely for the occasion. It is built to the side of the headman's hut, near the sacred fire, under the special protection of the ancestral spirits. After the

week has passed, the child is given a sort of christening. The headman leads them in front of the sacred fire and introduces them to the spirits of the ancestors. This event is akin to an introduction to social life.

The ritual carried out after the death of a person is rather simple. The body is buried in a plain hole in the ground, and the location can be recognized thanks to a "sculpture" made of piled up cow horns tied up to sticks. The Himba do not use tombstones.

This practice confirms once again the importance of breeding in the Himba culture. As a matter of fact, wealth is not symbolized by the quality of a tombstone, but rather the cattle owned during lifetime.

The funeral is usually followed by the slaughter of several cattle and three days of celebrations to commemorate the member of the cmmunity who passed away.

3. Anthropologists study the energetics of uniquely human subsistence strategies

Summary:

Among our closest living relatives -- the great apes -- we humans are unique: We have larger brains, reproduce more quickly and have longer life spans. These traits are obviously valuable, but the extra energy required to sustain them is quite significant. So how did we manage to afford them?

Among our closest living relatives -- the great apes -- we humans are unique: We have larger brains, reproduce more quickly and have longer life spans. These traits are obviously valuable, but the extra energy required to sustain them is quite significant. So how did we manage to afford them?

A group of anthropologists from UC Santa Barbara, the University of Utah and Duke University have teamed up on a research study to understand the strategies humans developed for obtaining that extra energy. Their findings are published in the current issue of *Science.*

Evolutionary success is largely determined by the extent to which an organism is effective at extracting energy (i.e. calories) from the environment and converting

that energy into offspring. But energy acquisition is constrained by a number of factors, the primary being how much time and energy one can spend in the pursuit of food. Energy budgets represent the balance between energy intake and expenditure that all organisms must navigate in order to survive and reproduce.

"Because energy is such a fundamental currency, evolution has produced many astonishing energy-saving adaptations across the Tree of Life," said Thomas Kraft, the paper's lead author. Currently an assistant professor at the University of Utah, Kraft conducted the research while a postdoctoral student with Michael Gurven, senior author and professor of anthropology at UC Santa Barbara. "But that doesn't mean natural selection always favors reduced energy expenditure. In fact, tremendous variation exists in the 'tempo' of energetic strategies. A dramatic example is the difference between endothermic (warm-blooded) and ectothermic (cold-blooded) animals. Warm-blooded animals tend to use a lot more energy each day but are able to successfully channel that energy into activities that ultimately lead to successful reproduction."

The researchers began by comparing the amount of energy and time humans and other great apes expend in order to obtain all the foods they typically include in their diets. "We studied contemporary subsistence societies of hunter-gatherers and farmers in order to examine the kinds of energetic strategies that have existed for millennia, including those after the advent of plant domestication," said Kraft.

The team of scientists drew especially upon their long-term collective experience working with the Hadza, an indigenous group of foragers in northwest Tanzania, and the Tsimane, an indigenous group of horticulturalists in the Bolivian Amazon.

Compared to chimpanzees, gorillas and orangutans, human hunter-gatherers are not particularly efficient at acquiring food. "It turns out we spend a surprising amount of energy getting food because we walk very long distances and engage in intense activities such as digging tubers or clearing trees," explained Kraft. "Other great apes, in contrast, don't need to go very far each day. Most of their food shopping involves leisurely picking fruit and vegetation."

However, humans do benefit from earning a lot more food energy per hour. While other great apes don't cook their food and they spend exorbitant amounts of time chewing and digesting, humans' high-intensity subsistence activities yield many calories quickly.

"This is like saying that despite the intensity of the work, humans earn a much higher energetic 'salary' than do other apes," said Kraft. "This ability to attain a higher return rate is what makes hunter-gatherers so successful." Add farming to the mix and that rate of return -- or 'salary' -- only increases. "Those who mix farming with foraging double or triple what hunter-gatherers earn," Kraft continued. But high throughput human strategies, which involve expending a lot of energy to get more food faster, can also be quite risky if you fail to get food on a given day. "Yet humans seem uniquely able to overcome this by cooperating and sharing and storing foods to avoid dangerous shortfalls."

Such cooperation has other benefits as well. Being able to meet one's daily food requirement in less time would have provided more opportunities for other endeavors. "Developing the rich social and cultural life so common in all human societies may first have required time-efficient strategies for feeding yourself," said Gurven, who is also director of the UC Santa Barbara's Integrative Anthropological Sciences Unit and co-director of the Tsimane Health and Life History Project.

However, he noted, it also can lead us astray, contributing to health problems such as the current obesity epidemic. "Part of what makes us humans so successful is being really good at figuring out how to get the biggest return for the least effort," Gurven said. "You can see where that leads us today -- driving cars or taking a bus to the local Costco to purchase those tasty $4.99 rotisserie chickens. We've replaced our physical labor in hunting or farming with supply chains. If we evolved to get calories cheaply, then the need to eat less or move more may be a struggle for good reason."

On the other hand, he continued, the research findings suggest humans also evolved to be highly physically active, at least to attain food. "This doesn't mean we need to be vigorously active all the time," he said. "The lesson from subsistence populations is instead to just be less sedentary."

One finding from the study that surprised the researchers involved the high energetic costs of human subsistence strategies. Walking in an upright/bipedal form makes humans move more efficiently than the other great apes, and we use sophisticated tools to make tasks easier to accomplish. However, humans (both hunter-gatherers and farmers) actually expend more energy per day on activities related to acquiring food than do chimpanzees, gorillas and orangutans. This makes our subsistence strategies not very efficient overall.

Anthropology has a long tradition of collecting data on energy flows in different kinds of societies -- e.g. hunter-gatherers, horticulturalists, pastoralists. The researchers compiled these disparate data into a single database so they could ask whether the detailed data they had from the Hadza and the Tsimane were representative of broader patterns in subsistence energetics across societies. And they were, but other surprises came out of this exercise as well.

"We didn't expect that our cross-cultural database would reveal minimal difference in the amount of time spent working between hunter-gatherers and farming populations," he continued. As exemplified by James Suzman's recent book, "Work: A Deep History from the Stone Age to the Age of Robots," many anthropologists have long argued that hunter-gatherers spend very little time working as compared to other human societies. After compiling an exhaustive list of studies, the researchers found no evidence to support the idea that contemporary subsistence farmers spend more time working on average than hunter-gatherers.

"We hope that having all this new information in one place will help us understand the fundamental relationship that humans have with energy. How we obtain and expend energy lies at the heart of both what makes us human and many of the health and environmental issues that we face today," Kraft explained. "It would be wise not to forget our evolutionary legacy as we approach these problems."

4. Odisha child rights panel opposes move to raise marriage age of girls

Bhubaneswar: The Odisha State Commission for Protection of Child Rights (OSCPCR) has opposed the union government’s move to raise the minimum legal age of marriage for women from 18 to 21 years. Rather, it has proposed to bring down the minimum marriage age of men to 18.

OSCPCR chairperson Sandhyabati Pradhan on Tuesday wrote to chairperson of Parliament Committee on Education, Women, Children, Youth & Sports, Vinay Sahasrabuddhe in this regard.

Notably, the Centre introduced the Prohibition of Child Marriage Bill, 2021 in Lok Sabha on December 21, 2021, which was later sent to the Parliamentary panel led by Sahasrabuddhe for review.

"That change of legislation in isolation will never be able to stop child marriage, unless there is socio behavioural change among the parents and community. Factors like distress and poverty, patriarchal norms and practices, lack of opportunity for schooling, employment and the like are still contributing in a large extent in prevalence of child marriage," Pradhan said.

There is also a need to strengthen families by providing appropriate livelihood opportunities, she said.

The Juvenile Justice Care and Protection Act and schemes like Integrated Child Protection Scheme have the scope to extend support to such vulnerable children only up to the age of 18. In such circumstances, there will be no space to provide support to a child bride/groom in between the age of 19 to 21 if rescued from child marriage, she pointed out.

"Act like POCSO has restricted consensual sex up to the age of 18. This implies that someone may have sexual act after 18 but won't be able to marry till 21. This will create new sets of issues like increasing unwed mothers and foeticide thereafter," the Commission chief said.

Keeping the above facts in mind, Pradhan requested the Committee to consider not raising the legal age of marriage of girls to 21, rather keeping 18 as the minimum legal age for both boys and girls.

In addition to this, the Committee may consider to recommend more accountability of the State towards building an enabling environment where the girls can dare to fulfil their desires which will build courage within them to say no to child marriage, she added.

SOCIO – CULTURAL ANTHROPOLOGY

5. The society where a man is never the boss : The kingdom of women

Topic in syllabus : Paper 1 Chapter 2.3 Marriage and family

It's a place where women rule, marriage doesn't exist and everything follows the maternal bloodline. But is it as good for women as it sounds – and how long can it last?

Imagine a society without fathers; without marriage (or divorce); one in which nuclear families don't exist. Grandmother sits at the head of the table; her sons and daughters live with her, along with the children of those daughters, following the maternal bloodline. Men are little more than studs, sperm donors who inseminate women but have, more often than not, little involvement in their children's upbringing.

This progressive, feminist world – or anachronistic matriarchy, as skewed as any patriarchal society, depending on your viewpoint – exists in a lush valley in Yunnan, south-west China, in the far eastern foothills of the Himalayas. An ancient tribal community of Tibetan Buddhists called the Mosuo, they live in a surprisingly modern way: women are treated as equal, if not superior, to men; both have as many, or as few, sexual partners as they like, free from judgment;

and extended families bring up the children and care for the elderly. But is it as utopian as it seems? And how much longer can it survive?

Choo Waihong set about finding out. A successful corporate lawyer from Singapore, she left her job in 2006 to travel. Having trained and worked in Canada, the US and London, she felt drawn to visit China, the country of her ancestors. After reading about the Mosuo, she decided to take a trip to their picturesque community – a series of villages dotted around a mountain and Lugu Lake – as many tourists do. But something beyond the views and clean air grabbed her.

"I grew up in a world where men are the bosses," she says. "My father and I fought a lot – he was the quintessential male in an extremely patriarchal Chinese community in Singapore. And I never really belonged at work; the rules were geared towards men, and intuitively understood by them, but not me. I've been a feminist all my life, and the Mosuo seemed to place the female at the centre of their society. It was inspiring."

Warm, curious and quick-witted, Waihong made friends quickly. She discovered that Mosuo children "belong" only to their mothers – their biological fathers live in their own matriarchal family home. Young Mosuo are brought up by their mothers, grandmothers, aunts and uncles.

From the perspective of an outsider – particularly one from China, from where the majority of tourists come – the Mosuo are "condemned" as a society of single mothers, says Waihong. "Children are born out of wedlock, which in China is still unusual. But this isn't how the Mosuo see it – to them, marriage is an inconceivable concept, and a child is 'fatherless' simply because their society pays no heed to fatherhood. The nuclear family as we understand it exists, just in a different form."

It is common for Mosuo women not to know who the father of their children is, and there is no stigma attached to this

Men and women practise what is known as a "walking marriage" – an elegant term for what are essentially furtive, nocturnal hook-ups with lovers known as "axia". A man's hat hung on the door handle of a woman's quarters is a sign to other men not to enter. These range from one-night stands to regular encounters that deepen into exclusive, life-long partnerships – and may or may not end in pregnancy. But couples never live together, and no one says, "I do".

"For Mosuo women, an axia is often a pleasurable digression from the drudgery of everyday life, as well as a potential sperm donor," says Waihong.

Women own and inherit property, sow crops in this agrarian society, and run the households – cooking, cleaning and child-rearing. The men provide strength, ploughing, building, repairing homes, slaughtering animals and helping with big familial decisions, although the final say is always with Grandmother. Although men have no paternal responsibilities – it is common for women not to know who the father of their children is, and there is no stigma attached to this – they have considerable responsibility as uncles to their sisters' children. In fact, along with elderly maternal great-uncles, who are often the households' second-in-charge, younger uncles are the pivotal male influence on children.

"Mosuo men are feminists by any standards," says Waihong. "Boys think nothing of looking after their baby sisters, or taking their toddler brothers by the hand everywhere. I was once made to wait before talking business with an elderly Mosuo man until he had bathed his family's twin baby girls and changed their nappies."

A few months after her first trip, Waihong returned to Lugu Lake. A teenage girl, Ladzu, had offered to teach her the Mosuo language, which is passed down orally, and introduce her to her family. Her visits grew longer and more frequent. She became godmother to Ladzu and her brother, Nongbu. Ladzu's uncle, Zhaxi, a local character and successful entrepreneur, offered to build her a house. Thus she began to put down roots.

"I grew accustomed to shuttling between Singapore and Lugu Lake, navigating a hectic city life and a different rural rhythm in the mountains," she says. Her longer stays – she now lives with the Mosuo for a few months, three or four times a year – gave her the chance to discover more about this private, often misunderstood community.

In the absence of marriage as a goal, the only reason for men and women to have anything resembling a relationship is for love, or enjoyment of each other's company. If it runs its course, the usual reasons for staying together – for the children, societal or financial reasons – don't apply. As an unmarried woman in a community where marriage is non-existent, Waihong felt at home.

"All Mosuo women are, essentially, single," she says. "But I think I'm seen as an oddity because I'm not from here, and I live alone, rather than with a family. I

get a lot of dinner invitations, and my friends are always egging me on to find a nice Mosuo lover." Has she? "That would be telling."

With life centred on the maternal family, motherhood is, unsurprisingly, revered. For a young Mosuo woman, it is life's goal. "I've had to advise many young women on ovulation, so keen are they to get pregnant," she says. "You are seen as complete once you become a mother." In this respect, Waihong, who doesn't have children, is regarded more keenly. "My sense is that I'm pitied," she says, "but people are too polite to tell me."

What happens if a woman doesn't want children? "That's simply not one of their choices. To even ask that question is to see the Mosuo through our eyes, our way of doing things. The question is not pertinent," she says.

And what if they can't have children, or produce only boys? "They will formally adopt a child, either from an unrelated Mosuo family or, more commonly, from one of their maternal cousins," she says. "A few generations ago, before China's one-child policy – which extends to two in rural areas – families were huge. There are a lot of cousins around."

To western eyes, this is the less progressive side of the Mosuo way of life. Is a society that, in many ways, emancipates women from marriage, and gives them sexual freedom, actually producing glorified 1950s housewives who have no choices other than motherhood? It's a frustration that Waihong feels with her goddaughter Ladzu, now 22. "She is a mother, and leads a very domestic life," says Waihong. "For a young Mosuo woman, that's not unusual. But I wish it were different. For me, it's a waste."

But things are changing. Since (mostly) Chinese tourists began arriving in the early 1990s, bringing paved roads, an airport and jobs for Mosuo people, their traditional way of life has started to feel outdated to its young inhabitants. Ladzu and her friends may still be living for motherhood, but she is part of a pioneering generation in transition: she is married, and to a Han Chinese man. She still lives at Lugu Lake, but in her own house, with her husband and son, who was born in February. She is not alone: although her grandmother's generation, in their 60s and 70s, still practise "walking marriage", as do many women in their 40s, about half of women in their 30s live with their "partners" – the fathers of their young children. A minority of men and women marry outside the community and move away.

"I know one Mosuo man who is living in [the nearest Chinese city of] Lijiang, married with two children," says Waihong. "Equally, I know a young Mosuo woman, working as a tour bus driver, who has a child on her own and lives in her mother's household."

Education often makes the difference: there is a junior high school at Lugu Lake, but the nearest senior school is 100km away, and few children attend. Even fewer head on to further education. "I know a handful of men and women who have become civil servants or college lecturers," says Waihong. "But most only have their junior school certificate."

In many ways, it doesn't matter to young Mosuo: tourism is providing careers – from waiter to guesthouse owner, tourist guide to taxi driver – until now, a foreign concept. This new rising class has money and the chance to meet people outside the Mosuo community; many families are renting out land for hotels to be built on. Subsistence farming is on the way out, slowly being replaced by the commercial farming of prized local crops. Where land is still farmed for the family, mostly in more rural parts, children head home to help with the harvest. "And they know there will always be food on the table for them, back home with Mum," says Waihong.

It is a society in transition, in a country that is changing fast. Feminist activism is on the rise in China, battling ongoing discrimination; China still describes unmarried women over 27 as "leftover". Can these naturally emancipated Mosuo women – and men – show Chinese society a different approach to family life? "Yes," says Waihong, "to wear their singlehood with pride."

Young Mosuo are carving out a different path from their parents, embracing "western" marriage and family life with gusto. Zhaxi, who built Waihong's house, says there will be no Mosuo culture left in 30 years. She is less sure. "I think their traditional family structure may come to be seen as halcyon, once they see what the alternative is," she says. "They were the original trendsetters, 2,000 years ago; they don't know how good they have it.

6. What Misspellings Reveal About Cultural Evolution

Topic in Syllabus : Paper 1 Chapter 2.1+7 Culture , Language

Something about me must remind people of a blind 17th-century poet. My last name, Miton, is French, yet people outside of France invariably misspell it as "Milton"—as in the famed English author, John Milton, of the epic poem *Paradise Lost*.

It is not uncommon for people to misspell an unfamiliar name—yet 99 times out of 100 people misspell mine as "Milton." That is the name that shows up on everything from my university gym card to emails from colleagues.

It might seem trivial, yet this misspelling actually illustrates a key feature of how cultural practices emerge and stabilize.

When studying culture, one of the key questions scientists ask is about continuity: Why do people do the same things, in roughly similar ways, over long periods of time? Consider how traditional food recipes, say tamales, have maintained a stable core definition over generations—corn-based dough cooked in corn husks.

Cognitive anthropologists such as myself try to answer this scientific question by studying how human minds interact with culture. One approach, known as cultural evolution, draws from Darwinian theory to view the evolution in longstanding cultural practices as akin to the evolution of biological species.

Most cultural evolution theorists assume that these traditions are maintained through generations by faithful transmission, or what's known as "cultural fidelity." Because humans are considered to be particularly adept at acquiring information through imitation, it stands to reason, they say, that we'd copy our models without mistakes. Humans, these researchers assert, *inherit* cultural information in the same way DNA sustains genetic information, with low rates of random mutations. Considering cultural change in this way has led cultural evolutionists to rely heavily on the subfield of population genetics—and to use models that assume cultural continuity works solely through inheritance.

Yet cultural information is not actually passed on through generations with the same degree of fidelity as genetic information.

The frequency of certain misspellings is one example that suggests a more complicated explanation for how humans achieve culturally stable forms. As a cognitive anthropologist working in the emergent interdisciplinary field of complexity science, I'm interested in how cultural forms persist *not* because they get reproduced with high fidelity, like genetic information—but for the opposite

reason, because they're often copied wrongly. My colleagues and I have found that people produce recurrent and similar forms over time (such as a recipe or a musical sequence) because of cognitive, environmental, social, and other factors related to the transmission of information that generate certain "transformations" rather than others.

In other words, I start with an assumption that cultural evolution follows different paths than biological evolution. Stable cultural forms do not have to result from close replication; they can emerge continuously out of subtle changes.

So, what does our tendency to make certain mistakes—and not others—reveal about the complexity of human cultures?

Most misspellings are systematic and non-random transformations. People transform words for any number of reasons, including whether the speaker already knows the misspelling and/or the correct spelling, or how often they have encountered similar words in the past.

In the case of my last name, "Milton" is likely a variant English-speakers have encountered far more often than "Miton." So, if there is any doubt about the correct spelling, they default to the one they know. In my case, people may remember "Milton," the name of a celebrated poet, from school or other settings, and thus assume that spelling to be correct. In other words, the accumulation of personal experiences, education, and other forms of cultural knowledge play a crucial role in the transmission of information.

Misspellings also emerge in relation to the linguistic environment in which they occur. If a name includes sounds not typical in a given language, speakers will usually construct a version of the name that's closer to sound patterns that more commonly appear in that language. That helps explain why the correct French pronunciation of Miton also sounds quite different from the English pronunciation of Milton.

Such examples of people systematically transforming different pieces of information in non-random ways abound in daily life.

One method I use to study these systematic changes in my own research takes inspiration from the children's game "Telephone." In this game, a child starts out with a phrase, then whispers that phrase to the next child in the row, who then

repeats what they have heard to the next child, and so on. The last participant then reveals what they heard and compares that to the original phrase. Almost always, the starting and ending phrases manage to be different, which often leads to all the players bursting into laughter.

Though the majority of cultural evolutionists remain tethered to their Darwinian roots and maintain a rather strict analogy between cultural and biological evolution, increasing numbers of researchers are now investigating how the stability of particular cultural forms can be sustained through *transformations* rather than through faithful copying. As fallible as human transmission can be, the fact that our mistakes in transmitting cultural information occur in systematic and directed ways, rather than purely randomly, is opening a new pathway to understanding continuity and change within the field of cultural evolution.

This shift in understanding takes cultural evolution into the realm of complexity science, or the study of complex systems. This approach incorporates work from various disciplines, including anthropology, biology, physics, and computer science.

When transmitting information to one another, humans tend to make certain mistakes more than others. A cognitive anthropologist explains why that matters to cultural stability and change.

Within complexity science, large-scale social stability is understood to be caused by many different small-scale movements at the level of everyday life. From this perspective, the continuation of, say, a culinary tradition might depend on any number of cultural phenomena that continually emerge from local interactions between individuals or among small groups of people.

For instance, tamales, which I defined earlier, are not *always* cooked in corn husks—sometimes banana leaves are used instead. The continuation of this dish does not depend on the exact replication of a single recipe over generations but on how these recipes have been shared and modified to adjust to local products or tastes across time and space.

There are many other transformations complexity scientists like myself have yet to explore. I recently moved to New Mexico, and a new mutation of my last name—"Minton"—has shown up. I'm still trying to figure that one out.

INDIAN & TRIBAL ANTHROPOLOGY

1. The Human and Environmental Costs of Hydropower: Loktak Lake

Topic in syllabus : Paper 2 Chapter 6.3

A dam in Manipur showcases the long-term impact on both ecology and local communities.

Nestled in the valley of Manipur, Loktak Lake is the largest freshwater lake in northeast India. It is a Ramsar-designated wetland of international importance and home to the last wild population of the highly endangered brow-antlered, or sangai, deer. However, according to locals and environmentalists, a recent hydropower project is gradually destroying the lake's ecosystem, greatly harming local livelihoods and threatening the habitat of Manipur's beloved sangai.

In post-independence India, dams have long been lauded as signs of modernity and progress; hydropower is also crucial to India's commitment to producing 40 percent of its energy from renewable sources by 2030. Currently around 170

dams are being planning for the northeast of the country. However, activists and locals point with caution to the environmental and social damage this barrage has caused Loktak and its animal and human populations: the water quality is depleting, the vegetation thinning out, and fish species and edible plants disappearing.

The World's Only Floating National Park Under Threat

Wedged between Myanmar and India's Assam, Loktak is one of the last remaining *pats*, or lakes, of an ancient wetland system once covering much of Manipur, a remote, conflict-ridden state. A proudly independent kingdom, the state was forcibly subsumed into India following Indian independence in 1947, setting off decades of conflict between ethnic groups and the Indian state. Today, Manipur is slowly emerging from over half a century of political unrest and violence.

Of this ancient wetland, only a few pats remain; most have been replaced with concrete. Loktak is 250 square kilometers in size and is by far the largest. Nicknamed the belly of the state, it is renowned for its *phumdis*, tangled clumps of biomass, vegetation, and soil, half-submerged, half-floating in the water. Famously, local fishermen have sculpted these phumdis into natural fish farms, creating a covering of perfectly symmetrical circles across the lake.

Loktak is also home to the world's only floating national park, Keibul Lamjao, a 40 sq km area of phumdis, home to the sangai deer, along with a plethora of migratory birds and plant-life. The sangai were actually thought to be extinct until the 1950s when a small group was found living on the phumdis of southern Loktak; their rounded hooves mean they can survive only on Loktak's spongey biomass. The 2016 census counted 260 sangai remaining in the park.

According to Oinam Maipakchao, a local social worker, the residents of the Loktak area are now facing unprecedented environmental and social challenges, that can be linked mainly to the construction of a hydroelectric dam, the Ithai barrage, across the lake's main draining outlet in 1983. "This destroyed the natural flushing cycle of the lake which kept the waters clean and the phumdis strong," he explains.

He describes how before the dam, during the dry season the phumdis would fall with the water level, feeding on nutrients and soil from the base of the lake. Then, in the monsoon, they would rise, along with their cargo of soil and silt, and

be flushed through Myanmar to the Bay of Bengal. This, he says, was a natural draining cycle that acted as flood control for the valley as well as purging the lake of the debris and dirt.

According to Maipakchao, the consequences of the dam for the wetland are severe. Now, with constant water levels and no natural outlet, the phumdis are building up, along with the silt and dirty water. He explains that the inability to feed in the dry season means the phumdis are thinning out and breaking up. Water pollution and the weakening of the phumdis are reducing fish migration; numerous fish species are already disappearing, as are the migratory birds seeking food.

On a visit to Keibul Lamjao, Maipakchao points to the parts of the phumdis in the national park are now submerged in water. This, he says, is a sign of poor health. A study carried out in 2020 found that the areas of the national park that are suited to the sangai are indeed decreasing in size. The study identifies the impact of the Ithai barrage and the thinning of the phumdis as major drivers of these changes.

The Human Impact of the Dam

The permanent flooding of the lake also submerged large areas of agricultural land once used for crops and buffalo grazing. The displaced farmers were left with little choice but to move to the city to seek jobs or join the ranks of the fishing community. The lake was also a major source of plant food sources, such as water chestnuts, which are no longer able to germinate as they need shallow waters.

While scrapping muddy gunk from his old fishing net, looking out over the lake, Ahnonjao Singh, a local fisherman in the lakeside village of Thanga, explained, “before the dam, there were so many fish; our fishing techniques were quite different.”

Singh is 60 and has lived on the banks of Loktak his whole life. He describes how the wetland is entwined with the economic, social, and spiritual lives of the local people who over generations developed a range of fishing techniques for all seasons. Local religious rituals are not complete without certain types of fish and flowers from the lake, some of which they are now struggling to find. “She gives us life,” Singh said. “But we don’t know how much longer she will live.”

Today, according to Maipakchao, 95 percent of the local population are fishers, relying on the lake's declining fish stock for a living. With scant government help available, out of necessity, many fishermen build shacks, or phum-shangs, on the phumdis, and live out on the lake for months at a time with their families. However, between 2011 and 2013, citing environmental concerns, the state government controversially cleared over 700 of these phum-shang, offering minimal recompense to the fishermen.

2. 'Pathshalas' making change in tribals' life

'Pathshala Change Makers' appointed by the government offer handholding to children, creating interest in reading and writing.

Amid lockdown, when schools and other educational institutions are closed, the children of Primary Vulnerable Tribal Groups (PVTG) in Jharkhand continue with their learning with the help of the 'Pathshala Change Makers' (PCM) appointed by the state government.

The Pathshala Change Makers offer handholding to the community in their day-to-day engagements. The objective of the initiative is to generate interest and inculcate a habit of reading and writing among the Primary Vulnerable Tribal Groups children for strengthening their basic education by the time they get school enrollment.

As many as 140 PVTG Pathshalas run in the most deprived geographic areas of 10 districts of the tribal-dominated state — Pakur, Dumka, Deoghar, Godda, Garhwa, Latehar, Palamu, Gumla, Saraikela and East Singhbhum, under the Udaan project, benefiting nearly 3,000 PVTG children.

The enrollment process of these children continues, with a target of around 100 more PVTG Pathshalas this year. There are around 73,000 PVTG households living in extreme poverty. These groups have their own social and cultural identity with most of them living in remote forest areas. They depend on forest-based livelihood, hunting and livestock rearing and non-timber forest produce.

As per the 2011 census data, the literacy rate among PVTGs in Jharkhand is a poor 39.28 per cent, which is around half of the state literacy rate. Most PVTG children in Jharkhand lack basic and primary education.

To combat the situation amid the Covid-19 pandemic, the Jharkhand State Livelihood Promotion Society (JSLPS) started an intervention plan — 'PVTG Pathshala' under the special project Udaan — a comprehensive and sustainable development of PVTGs in the year 2020. JSLPS CEO Nancy Sahay said a small education kit, which includes basic learning materials like chalk, slates, pencils, erasers, notebooks, sharpeners, storybooks, etc are provided to the children under the Udaan project.

"I have been running a PVTG Pathshala under which children who don't have any other place to start their education process, are given basic and primary education for the last three months," said PCM Naresh Parahiya.

He has been conducting a Pathshala for 21 children at a remote village Rangya under Manatu block of Palamu district, enabling them to enhance their knowledge through peer learning, he said.

To make it more effective, these Change Makers are appointed from their own community so that the children could identify themselves with them, he said.

"Other than teaching, the Pathshala Change Makers are also involved in creating largescale awareness among children's parents for whom education is never a priority for their kids," said Naresh.

Sunita Devi, a young mother says her son has been attending the Pathshala for three months. Being unlettered, she was worried about the future of her son as

all the schools are closed due to the Covid-mandated lockdown, and she was not able to admit him to any school.

"Then I got to know about the Pathshaala. I decided to send my son there," said Sunita Devi. Now, her son has started identifying Hindi and English language letters, besides counting, she says. Sunita lives in the village with her son while her husband works in Rajasthan.

3. TRYST WITH THE TRIBES: An IAS officer's journey towards bettering lives of tribals

Topic in Syllabus - Paper 2 : Chapter 4 Role of administrators in tribal development

Krishna earned the title 'Imli Krishna', when he conceptualised and spearheaded the Imli Andolan of Bastar helping 30 lakh tribals to get a fair deal for their trade and become masters of their destinies.

TRIFED Managing Director Pravir Krishna has penned a book "Tryst With the Tribes–Tales From Tribal Heartlands" narrating his experiences of working among tribals.

The author says he had the good fortune to work with the vibrant tribal community for over 12 years, first as a District Magistrate in Sarguja, then Bastar,

both predominantly tribal districts of Madhya Pradesh and finally as the head of TRIFED in the Ministry of Tribal Affairs, in the last 35 years.

The author has encapsulated all the 12 years of his journey in the book which is published by Rupa Publications, New Delhi.

"Tryst With the Tribes–Tales From Tribal Heartlands" is the story of how a young IAS officer fell in love with India's tribal heartlands, and how these experiences changed him forever.

Krishna, an IAS officer of the 1987 batch from Madhya Pradesh cadre, first came face-to-face with the stark realities of the exploitation of tribal people when he was posted as the collector and district magistrate of Sarguja, a tribal district in Madhya Pradesh, in 1994. It affected him so deeply that he embarked on a journey towards bettering the lives of tribal people. Ever since he has helped create an atmosphere in which tribals trade freely and earn more.

The author has offered various hands-on suggestions for transforming symbolic legislation for the tribes to a more robust approach to tribal development that is based on strengthening self-help; use of local resources and the traditional and sound skills and knowledge-bank of the tribes; and the need to develop enterprises based on these resources.

Krishna earned the title 'Imli Krishna', when he conceptualised and spearheaded the Imli Andolan of Bastar helping 30 lakh tribals to get a fair deal for their trade and become masters of their destinies.

The book is a labour of love and sweat, hard work and persistence, explaining how the bureaucrat led the "Imli Andolan" to a nationwide platform, which Krishna fondly calls the 'Tribal AMULTransformation'.

"My tryst with tribal India began when I was posted as a collector in Sarguja. The then Sarguja district covered almost the entirety of the northern, hilly part of present-day Chhattisgarh. Mine was a most sudden posting," Krishna says in the book.

"My Sarguja posting initiated me into the intricacies and ground realities of the tribal way of life, its challenges, and rewards. For an outsider to be acknowledged as one belonging to the tribes is a rare honour ! I count it as a major earning!

Less than three years later, I was transferred to Bastar, a more densely populated tribal district, as Collector. That opened a major chapter in my career, and changed my mind forever," says the author.

4. No Means No: Kinnaur Tribals Oppose Hydropower Plant to Protect Fragile Ecology

Topic in syllabus : Paper 2 Chapter 6.2

Kinnauras launch campaign against the proposed 804 MW Jangi Thopan Powari Hydroelectricity Project on Satluj.

As world leaders were holding hectic negotiations over climate change at COP26 in Glasgow in November, there was a subtle protest by the inhabitants of Kinnaur district, in the Himalayas, against the impact on the ecology and environment of their region and their very existence.

'No means No', the clarion call by the tribals, who are locally called Kinnauras in the border district in Himachal Pradesh, is against the proposed 804 megawatt (MW) Jangi Thopan Powari Hydroelectricity Project. Under the banner different tribal groups which also includes Kyang, which means 'spark' in the local dialect, the group of young Kinnauras has demanded a complete freeze on the construction of the hydel projects.

In the recently held by-election for the Mandi parliamentary seat, the group gave a call to push for NOTA, or the 'None of the above option', which allows voters to disapprove all the candidates. The Kinnauras forced both the major contesting parties, the Congress and the Bharatiya Janata Party, to consider their demand. The Congress, which won the election, said at a press conference that Kyang's demand will be taken up seriously.

The Kyang campaign, which comprises the use of social media, composing songs like *Pir Parbat si Pghalni Chahiye* and articulating pictorial propaganda material even from the popular Netflix series *The Squid Game*, links the struggle with international and national movements against climate change. The protesters can be seen carrying portraits of climate activist Greta Thunberg and freedom fighter Bhagat Singh. The 'No Projects' slogan links the campaign to sustainable development and protection of the identity of the tribal people.

The last three decades of harnessing hydel power from Kinnaur speaks volumes of the tale of disasters. Under the Nathpa Jhakri Hydro Power Project—now called Satluj Jal Vidyut Nigam Limited—many plants were constructed in the Satluj River basin. Nathpa, a village from where water was diverted through the river dam, became extinct and the villagers had to be rehabilitated in another area.

The impact of these projects is visible in Kinnaur, known for its pristine beauty and producing one of the finest-quality apples in the country, in the form of frequent landslides. The rampant construction of hydel projects and headrace tunnels, which are hundreds of kilometres long, has disturbed the ecology of the region with cracks developing in the mountains and their fertile grasslands becoming dry.

The Jangi project is proposed to be constructed in the most ecologically fragile mountains of the district. The point from where the Satluj enters India from China to Bhakra Dam, in Bilaspur, will be extinct once all the proposed projects come into fruition—Khab-Khab Shaso and Jangi. The commissioned project, Shongtong Karcham, Karcham Wangtoo, Nathpa–Jhakri, Jhakri Rampur,

Rampur-to-Behna and finally Koldam and Bhakra have already disturbed the ecology of the region.

Besides these projects in Kinnaur, other plants have been commissioned as well. For example, the 300 MW Baspa Hydropower Project, on Baspa rivulet, was constructed by JSW Group.

With the estimated hydropower energy of Kinnaur more than 8,000 MW, even private players are entering the fray with quality control being increasingly compromised. Some of the projects have started leaking even before commissioning, which can cause a major disaster in near future.

The entire muck extracted from the headrace tunnels is dumped alongside the river bed. A flash flood caused by the melting of upstream glaciers, as it happened in Uttarakhand last year, is enough to carry the entire mud back to the river, causing a destruction of unimaginable proportions.

The Kinnauras, well aware of the dangers of these projects, are building this movement to protect the region's ecology instead of demanding relief and rehabilitation. In the mid-1950s, after realising the backwardness of the region, tribal leaders had coined the slogan "*Peking Nazdik hai Delhi Door Hai* (Peking is closer and Delhi is far away)".

Jeeta Negi, one of the leaders of Kyang, explains why protecting the region is more important than rehabilitation. According to him, 8,000 MW capacity "roughly means Rs 10,000 crore revenue from the waters of Kinnaur". "The district has a population of nearly 90,000 divided roughly into less than 20,000 families. Even if 5% of the revenue is shared with the tribals, it would mean crores of rupees. However, only large corporate entities have gained maximum profit from these projects," he says

The protest is not only limited to the tribal belt of Kinnaur. Recently, some students pursuing higher studies in Chandigarh organised a protest against such projects. "Sooner or later, the movement will call for decommissioning of some of these projects. We want water in our rivers and rivulets. Barren rivers are a blot on mankind and the ecology." Negi says.

5. Under police's initiative, 300 tribal youths in Naxal-hit Gadchiroli get jobs in different fields

Topic in Syllabus : Paper2 Chapter 6.2 Poverty and Unemployment issue

From the beginning of 2021, the Gadchiroli police had initiated various welfare programmes for the tribal youths from remote villages in the region in order to help generate jobs and create self-employment opportunities for them, superintendent of police Ankit Goyal said.

A total of 300 tribal youths in the Naxal-affected Gadchiroli district of Maharashta were given appointment letters for employment in different sectors, including hospitality and automobile, at the job fair held by the police department, an official said on Friday.

The job fair was organised on Thursday as part of the district police's initiative to train the youths and create employment opportunities for them, he said.

Talking to PTI, Gadchiroli superintendent of police Ankit Goyal said, "As many as 300 candidates from the tribal region of the district got appointment letters in the job fair. These candidates would be employed in different sectors, like hospitality, automobile, plumbing and welding.

A total of 101 male/female candidates, who had received training in two/four wheeler repair, in making pickles, papad and fast-food items were given kits to start their own businesses. Besides, 95 other male/female candidates, who were given training in vegetable cultivation, received certificates in the programme on Thursday, he said.

From the beginning of 2021, the Gadchiroli police had initiated various welfare programmes for the tribal youths from remote villages in the region in order to help generate jobs and create self-employment opportunities for them, Goyal added.

The police department with its partners imparted training and created job or self-employment opportunities for 70 candidates in the field of beauty parlour, 60 in fisheries, 293 in poultry, 35 in tailoring, 35 in photography, 114 in vegetable cultivation, 235 in two/four wheeler repair, 254 in hospitality, 196 in automobile training, 1,143 nursing attendants and other sectors, he said.

The training initiative was jointly carried out by the police, Pratham Education Foundation, BOI Star and Krishi Tantragyan Vyavasthapan (Atma).

6. Giri Poshana is the war waged against hunger

This year, the food is being produced at FSSAI-licensed nutri-food processing units led by Joint Liability Groups run by tribal women

HYDERABAD: An initiative introduced as a pilot project in 2019 to address the nutritional deficiencies among tribals, has not only achieved the potential to improve the nutritional intake of the selected tribal population, but has also become a financial support system for Adivasi women working in the food processing industry.

The Central government's 'Giri Poshana', an yearly scheme to address issues such as underweight, stunted growth and anaemia among children and adolescent girls, and low haemoglobin count in pregnant and lactating mothers among the tribal communities through nutritional intervention, is being implemented though convergence of Tribal Welfare and Women and Child Welfare departments, with technological, operational and scientific support from ICRISAT.

The idea of the project was to deliver three ready-to-cook food products such as multi-grain cereal, jowar meal and multi-grain sweet meal, and three ready-to-eat products such as peanut sesame chikki, peanut-fried gram chikki and jowar bites, which were formulated and developed by ICRISAT, to the targeted beneficiaries through Anganwadi centres in Agency areas.

The initiative was introduced as a pilot project of ICRISAT's Agribusiness and Innovation Platform as 'Nutrifood basket,' covering 5,000 tribals. During the second phase, named Giri Poshan-2 launched in 2019, the officials went the extra mile and delivered food to 13,000 beneficiaries at their door-steps in Utnoor, Bhadrachalam and Eturunagaram after the outbreak of Covid.

For 2021-22, the State government selected 16,468 beneficiaries from the primitive vulnerable tribal groups such as Kolam, Thoti, Chenchu and Kondareddy to roll-out this initiative through 404 Anganwadi centres. The project is being supervised by Governor Tamilisai Soundararajan on a regular basis.

"In Phase-2, we got the food products produced externally. But last year, we developed competence among tribal communities to produce, process and package the food on their own, so that they are empowered to become nutritional entrepreneurs," says Aravazhi Selvaraj, CEO-AIP, ICRISAT.

This year, the food is being produced at FSSAI-licensed nutri-food processing units led by Joint Liability Groups (JLGs) run by tribal women.

"The raw ingredients are being purchased from tribal farmer FPOs through backward integration. From production to processing and consumption, all stakeholders in the supply-chain are getting benefits of it," says LS Kamini, deputy project manager, Tribal Welfare Department

7. TRIFED signs MoU with Rambhau Mhalgi Prabodhini- Nation First Policy Research Centre (RMP-NFPRC) to leverage knowledge, expertise and institutional strengths

New Delhi: As a part of its mission to improve the livelihoods of the tribals (both forest dwellers and artisans) and work towards tribal empowerment, TRIFED, ever since its conception in August 1987, has been carrying out several programmes and initiatives.

A major game-changing initiative that has been implemented by TRIFED in the recent past is the Van Dhan programme, which TRIFED is spearheading in 27 States/UTs and 307 Districts with availability of MFPs as well as significant forest dwelling tribal population. In a bid to expand its activities and help more and more tribals, TRIFED has been getting into active collaboration with like-minded organisations, be it in the private or public sector. The objective of these

collaborations is to combine the synergies so that tribals can get maximum benefit.

TRIFED entered into an agreement with Rambhau Mhalgi Prabodhini- Nation First Policy Research Centre (RMP-NFPRC) on December 29, 2021. This MoU is for a collaborative effort in leveraging knowledge, expertise and institutional strengths. The scope of the partnership, which came into effect from December 29, 2021 itself, will include, but is not limited to the following strategic areas:

- To develop and execute research projects around tribal development and related activities.
- To engage in assessing and reviewing the existing and upcoming government schemes like Van Dhan Yojana.
- To publish research findings in the form of joint reports, or any other publication(s).
- To promote and disseminate research, conduct sessions, and meetings with experts on the topic.
- To jointly host conferences, seminars and other such activities pertaining to the research.
- To exchange information, provide access to personnel(s) and data relevant to the research in hand.
- To forge collaborations with other like-minded entities outside this agreement, if found mutually desirable.
- To allow access to information from regional offices, state implementing agencies and other entities relevant to the scope of the project.

Among its flagship programmes and implementations, The 'Mechanism for Marketing of Minor Forest Produce (MFP) through Minimum Support Price (MSP) & Development of Value Chain for MFP' Scheme, in particular, has impacted the tribal ecosystem as never before. Implemented by TRIFED in association with State Government Agencies across 21 states of the country, the scheme has injected more than Rs 3000 crores directly in the tribal economy since April 2020. Aided by the Government push in May 2020 wherein the prices of Minor Forest Produce (MFPs) were increased by up to 90% and the inclusion of 23 new items in the MFP list, this flagship scheme of the Ministry of Tribal Affairs, which draws its strength from The Forest Rights Act of 2005, aims to provide remunerative and fair prices to tribal gatherers of forest produces.

The Van Dhan Vikas Yojana, also a component of the same scheme, further complements MSP beautifully and has emerged as a source of employment generation for tribal gatherers and forest dwellers and the home-bound tribal

artisans. The beauty of the programme is that it ensures that the proceeds from the sales of these value-added products go to the tribals directly.

To take this to the next logical phase, TRIFED is exploring convergences with organisations, government and non-government and academic, to continue its mission towards tribal empowerment. The aim is to pooling strengths together and undertake work that will help in boosting the income and livelihoods of the tribal people.
TRIFED continues to work towards generating income and livelihoods for tribal people through such flagship schemes like the MSP for MFP and the Van Dhan Yojana.

8. National growth without tribal dev is a myth

Tribals or 'Scheduled Tribes' (STs) constitute 8.6 % of the total population of India. According to some historians, they were probably the makers of the Indus Valley Civilisation, one of the earliest in the world and the worshippers of the 'Linga cult' and Lord Pashupatinath. According to others, the last Veda, i.e., Atharva Veda, was written by a tribal. So was the intellectual capacity of the original inhabitants of the Indian subcontinent that the Aryans, who later settled up to the Cauvery delta, learned much more things of daily chores from the tribals.

However, according to the census data of 2011, while the literacy rate of the country is 73%, the tribal literacy rate stands at 59%, which beckons towards a humongous gap of 14%. Analysing the data further State wise and by ethnicity, it shows a highly deplorable number. For example, Andhra Pradesh ranks at the lowest in tribal literacy rate (48.8%). It is disheartening to note that developed States like Tamil Nadu and Kerala show a disturbing pattern, where literacy gap between the gross literacy rate and STs is as high as 25.8% and 18.2%, respectively, indicating the astonishing level of discrimination and unequal distribution of resources. On the other hand, the underperforming States such as Jharkhand (9.3%), Bihar (10.7%) and Chhattisgarh (11.2%) perform better, symbolising an equitable growth of the education system. What is more miserable is that the tribal female literacy rate that stands at 49.4% only with a huge gap of 15.2% when compared with the total population with Telangana and AP being the worst performers.

The Gross Enrolment Ratio (GER) of STs in primary school level stands at 106.7, which is further declines to 74.5 at secondary and only 43.1 at senior secondary level (2015-16) while the GER in higher education is at meagre 14.2. Due to poverty and other related factors, the dropout rate is also meteorically high among the tribals, making it 62.4 at Class-X level.

Tribal health infrastructure at a glance shows further disturbing figures as per Rural Health Statistics, 2017 (Ministry of Health and Family Welfare) with a high rural tribal population base. There was a requirement of around 4,960 Primary Health Centers (PHCs) and 1,172 Community Health Centers (CHCs), but the shortage of PHCs and CHCs hyped up to 1,240 and 273, respectively, in tribal areas with Madhya Pradesh and Rajasthan providing very low health services to its tribal populations. This highlights the poor investment by the governments in health infrastructure and the governments' apathy towards social sphere of tribal life. Similarly, there was a colossal shortfall of 2,716 ANM/female health workers and 3,134 nursing staffs at Sub-Centers and PHCs with a vacancy of 1,516 doctors at the PHCs in these tribal pockets, vindicating the point as to why still institutional delivery is lagging behind in tribal areas along with large-scale undernourishment.

In the domain of organised crimes and atrocities (by non-STs), tribals are the easiest targets for their innocence and shying nature. The NCRB report, 2016 (Ministry of Home Affairs) states that there was an increase in atrocities against the tribals on a year-to-year basis: 6,270 in 2015 to 6,556 in 2016 among the States. Madhya Pradesh alone registered 1,823 of such cases in 2016 showing a regressive social mentality against the tribals. Furthermore, the same report highlights a high rate of human trafficking among the tribal population. In 2016 alone, a total of 8,132 such cases were reported in India.

All these dispiriting statistics show how infirm are the socioeconomic and health indicators, but if given due priority these can prove wonders to the tribal population and the economy as a whole. It is, therefore, imperative to strive towards a rights-based approach. Just like the Forests Rights Act, 2006, many more such legislations can be put to test. Gone are the days when tribal welfare as a token of charity was emphasised undermining the very rights of the tribals. A case in point is the Right to Education Act, 2009. It is still unknown as to how far this law has empowered the tribal students and how this has built a better society for them. Has it benefited them with more number of jobs after a decade of implementation? Is it taking care of the tribal culture, language, cognitive strength, curriculum and inherent learning ability of the students? Even after the

establishment of Ashram Schools, Eklavya Model Schools and Kasturba Gandhi Valika Vidyalayas, why are there high dropouts?

Do solutions exist? The answer lies in the question itself. According to the Annual Employment-Unemployment Survey, 2015-16 by the Ministry of Labour & Employment, only 46% of ST workers aged about 15 years and above got engaged in any kind of work for 12 months. The tribal population below the poverty line in rural areas in 2011-12 stood at 45.3%, which went as high as 63.5% in Odisha and 61.6% in Maharashtra. With people starving, poor health and malnourishment and constant atrocities against tribal, imagining a better socioeconomic ambience is foolishness.

Notwithstanding myriad Constitutional provisions, the fate of the tribal population is contingent upon the political willpower and not as a matter of rights. Art 244 (1) of the Constitution talks of a Tribal Advisory Council (TAC) in 5th Scheduled Areas, but hardly has it functioned efficiently. In many States, a TAC is not even constituted. This should be put to practice on an urgent basis. The usage of PESA Act, 1996 was found to be in doldrums. Article 350A of Constitution and the National Education Policy, 2020 prioritise imparting education in mother tongue which is yet to be implemented in many tribal regions.

The remedy lies in enhancing their socioeconomic opportunities with better livelihood alternatives. Additionally, the major recommendations of the Xaxa Committee Report, 2014 should be immediately employed for the improvement of educational and health indicators of the tribal communities and the state should recalibrate its approach towards tribals by internalising the essence of tribal development as fact remains that national development without tribal development is a myth.

9. Odisha: Shanti Devi Dies at 88, Worked to Uplift Tribal Girls, Known for Peace Efforts in Maoist-hit Areas

Renowned social worker and Padma Shri awardee Shanti Devi passed away at his residence in Gunupur of Odisha's Rayagada district, last night. She was 88. Prime Minister Narendra Modi, Odisha chief minister Naveen Patnaik, and several other personalities on Monday condoled the death of the noted social worker from Odisha.

“Shanti Devi Ji will be remembered as a voice of the poor and underprivileged. She worked selflessly to remove suffering and create a healthier as well as just society. Pained by her demise. My thoughts are with her family and countless admirers. Om Shanti,” tweeted PM Modi.

Extending his deepest condolences to the family of Shanti Devi, vice-president M Venkaiah Naidu in a tweet said she will be remembered for her untiring efforts for the empowerment of tribal girls through education.

Patnaik tweeted in Odia: “Saddened to know about the demise of social activist and Padma Shri awardee Shanti Devi. Her lifelong efforts for the uplift of the distressed will remain as an inspiration. Her contribution to social service is incomparable. I extend my heartfelt condolences to the bereaved family and wish peace for the departed soul."

According to reports, Shanti Devi complained of chest pain and fell unconscious. Later, a doctor of a local hospital reached her residence and declared her dead.

She had an immense contribution towards restoring peace in Maoist-affected areas of the state. She was also spearheading the voluntary organisation Seva Samaj. At the age of 17, she got married to Ratan Das, a Gandhian, and shifted to Koraput. She started her social work by founding an ashram at Gobarapalli in Rayagada district and worked for the development and education of tribal girls. Later, she shifted to Gunupur and founded Seva Samaj ashram in 1964 to provide education to tribal girls

10. A tale of 2 villages: How Dhinkia & Nuagaon have fared different between 2 steel projects

As the Odisha government speeds up acquiring land near Paradip for Jindal Steel, DTE visits two villages that had chosen different paths 20 years ago when Posco came to establish a plant

In 2005, when the Odisha government signed an agreement with South Korean steelmaker Posco Intl Corp to set up its mega project, Dhinkia and Nuagaon — two of the eight affected villages near the port of Paradip in Jagatsinghpur district — found themselves on the opposite sides. While Dhinkia opposed Posco, the leaders of Nuagaon supported it.

In 2017, Posco withdrew from the project and recently the Odisha government has renewed its land acquisition drive, but for another project by Jindal Steel Works (JSW) Ltd in the same area. The people of Dhinkia have continued their resistance to the JSW project while there is no support for it in Nuagaon either.

What has changed over the last decade?

"The people of Nuagaon suffered more economically by supporting Posco. They lost their betel vineyards to land acquisition, lost compensation money to chit fund companies and failed to find alternative livelihoods," Nuagaon sarpanch Bidyadhar Mallick told this reporter.

Dhinkia, on the other hand, prospered as its people could save their betel vineyards from being dismantled by the administration and also protect their livelihoods, he added.

Posco's project, touted to be India's single biggest foreign direct investment of the time, had an investment of $12 billion (Rs 52,000 crore then).

The project needed 4,004 acres across the eight villages under the three Gram Panchayats of Dhinkia, Nuagaon and Gadakujanga to set up its 12 million tonnes per annum (MTPA) steel plant.

However, the villagers resisted the project under the banner of Posco Pratirodh Sangram Samiti (PPSS). Dhinkia, a village of over 700 families, became the epicentre of the resistance.

There were bamboo barricades around the village and women guarded them to check the entry of the administration and police officials.

In 2011, the state government was forced to scale down the production capacity to eight MTPA and area to 2,700 acres, excluding Dhinkia from the list of affected villages — ostensibly to blunt the edge of the anti-Posco agitation.

The strategy worked to some extent, as the district administration managed to complete land acquisition dismantling more than 1,100 vines across the other seven villages in two phases (2011 and 2013) amid protests and the use of police force.

However, the government's supposedly punitive action of isolating Dhinkia seemed to benefit the village by default.

Dhinkia's exclusion proved to be a blessing as the village prospered over the years, emerging as one of Odisha's biggest centres of betel leaves.

The village supplies more than two million betel leaves — that are used to wrap a heady mix known as 'paan' relished by millions of Indians — worth around Rs 20 lakh every month to places across India, mainly Mumbai, Ahmedabad and Kolkata.

The residents of Dhinkia removed their bamboo barricades after Posco withdrew and the administration stopped the decade-long land acquisition drive.

They got busy in their betel vineyards. "When the anti-Posco agitation started, there were around 500 betel vines in Dhinkia, which have increased four-fold to 2,000 today," Ratnakar Rout, a betel vine farmer, said.

About 85 per cent families of Dhinkia have their own vines now according to the residents, as against 35 per cent before the anti-Posco movement started. At least 200 workers get work in the betel vines in Dhinkia on any given day.

On the other hand, despair is palpable in Nuagaon, a one-village Gram Panchayat with a population of over 10,000. Most villagers regret their decision of welcoming Posco.

They blame the leaders of United Action Committee (UAC), which had a strong presence in the village, for misleading the villagers to allow the dismantling of their betel vines and receive compensation when the administration started its drive in 2011.

Over 600 families in Nuagaon and three other villages of the adjoining Gadakujanga Gram Panchayat received a total compensation of around Rs nine crore for the demolition of 651 betel vines.

However, most of the compensation amount went straight to the chit fund companies that showcased local politicians as their brand ambassadors and kept their pace with the land acquisition drive of the administration.

At least 350 families of Nuagaon deposited around Rs 3 crore of their compensation money in a chit fund company called Artha Tatwa, which is now defunct.

As the company got embroiled in the chit fund scam that rocked Odisha, the money of the villagers also got blocked and they turned paupers.

Besides betel vines, the villagers lost thousands of cashew trees, another source of living for them, as they were felled by the administration after the land acquisition.

Many from project-affected villagers who used to be proud vine owners themselves not long ago, now depend on Dhinkia for livelihood.

Pitambar Mallick of Nuagaon, who works as a labourer in the betel vineyards of Dhinkia, said more than 300 daily wagers from their village do similar work regularly.

“But now that the administration may dismantle the betel vines in Dhinkia as part of land acquisition for JSW, we are uncertain about our employment,” he said.

That precisely explains why the villagers of Nuagaon are against JSW’s project. The JSW project, including a 12 MTPA steel plant, a 10 MTPA cement plant and a 900 megawatt power plant, is bigger than Posco’s and needs around 3,000 acres of land.

The 2,200 acres that the state-run Industrial Infrastructure Development Corporation (IDCO) had acquired for Posco, are supposed to pass on to JSW’s project.

The rest 748 acres, most of which come under Dhinkia, Patana and Malaha villages are being acquired during the present drive. This has triggered stiff protests from the people of Dhinkia and a subsequent police crackdown on them in the recent weeks. The bamboo barricades are back at the entry points to Dhinkia.

During the public hearing for JSW’s project in November 2021, most of the villagers of Nuagaon registered their opposition to the JSW project. Clearly, most people in Nugagaon do not want any other project after their bitter experience with Posco.

But the recent treatment meted out to the protesters in Dhinkia has instilled a sense of fear in them.

"People are afraid but at the same time have realised that dismantling of Dhinkia's betel vines for JSW will affect their livelihoods too. Most stare at an uncertain future," Smruti Mantri, a resident of Nuagaon, said.

11. Implementation of PESA Act

In terms of List II (State List) of Seventh Schedule of the Constitution, 'Panchayat', being 'local government', is a State Subject, and States/Union Territories are competent to consider and formulate guidelines to this effect under the provisions of respective Panchayati Raj Acts.
Draft Model Rules for PESA were circulated among PESA States in 2009 for framing their State specific PESA Rules for their respective States.

For effective implementation of PESA and to strengthen Gram Sabhas (GSs) and Panchayati Raj Institutions (PRIs) in Fifth Schedule areas, under the Rashtriya Gram Swaraj Abhiyan (RGSA) Scheme, the following activities are funded:- Human resource support for mobilizing, capacity building and strengthening of GSs and PRIs; Orientation/handholding support for capacity building and strengthening of GSs and PRIs through competent institutions or voluntary organizations/Non-Governmental Organizations.
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Further, the Ministry has organized State-level workshops for PESA States from time-to-time to give a fillip to the implementation of PESA and improve the level of awareness on the subject among the representatives of PRIs. Various Handbooks for use of Gram Panchayats/Gram Sabhas have been brought out by the Ministry.

Handbook of Community Mobilisation in Fifth Scheduled Areas was released on National Panchayati Raj Day, 24th April, 2015. The Book contains basic information about the provisions of PESA, principles and methods of community mobilization and role of Gram Sabha/Community Mobilisers and PESA Coordinators.

Separate guidelines for participatory Gram Panchayat Development Plan (GPDP) for local development in PESA Areas, were circulated to PESA States. In addition, an advisory on bonded labour and distress migration in PESA areas was also issued. Recently, Ministry of PanchayatiRaj organised a one-day National Level Conference in November, 2021 in New Delhi to celebrate the 25th year of promulgation of the PESA Act.

The Conference was addressed by Ministers of Panchayati Raj and Tribal Affairs as well as Governor of Maharashtra. Representatives of Panchayati Raj as well as Tribal Development Departments of PESA States; representatives of Central Ministries/Departments, NITI Aayog, National Institute of Rural Development and Panchayati Raj (NIRD&PR) and Non-Government Organisations also participated in the Conference and shared their views/suggestions for improved implementation of PESA.

Six States namely Andhra Pradesh, Gujarat, Himachal Pradesh, Maharashtra, Rajasthan and Telangana have framed State specific PESA Rules for their respective States to implement PESA. This information was given by Union Minister of State for Panchayati Raj Shri Kapil Moreshwar Patil in a written reply in Rajya Sabha today.

12. The Anatomy Of Love: Mating And Marriage In India's Tribal Culture

Tribal cultures not only celebrate love but also inculcate sex education and consent among teenagers. This is in sharp contrast with the mainstream culture that draws boundaries for those in love

Kali and Ponna did everything that a couple unable to conceive would do, except "going to the chariot festival" of Maadhorubaagan, a half-woman and half-man god — a rather radical act. It's a festival where a childless woman would go and mate with a stranger — breaching rules of marriage. If a child is born out of such a union, everyone would embrace that child as a gift of god Maadhorubaagan. But for a couple besotted with each other, doing such a thing was tough.

This is the story of Tamil writer Perumal Murugan's novel One Part Woman, in which Ponna finally decides to go to the chariot festival. The book created a huge controversy as it talked about a phenomenon that is considered to be a morally deviant act. But is it an aberration? Do we have nothing of this sort in our society? The answer is no. Murugan had not created this festival out of imagination. He found that such a festival existed some 50 years ago in the region around Tiruchengode hill in Tamil Nadu. He encountered many men born through this festival, where a childless woman could have sex with a stranger and the child born out of this union would be called Ardhanari (half-woman) or Sami Pillai (god-given child). It is very hard for the mainstream culture to accept such deviancies even when many such practices exist.

Premarital sex is one such practice. A nomadic tribe in the Bastar region of Chhattisgarh, Bison-Horn Maria, doesn't give primacy to "premarital chastity." In fact, it values sexual comfort between lovers. British civil servant Wilfrid Grigson did a comprehensive ethnographic study of this tribe, *The Maria Gonds of Bastar*, which was published in 1938. In the book, he documented a marriage he once attended. He wrote that the couple had sex multiple times to check their sexual compatibility. It was only when they were satisfied with each other that they married.

Vice India reported last year that "there is almost no sex crime in Horn Maria tribe." Experts attribute this to their sexually liberating practices. Strangely, premarital chastity is revered in our society, especially for girls. If a girl gets sexually involved with someone before marriage, it becomes a question of character for her because — as late woman rights activist Kamla Bhasin put it — the patriarchal society family's honour lies in the "vagina" of a woman.

Sex Education

Muria Gond, another tribe in the Bastar region of Chhattisgarh, constructs ghotul, a typical hut surrounded by walls made of wood, where young boys and girls can spend time. The idea behind this is to provide an environment for young members of the tribe to explore their sexuality and develop a feeling of togetherness. Boys and girls can have sex with one or more partners. They are encouraged to change partners after a period of a maximum of seven days.

The elders of the Muria tribe assist young boys and girls of ghotul by teaching them discipline and inculcating the value of cleanliness and hard work. Food and toddy are served. Anthropologist Verrier Elwin wrote in his memoir, *The Tribal World of Verrier Elwin (1964)*: "The message of the ghotul – that youth must be served, that freedom and happiness are more to be treasured than any material gain, that friendliness and sympathy, hospitality and unity are of the first importance, and above all that human love – and its physical expression – is beautiful, clean and precious, is typically Indian."

Marriage and mating among Indian tribes.

The sexually liberated design of tribal lifestyle challenges all definitions that recognise them as "primitive" by mainstream standards. They, in fact, come as a prototype of a progressive set-up in some way. The model they offer — a notion eerie for traditionalists — can provide a cue to our search for a new sex education model. In a hit show on Netflix called *Sex Education*, considered to be ground-breaking, the fictional Moordale Secondary School is some kind of dormitory, a ghotul of sorts. Everyone knows that teenagers would confront their sexuality, indulge in sex. But a good sex education can help them do it better.

Sex Education depicts the healthy ways of exploring sexuality; it shines a light on the role parents can play in providing a healthy environment to teenagers where they are introduced to sex-ed.

Live-in Relationship

The Garasia tribe of Rajasthan and Gujarat not only allows youngsters to choose their partner but also live-in relationships — this practice is called *dapa*. An annual festival, "Siyawa-ka-Gaur Mela," is organised, where young boys and

girls come and choose the partners they wish to live with. For members of the Garasia tribe, marriage is not mandatory to live with a partner but "love". If a Garasia woman falls in love with someone else and wants to leave her partner, she is allowed to do that. But, in that case, her new lover has to pay some amount to her ex-husband, which often becomes an issue of contention, and physical fights between families occur. A member of the Garasia tribe said, "Rich members of our community get married early while the poor remain unmarried for long. In that case, live-in is the option — marriage can happen at a later age." He added, "Deadly fights happen in our tribe on the issue of marriage. Obviously, if somebody's wife dumped him, how can a man wear such a badge of shame? So, in such cases fights between families and even between villages occur."

In mainstream societies, on the other hand, regressive practices like honour killing, child marriage and dowry deaths are still prevalent, particularly in Rajasthan and Gujarat. Live-in relationship is still a strange phenomenon in Indian society, except in metropolitan cities. In 2021, a couple had to file pleas in Punjab and Haryana High Court to seek protection as the family of a petitioner was against their live-in. The Court observed that the "individual had the right to formalise the relationship with the partner through marriage or to adopt the non-formal approach of a live-in-relationship." It said that it was a part of the "Right to Life" enshrined under Article 21 in the Indian Constitution.

Another interesting thing about the Garasia tribe is that members can marry even after the age of 50 or 60, which is rare in the mainstream culture. Old people falling in love are often looked down upon. But the Garasia tribe doesn't censor that: anyone at any age can fall in love, choose a partner, and marry. The Munda, Oraon and Ho tribes of Jharkhand also practice "dhuku" marriage, which is in principle a live-in relationship. But that practice has its root in poverty because, for marriage, families have to organise a big feast and to avoid that, couples can live-in a relationship until they have enough to organise a feast.

Marriage and Love

In many tribal cultures, both boys and girls have to agree for a marriage to happen. In the Garasia tribe, the bride and groom often choose each other at an annual fair and the groom has to pay the bride's family what is termed as "bride-price." Bhil, Bhilala, Pateliya and Gond tribes of Malwa region (central India) also celebrate an annual festival around Holi called Bhagoriya Haat (elopement fair), where boys and girls can meet and elope. Later, families negotiate bride

price and then only decisions on marriages are made.

While in the mainstream culture, “choice” is a function of parents and family, especially for girls. Parents often select a groom or bride, mostly from the same caste and religion. It doesn’t consider “love” as a necessary precondition for marriage, which results in many problems like domestic violence, divorce, dowry etc. If someone marries in a different caste or religion that person faces social sanction or even honour killing. Tribal cultures, therefore, provide an important lesson that for marriage the constructs of “love” and “choice” are important preconditions. Though endogamy is prevalent in tribes, too, tribal women have some agency to choose their partners — and that is celebrated, not denounced.

13. Panna tribals denied forest entry in the name of animal conservation

Women are now overburdened with the responsibility of fetching food for the family. Earlier, tribals would collect food and firewood from the forest

A ban preventing tribal men from entering the forest to collect woods in the name of wildlife protection has made the life of community women miserable in Panna.

The ban has become more intense in the past five years. Take the instance of Hiriya Bai, a 70-year-old woman, from Saur tribe.

Bai jokes that if she claims her family has meat for food, there is every possibility of arrest on the charge of killing animals.

The septuagenarian has to manage food for her family as men in her community are banned from entering the forest.

The situation is worse as there is no other kind of work available due to the prevalent drought. The only option for poor, landless families is to collect wood and sell it in the market.

For Bai and other women from her community, the only source of making money is collecting forest woods and selling them in the local market. If women fail to collect woods, it means their families have to go hungry.

The ban

The so-called conflict between tribals and wild animals has led the forest department to prevent the entry of tribals inside the forest.

The Panna National Park situated along the banks of the Ken river extends over 543 kilometres. Generally known as a tiger reserve, other species such as the leopard, wolf, gharial, blue bull, chinkara, sambar, wild boar, sloth bear, cheetal, chowsingha, Indian fox and porcupine are commonly found. A separate sanctuary for gharials has also been set up.

Kusum Bai, the wife of Ram Kumar and resident of Manki village, said the ban has put too much pressure on women.

She said that she had to visit the forest twice a week to collect woods which fetch her Rs 200 a week.

It is not possible for her to visit often as she has to look after two small children and carry out other domestic duties.

According to her, her family members get to eat only chapattis with salt thrice a week. One of her children was recently admitted to the Nutrition Rehabilitation Centre for severe malnourishment.

Her husband went to Delhi to get some work, but failed to get any. He returned a month ago and is forced to sit at home.

Similar is the story in Manaur village of Panna. Tribals complained that they were not allowed to go inside the forest. “It is not an easy task,” said Hironda Bai, a 65-year-old woman. “Sarkari julm badh gaya hai pichhale char-panch saalo me” (The government pressure has increased in the past three to four years).

Teerath Gond from Gadihara village said that the women in the family have to get wood for domestic needs such as cooking, apart from selling it in the market to earn money. This is putting extra work burden on them.

Restricting poor tribals from entering the forest area is not restricted to one or two regions. It has been noticed across Panna as well as in the neighbouring Chhatarpur district.

Hukum (30) from Singaro village visits Chhatarpur, which is about 60 kilometres away from his village, to appear in court.

He has been doing it for the past two years, his father Mannu (60) said, lamenting that the only mistake his son did was to captur some fish when he went to take bath in a river nearby.

Forest officials arrested him and kept him in custody for seven days. The family has already spent 20,000 on the case so far. Both the father and the son said that forest officials do not let them enter the forest area.

The ban has led to a serious crisis and brought about a change in tribal food habits. The tribals had always depended on the forest for food supply. Hiriya Bai recalled days when mostly food supply used to come from the forest and her family got to eat nutritious food often.

Though forest officials are restricting villagers in the name of protecting wild animals, the latter argue that wild animals and tribals have been living together peacefully for years.

A forest official said on the condition of anonymity that he has been ordered to protect the wild animals and so do not allow tribals to enter the forests.

14. Ancient Irula 'Snake' Tribe Makes Most of India's Anti-Venom

Irula tribe, one of India's oldest indigenous communities, lives along the borders of Tamil Nadu and Kerala. Irulas are specialists in traditional herbal medicine and healing practices. Interestingly, Irula 'vaidyars' (practitioners of any Indian systems of medicine) are mostly women. They practice traditional healing systems which use over 320 medicinal herbs.

However, in 1972, the passing of the Wildlife Protection Act effectively banned the hunting of several animals, including snakes. The Irula tribe was left with no source of employment because of that.

Romulus Whitaker, the renowned herpetologist and wildlife conservationist, has worked with the Irulas for nearly 50 years. He was aware of their skills. Besides, he knew the kind of problems that Irulas people were facing.

He decided to set up a cooperative, named the Irula Snake-Catchers' Cooperative, on the outskirts of Chennai in 1978. For the conservation of snakes and production of snake venom, this co-operative was going to use the traditional knowledge of Irulas.

According to this report, since its inception, the Irula Snake-cooperative has revolutionised the treatment of snake-bites in India and produces enough anti-venom to supply hospitals across the country.

The cooperative is now the largest producer of venom in India. It uses the traditional (tribal) knowledge to advance fields like medicine. Additionally, by making it possible for snake venom to be readily available, an indigenous community is doing the entire country, a great service.

Irula Snake Catchers Industrial Co-Operative Society

The co-operative has official licenses to hold about 800 snakes at a time. “We keep every snake for 21 days, and extract venom four times during that period,” Rajendran said. Then they release these snakes into the wild. A small mark on their belly scales prevents the same snake from being caught repeatedly. “The mark goes away after a few moultings.”

Rajendran's confidence in handling snakes and his deep understanding of these creatures are derived from a childhood spent in the forests and scrublands of the region. He had seen hundreds of snakes being captured, before he turned 10. The Irulas usually work in silence, even when they go into the forest with others. They instinctively know the significance of faint signs on the ground to either follow clues or dismiss them. However, they often find it hard to articulate the details of their understanding, even to people who study reptiles.

The origins of the Irula community and their interaction with snakes are shrouded in mystery. But their mythology blends local animistic traditions with the vocabulary of mainstream religion. Their main deity is a virgin goddess called Kanniamma, who is deeply associated with the cobra. Many rituals involve the priest entering a trance and hissing like a snake, symbolising the spirit of the goddess.

Ironically, for a large part of the 20th Century, tens of thousands of Irulas made a living by hunting snakes for their skin. Out of reverence to their goddess, though, they wouldn't eat its meat. Local tanners would pay between 10 and 50 rupees for a single skin before processing and exporting it to Europe and the United States for use in the fashion industry. In 1972, however, the Wildlife Protection Act in India banned the hunting of a number of animals, including snakes.

Masi, Vadivel and Rajendran may also be the last generation of Irulas with this impressive understanding of the reptiles. Most Irula parents want their children to join the mainstream Indian society in some way. A large percentage are enrolled in schools and do not accompany their parents into the forest.

"Many in the younger generation are even scared of snakes," Whitaker said.

Others, however, continue to have deep gratitude for the traditional skills of their community. "It was our work with snakes that supported us in difficult times and fed us while we struggled," said Susila, smiling. "What we learnt from our elders should not disappear with us."

15. Van Dhan for Jaan and Jahaan: The Story of Shahapur's Katkari Tribe

What can come out of a group of a few dedicated boys led by an able leader and enabling support from government organisations? A lot, apparently. This has been proved yet again, by "Adivasi Ekatmik Samajik Sanstha" of Shahapur in Thane, which markets **Giloy** and other products. Giloy is a medicinal plant with huge demand from pharmaceutical companies.

The journey started when Sunil Pawar, a youth from Katkaria community, and his team of 10 -12 friends started facilitating various works of Katkari tribals at revenue offices in his native place. **Katkari** is one of the 75 **Particularly Vulnerable Tribal Groups**, as per the classification by Ministry of Home Affairs. Sunil Pawar, a young lad and his friends started this enterprise of selling giloy in local markets. A good samaritan in the form of Shri Arun Pansare saw their efforts and offered them a place to start their office. Once they started working from an office situated near the market area, more tribals came to know about it and started joining them.

Sunil Pawar meanwhile came across an advertisement of Pradhan Mantri Van Dhan Yojana run by **TRIFED**, Ministry of Tribal Affairs, Govt. of India in association with Nodal Agency - ST Welfare Department, Govt. of Maharashtra.

Efforts were made by Adivasi Ekatmik Samajik Sanstha, Shahapur co-ordinated by Sunil to not only expand the market for the produce but also to diversify into o other forest products. They have started collecting and selling the 7 types of

Samidha (sacrificial offerings made mostly of wood) which are offered in the holy fire during the performance of Puja.

Shabri Adivasi Vitta Vikas Mahamandal plans to train these SHGs in establishing backward and forward linkages for their produce. In backward linkages, we will train tribals about how to pick giloy without affecting its long-term availability, this way it will be available for a longer period and they will also be taught about plantation of the same. In forward linkages, we will train them to process the giloy into making different products which will fetch better price for them," said Shri Nitin Patil, Managing Director of the Shabari Adivasi Vitta Mahamandal under Government of Maharashtra.

Pradhan Mantri Van Dhan Yojana provides working capital for these SHGs. So they don't have to sell their produce in distress, moreover they can immediately pay tribals for produce they have picked up, this greatly helps tribals in having steady income, Shri Patil informed.

Background

Pradhan Mantri Van Dhan Yojana (PMVDY) is a retail marketing led value addition plan for Minor Forest Produce (MFP), meant for forest-based tribes to optimize the tribal income, locally. Under the program, MFP-based tribal groups / enterprises of around 300 members are formed for collection, value addition, packaging & marketing of Minor Forest Produces (MFPs). These tribal enterprises will be in the form of Van Dhan SHGs which will be a group of 15-20 members and such 15 SHG groups will further be federated into a larger group of Van Dhan Vikas Kendras (VDVKS) of around 300 members.

Particularly Vulnerable Tribal Groups '

Tribal communities who use a pre-agricultural level of technology, face stagnant or declining population growth, and are equipped with only an extremely low level of literacy and a subsistence level of economy. 75 such groups of tribals in 18 States and one Union Territory have been identified and categorized as Particularly Vulnerable Tribal Groups (PVTGs).