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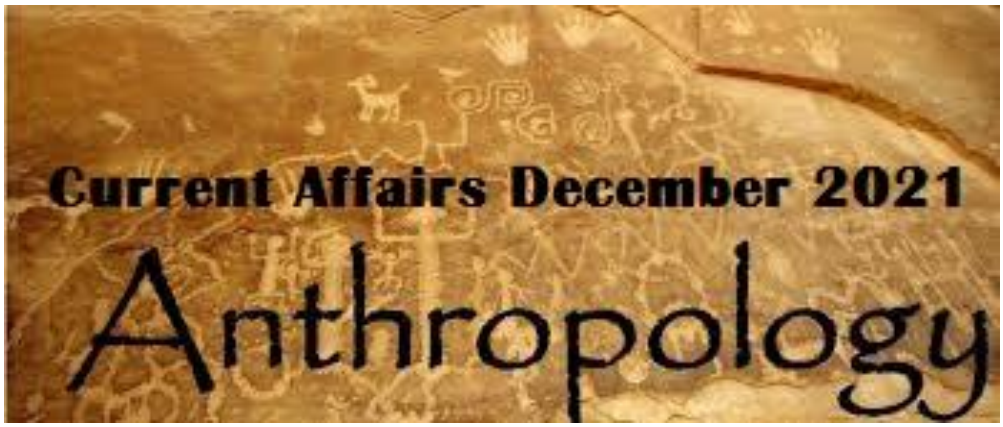

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PHYSICAL & ARCHAEOLOGICAL ANTHROPOLOGY

1. Archaeologists Discover 200,000-Year-Old Hand & Footprints That Could Be the World's Earliest Cave Art

Wet cement triggers a primal impulse, particularly in children.

It's so tempting to inscribe a pristine patch of sidewalk with a lasting impression of one's existence.

Is the coast clear? Yes? Quick, grab a stick and write your name!

No stick?

Sink a hand or foot in, like a movie star…

…or, even more thrillingly, a child hominin on the High Tibetan Plateau, 169,000 to 226,000 years ago!

Perhaps one day your surface-marring gesture will be conceived of as a great gift to science, and possibly art. (Try this line of reasoning with the angry homeowner or shopkeeper who's intent on measuring your hand against the one now permanently set into their new cement walkway.)

Tell them how in 2018, professional ichnologists doing fieldwork in Quesang Hot Spring, some 80 km northwest of Lhasa, were over the moon to find five handprints and five footprints dating to the Middle Pleistocene near the base of a rocky promontory.

Researchers led by David Zhang of Guangzhou University attribute the handprints to a 12-year-old, and the footprints to a 7-year-old.

In a recent article in Science Bulletin, Zhang and his team conclude that the children's handiwork is not only deliberate (as opposed to "imprinted during normal locomotion or by the use of hands to stabilize motion") but also "an early act of parietal art."

The Uranium dating of the travertine which received the kids' hands and feet while still soft is grounds for excitement, moving the dial on the earliest known occupation (or visitation) of the Tibetan Plateau much further back than previously believed — from 90,000-120,000 years ago to 169,000-226,000 years ago.

That's a lot of food for thought, evolutionarily speaking. As Zhang told TIME magazine, "you're simultaneously dealing with a harsh environment, less oxygen, and at the same time, creating this."

Zhang is steadfast that "this" is the world's oldest parietal art — outpacing a Neanderthal artist's red-pigmented hand stencil in Spain's Cave of Maltravieso by more than 100,000 years.

Other scientists are not so sure.

Anthropologist Paul Taçon, director of Griffith University's Place, Evolution and Rock Art Heritage Unit, thinks it's too big of "a stretch" to describe the

impressions as art, suggesting that they could be chalked up to a range of activities.

Nick Barton, Professor of Paleolithic Archeology at Oxford wonders if the traces, intentionally placed though they may be, are less art than child's play. (Team Wet Cement!)

Zhang counters that such arguments are predicated on modern notions of what constitutes art, driving his point home with an appropriately stone-aged metaphor:

When you use stone tools to dig something in the present day, we cannot say that that is technology. But if ancient people use that, that's technology.

Cornell University's Thomas Urban, who co-authored the Science Bulletin article with Zhang and a host of other researchers shares his colleagues aversion' to definitions shaped by a modern lens:

Different camps have specific definitions of art that prioritize various criteria, but I would like to transcend that and say there can be limitations imposed by these strict categories that might inhibit us from thinking more broadly about creative behavior. I think we can make a solid case that this is not utilitarian behavior. There's something playful, creative, possibly symbolic about this. This gets at a very fundamental question of what it actually means to be human.

2. Researchers Uncover a Gene Mutation Linked to the Development of Kidney Disease

(Mutation Paper 1 Chapter 1.7)

There are some genetic variations that are linked to an increased risk of developing kidney disease such as variations in MYH9 and APOL1 genes. Now, researchers at the Australian National University (ANU) have identified a mutation in the gene VANGL1 that causes the development of kidney disease. Further testing also revealed that the gene helps prevent the immune system from attacking the kidney.

The findings are published in the journal *Cell Reports Medicine* in a paper titled, "Deletions in VANGL1 are a risk factor for antibody-mediated kidney disease."

"We identify an intronic deletion in VANGL1 that predisposes to renal injury in high-risk populations through a kidney-intrinsic process," the researchers wrote. "Half of all systemic lupus erythematosus (SLE) patients develop nephritis, yet the predisposing mechanisms to kidney damage remain poorly understood. There is limited evidence of genetic contribution to specific organ involvement in SLE. We identify a large deletion in intron 7 of Van Gogh Like 1 (VANGL1), which associates with nephritis in SLE patients."

The researchers sequenced the genome of patients with autoimmune kidney disease and Tiwi Islanders with extremely high rates of kidney disease.

"Patients with this mutation will be significantly more likely to develop kidney disease," lead author, nephrologist, and ANU research fellow, Simon Jiang, PhD, said.

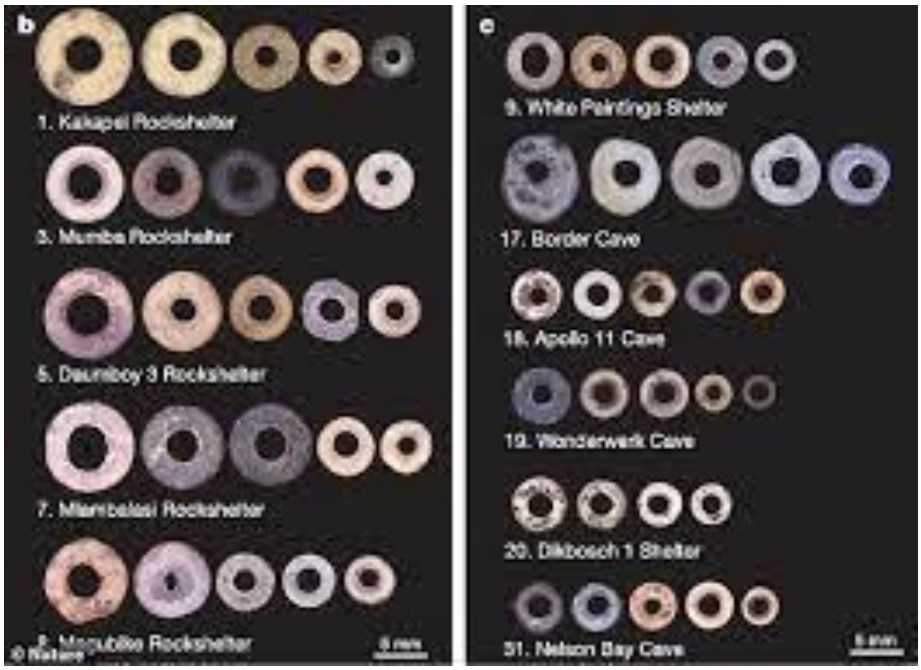
"This discovery has big implications for Tiwi Islanders. They have the highest recorded rates of kidney disease in the world.

"When you have a systemic immune or inflammatory disease, this mutation allows the immune system to attack the kidney. The natural function of this gene is to slow that inflammatory process down," Jiang explained.

"People think immune diseases such as lupus happen to attack the kidneys by chance. What we have actually shown for the first time is that the kidney has its own way of resisting or stopping that assault."

The new findings highlight the evolving role of VANGL1 and other PCP genes in kidney injury and repair, which may have important implications for therapeutics and transplant

3. Ostrich eggshell beads reveal 50,000-year-old social network across Africa



Humans are social creatures, but little is known about when, how, and why different populations connected in the past. Answering these questions is crucial for interpreting the biological and cultural diversity that we see in human populations today. DNA is a powerful tool for studying genetic interactions between populations, but it can't address any cultural exchanges within these ancient meetings. Now, scientists from the Max Planck Institute for the Science of Human History have turned to an unexpected source of information—ostrich eggshell beads—to shed light on ancient social networks. In a new study published in *Nature*, researchers Drs. Jennifer Miller and Yiming Wang report 50,000-years of population connection and isolation, driven by changing rainfall patterns, in southern and eastern Africa.

Ostrich eggshell beads: a window into the past

Ostrich eggshell (OES) beads are ideal artifacts for understanding ancient social relationships. They are the world's oldest fully manufactured ornaments,

meaning that instead of relying on an item's natural size or shape, humans completely transformed the shells to produce beads. This extensive shaping creates ample opportunities for variations in style. Because different cultures produced beads of different styles, the prehistoric accessories provide researchers a way to trace cultural connections.

"It's like following a trail of breadcrumbs," says Miller, lead-author of the study. "The beads are clues, scattered across time and space, just waiting to be noticed."

To search for signs of population connectivity, Miller and Wang assembled the largest ever database of ostrich eggshell beads. It includes data from more than 1500 individual beads unearthed from 31 sites across southern and eastern Africa, encompassing the last 50,000 years. Gathering this data was a painstakingly slow process that took more than a decade.

Climate change and social networks in the Stone Age

By comparing OES bead characteristics, such as total diameter, aperture diameter and shell thickness, Miller and Wang found that between 50,000 and 33,000 years ago, people in eastern and southern Africa were using nearly identical OES beads. The finding suggests a long-distance social network spanning more than 3,000 km once connected people in the two regions.

"The result is surprising, but the pattern is clear," says Wang, co-corresponding author of the study. "Throughout the 50,000 years we examined, this is the only time period that the bead characteristics are the same."

This eastern-southern connection at 50-33,000 years ago is the oldest social network ever identified, and it coincides with a particularly wet period in eastern Africa. However, signs of the regional network disappear by 33,000 years ago, likely triggered by a major shift in global climates. Around the same time that the social network breaks down, eastern Africa experienced a dramatic reduction in precipitation as the tropical rain belt shifted southward. This increased rain in the large area connecting eastern and southern Africa (the Zambezi River catchment), periodically flooding riverbanks, and perhaps creating a geographic barrier that disrupted regional social networks.

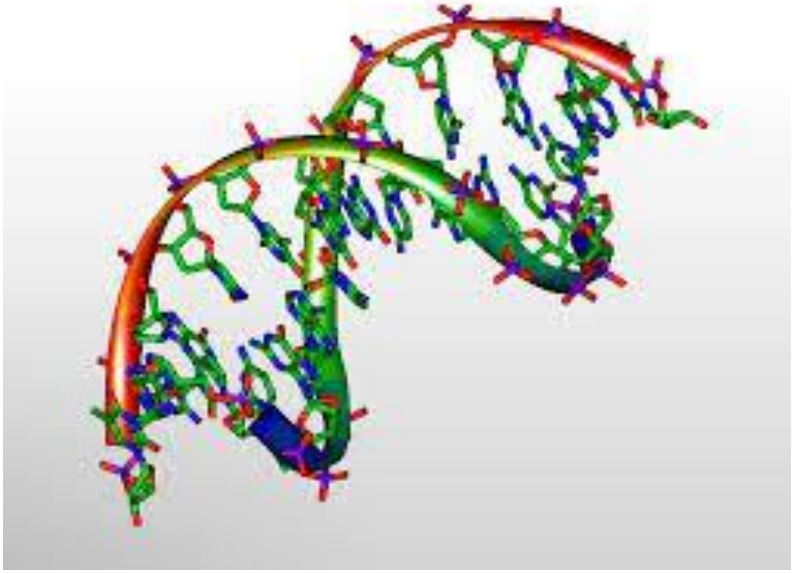
"Through this combination of paleoenvironmental proxies, climate models, and archaeological data, we can see the connection between climate change and cultural behavior," says Wang.

Weaving a story with beads

Together, the results of this work document a 50,000-year-long story about human connections, and the dramatic climate changes that drove people apart. The data even provides new insight into variable social strategies between eastern and southern Africa by documenting different bead-use trajectories through time. These regional responses highlight the flexibility of human behavior and show there's more than one path to our species' success.

"These tiny beads have the power to reveal big stories about our past," says Miller. "We encourage other researchers to build upon this database, and continue exploring evidence for cultural connection in new regions."

4. First genome-wide ancient human DNA from Sudan shines new light on Nile Valley past



The first genome-wide ancient human DNA data from Sudan reveals new insights into the ancestry and social organization of people who lived more than 1,000 years ago in the Nile Valley, an important genetic and cultural crossroads.

Nature Communications published the analyses of the DNA of 66 individuals from a site in ancient Nubia known as Kulubnarti, located on the Nile River in Sudan, just south of the Egyptian border.

"Before this work, there were only three ancient genome-wide samples available, from Egypt, for the entire Nile Valley," says first author Kendra Sirak, who began the project as a PhD student at Emory University. "And yet the region was, and still is, an incredibly important part of the world in terms of the movement, meeting and mixing of people."

Sirak was the last graduate student of the late George Armelagos, former professor of anthropology at Emory and a pioneer in bridging the disciplines of archeology and biology. While still a graduate student in the 1960s, Armelagos was part of a team that excavated ancient skeletons from Sudanese Nubia, so the bones would not be lost forever when the Nile was dammed.

"Nubia was a place of human habitation for tens of thousands of years," says Sirak, who is now a staff scientist at Harvard University. "This ancient genetic data helps fill in some major gaps in our understanding of who these people were."

The 66 individuals date back from 1,080 to 1,320 years ago, during the Christian Period of Sudanese Nubia, prior to the genetic and cultural changes that occurred along with the introduction of Islam. The analyses showed how the Kulubnarti gene pool formed over the course of a least a millennium through multiple waves of admixture, some local and some from distant places. They had ancestry seen today in some populations of Sudan, as well as ancestry that was ultimately West Eurasian in origin and likely introduced into Nubia through Egypt.

"A key finding is that social status did not have a strong relationship to biological relatedness or to ancestry in this ancient population, who lived during a period of cultural and social change," says Jessica Thompson, a co-senior author of the paper. Thompson, a former PhD supervisor of Sirak in Emory's Department of Anthropology, is now at Yale University.

The remains of the individuals came from two cemeteries with Christian-style burials that previous evidence indicated were socially stratified. In one cemetery, located on an island in the Nile, the skeletal remains bore more markers of stress, disease and malnutrition and the average age of those buried was just over 10

years old. By contrast, the average age at death in the other cemetery, located on the mainland, was 18 years.

One hypothesis that grew out of this skeletal evidence was that the island cemetery was for a Kulubnarti "underclass," possibly laborers for members of landowning families buried in the mainland cemetery. It was a mystery whether the social stratification may have developed because one population came from a different origin.

A genome-wide analysis suggests that was not the case — the people buried in the separate cemeteries came from a single genetic population.

"It seems that people in this area did not use biological ancestry as a basis for social differentiation," Thompson says. "This reinforces the point that dividing people up socially on the basis of their genetic ancestry is a recent phenomenon, with no basis in universal human tendences."

Another key finding of the genetic analyses shows that some people as close as second-degree relatives were buried across the cemetery divide. Examples of second-degree relationships include grandparents to grandchildren, aunts and uncles to nieces and nephews, and half siblings.

"That indicates that there was some fluidity among the two groups of people," Sirak says. "There wasn't an intergenerational caste system that meant someone was prescribed to being in the same social group as all of their relatives."

A further interesting twist is that much of the Eurasian-derived ancestry within the population came from women. "Often when you think of ancestry and how genes move, you think of males who are trading or conquering or spreading religion," Sirak says. "But the genetic data here reveals that female mobility was really crucial to shaping the gene pool in Kulubnarti."

One possible explanation is that Kulubnarti was a patrilocal system, meaning that males tended to stay where they were born and females moved away from their homelands.

"The Christian Period Nubians from Kulubnarti are fascinating," Sirak says. "They survived in a barren, isolated, desolate region where life was never easy. I like to think that the ancient DNA research is giving a new life to these people from 1,000 years ago by providing a more nuanced view of them. Anytime

you're studying someone's remains, their physical being, you owe it to them to tell the most accurate, respectful and meaningful story that you can."

Sirak came to Emory as a graduate student in 2012 to study human bones and paleopathology under Armelagos. By that time, he and fellow faculty members had built Emory's Department of Anthropology into a powerhouse of the biocultural approach to the field. In particular, Armelagos, his colleagues and graduate students studied the remains of the Sudanese Nubians to learn about patterns of health, illness and death in the past.

A long missing piece in the studies of this population, however, was genetic analysis. So, in 2013, Armelagos sent Sirak to one of the best ancient DNA labs in the world, University College Dublin, with samples of the Nubian bones.

"I had no interest in genetics," Sirak recalls, "but George was a visionary who believed that DNA was going to become a critical part of anthropological research."

Sirak soon became hooked when she saw how she could combine her interest in ancient bones with insights from DNA. She formed collaborations not just in Dublin but at Harvard Medical School's Department of Genetics and elsewhere, investigating mysteries surrounding deaths going back anywhere from decades to ancient times.

Armelagos was 77 and still mentoring Sirak, his last graduate student, when he died of pancreatic cancer in 2014. Dennis Van Gerven, an emeritus professor of anthropology at the University of Colorado at Boulder, took over Sirak's mentorship, along with Thompson. Van Gerven was among Armelagos' first group of students, and he also spent decades studying the Sudanese Nubians.

Sirak stuck with her PhD dissertation project of trying to collect enough ancient DNA from the Nubian remains for analysis.

"Ancient DNA is difficult to recover from areas that are extremely hot, because DNA tends to degrade in heat," she explains.

Genetic sequencing techniques kept improving, however, and Sirak was working at the forefront of the effort. In 2015, while still an Emory graduate student, she was among the researchers who realized that a particular part of the petrous bone consistently yielded the most DNA. This pyramid-shaped bone houses several parts of the inner ear related to hearing and balance. In addition, Sirak

developed a technique to drill into a skull and reach this particular part of the petrous bone in the most non-invasive way possible, while also getting enough bone powder for DNA analysis. The use of this part of the petrous bone is now the gold standard in ancient DNA analysis.

In 2018, Sirak received her PhD from Emory and went on to work in the lab of David Reich, a geneticist at Harvard Medical School who specializes in the population genetics of ancient humans.

She and her colleagues continued to push the boundaries of what's possible with ancient DNA sequencing. They managed to get whole-genome samples from the petrous bones of 66 of the Sudanese Nubians, ushering in a whole new era of bioarchaeology for the Nile Valley. "I don't think we would have succeeded in this work had we not known to focus on the specific part of the petrous bone," Sirak says.

"It's incredible to me that George asked me to focus on ancient DNA back in 2012, long before these techniques were developed," she adds. "He had a way of making anyone who was working with him really feel important and powerful and that gave me the confidence to strike out on a pioneering path."

"George Armelagos' influence is everywhere," adds Thompson, explaining that he also advised many senior people who mentored her early in her career.

Funded by National Geographic Explorer grants, Sirak is now working with Sudanese colleagues to gather and analyze ancient DNA samples from other geographic locations in the Nile Valley, going even deeper into its past, to add more details to the story of how people moved, mixed and thrived in the region across millennia.

As the last graduate student of Armelagos — and then a mentee of Van Gerven, one of Armelagos' first students — Sirak feels like she is completing a circle. The publication of the current paper is the realization of Armelagos' last wishes for the project.

"It's really special for me to be able to use ancient DNA to build on decades of anthropological and archeological research for the region," Sirak says. "I know that George would be proud and thrilled. I'm part of this amazing lineage of researchers now. And the desire to continue what they started is a huge motivation for me."

SOCIO – CULTURAL ANTHROPOLOGY

5. How did Neanderthals and other ancient humans learn to count?

Archaeological finds suggest that people developed numbers tens of thousands of years ago. Scholars are now exploring the first detailed hypotheses about this life-changing invention.

Some 60,000 years ago, in what is now western France, a Neanderthal picked up a chunk of hyena femur and a stone tool and began to work. When the task was complete, the bone bore nine notches that were strikingly similar and approximately parallel, as if they were meant to signify something.

Francesco d'Errico, an archaeologist at the University of Bordeaux, France, has an idea about the marks. He has examined many ancient carved artefacts during his career, and he thinks that the hyena bone — found in the 1970s at the site of Les Pradelles near Angoulême — stands out as unusual. Although ancient carved artefacts are often interpreted as artworks, the Les Pradelles bone seems to have been more functional, says D'Errico.

He argues that it might encode numerical information. And if that's correct, anatomically modern humans might not have been alone in developing a system of numerical notations: Neanderthals might have begun to do so, too[1].

When D'Errico published his ideas in 2018, he was venturing into territory that few scientists had explored: the ancient roots of numbers. "The origin of numbers is still a relatively vacant niche in scientific research," says Russell Gray, an evolutionary biologist at the Max Planck Institute for Evolutionary Anthropology in Leipzig, Germany. Researchers don't even agree, at times, on what numbers are, although a 2017 study[2] defined them as discrete entities with exact values that are represented by symbols in the form of words and signs.

Now the origin of numbers is attracting increasing attention as researchers from a variety of fields address the problem from different vantage points.

Cognitive scientists, anthropologists and psychologists are looking at contemporary cultures to understand differences among existing number systems — defined as the symbols that a society uses for counting and manipulating numbers. Their hope is that clues buried in modern systems might illuminate details of their origins. Meanwhile, archaeologists have begun looking for evidence of ancient numerical notations, and evolutionary biologists with an interest in language are exploring the deep origins of number words. These studies have spurred researchers to formulate some of the first detailed hypotheses for the prehistoric development of number systems.

And an infusion of funding will stimulate more studies in this area. This year, an international research team with a €10-million (US$11.9-million) grant from the European Research Council will start to test different hypotheses, as part of a broader effort to study when, why and how number systems appeared and spread around the world. The project, called the Evolution of Cognitive Tools for Quantification (QUANTA), might even provide insights into whether number systems are unique to anatomically modern humans, or were conceivably present in nascent form in Neanderthals.

An instinct for numbers

Although researchers once thought that humans were the only species with a sense of quantity, studies since the mid-twentieth century have revealed that many animals share the ability. For instance, fish, bees and newborn chicks[3] can instantly recognize quantities up to four, a skill known as subitizing. Some animals are also capable of 'large-quantity discrimination': they can appreciate the difference between two large quantities if they are distinct enough. Creatures with this skill could, for example, distinguish 10 objects from 20 objects, but not 20 from 21. Six-month-old human infants also show a similar appreciation of quantity, even before they have had significant exposure to human culture or language.

What all of this suggests, says Andreas Nieder, a neuroscientist at the University of Tübingen, Germany, is that humans have an innate appreciation of numbers. That arose through evolutionary processes such as natural selection, he says, because it would have carried adaptive benefits.

Others interpret the evidence differently. Rafael Núñez, a cognitive scientist at the University of California, San Diego, and one of the leaders of QUANTA, accepts that many animals might have an innate appreciation of quantity.

However, he argues that the human perception of numbers is typically much more sophisticated, and can't have arisen through a process such as natural selection. Instead, many aspects of numbers, such as the spoken words and written signs that are used to represent them, must be produced by cultural evolution — a process in which individuals learn through imitation or formal teaching to adopt a new skill (such as how to use a tool).

Although many animals have culture, one that involves numbers is essentially unique to humans. A handful of chimpanzees have been taught in captivity to use abstract symbols to represent quantities, but neither chimps nor any other non-human species use such symbols in the natural world. Núñez suggests that a distinction should therefore be made between what he has dubbed the innate 'quantical' cognition seen in animals and the learnt 'numerical' cognition seen in humans[2].

But not everyone agrees. Nieder argues that neurological studies show clear similarities between the way in which quantities are processed in the brains of non-human animals and how the human brain processes numbers. He says that it is misleading to draw too firm a line between the two behaviours[4], although he agrees that human numerical abilities are much more advanced than those of any other animal. "No [non-human] animal is able to truly represent number symbols," he says.

D'Errico's analysis of the Les Pradelles bone could help to provide some insights into how the earliest stages of number systems took shape. He studied the nine notches under a microscope, and says that their shapes, depths and other details are so alike that all seem to have been made using the same stone tool, held in the same way. This suggests that all were made by one individual in a single session lasting perhaps a few minutes or hours. (At some other time, eight much shallower marks were carved on the bone, too.)

However, D'Errico doesn't think that this individual intended to produce a decorative pattern because the marks are uneven. For comparison, he has analysed the seven notches on a 40,000-year-old raven bone from a site of Neanderthal occupation in Crimea. Statistical analysis shows that the notches on this bone are spaced with the same sort of regularity seen when modern volunteers are given a similar bone and asked to mark it with equally spaced notches[5]. But this type of analysis also shows that the marks on the Les Pradelles bone lack such regularity. That observation — and the fact that the notches were

generated in a single session — led D'Errico to consider that they might have been merely functional, providing a record of numerical information.

Marks of sophistication

The Les Pradelles bone is not an isolated find. For instance, during excavations at Border Cave in South Africa, archaeologists discovered an approximately 42,000-year-old baboon fibula that was also marked with notches. D'Errico suspects that anatomically modern humans living there at the time used the bone to record numerical information. In the case of this bone, microscopic analysis of its 29 notches suggests they were carved using four distinct tools and so represent four counting events, which D'Errico thinks took place on four separate occasions[1]. Moreover, he says that discoveries over the past 20 years show that ancient humans began producing abstract engravings, which hint at sophisticated cognition, hundreds of thousands of years earlier than was once thought.

In the light of these discoveries, D'Errico has developed a scenario to explain how number systems might have arisen through the very act of producing such artefacts. His hypothesis is one of only two published so far for the prehistoric origin of numbers.

It all started by accident, he suggests, as early hominins unintentionally left marks on bones while they were butchering animal carcasses. Later, the hominins made a cognitive leap when they realized that they could deliberately mark bones to produce abstract designs — such as those seen on an approximately 430,000-year-old shell found in Trinil, Indonesia[6]. At some point after that, another leap occurred: individual marks began to take on meaning, with some of them perhaps encoding numerical information. The Les Pradelles hyena bone is potentially the earliest known example of this type of mark-making, says D'Errico. He thinks that with further leaps, or what he dubs cultural exaptations, such notches eventually led to the invention of number signs such as 1, 2 and 3[7].

D'Errico acknowledges that there are gaps in this scenario. It isn't clear what cultural or social factors might have encouraged ancient hominins to begin marking bones or other artefacts deliberately, or to then harness those marks to record numerical information. QUANTA will use data from anthropology, cognitive science, linguistics and archaeology to better understand those social factors, says D'Errico, who is one of the project's four principal investigators.

Bones of contention

However, QUANTA researcher Núñez, along with some researchers who are not involved in the project, cautions that ancient artefacts such as the Les Pradelles bone are challenging to interpret. Karenleigh Overmann, a cognitive archaeologist at the University of Colorado in Colorado Springs, highlights those difficulties by citing the example of message sticks used by Aboriginal Australians. These sticks, which are typically flattened or cylindrical lengths of wood, are adorned with notches that might look as though they encode numerical information — but many do not.

Piers Kelly, a linguistic anthropologist at the University of New England in Armidale, Australia, who conducted a review of message sticks[8], agrees with Overmann's point. He says that some message sticks are carved with tally-like marks, but these often act as a visual memory aid to help a messenger recall details of the message they are delivering. "They call to mind the act of recounting a narrative rather than accounting a quantity," says Kelly.

Wunyungar, an Aboriginal Australian who is a member of the Gooreng Gooreng and Wakka Wakka communities, says that the sticks might transmit one of any number of distinct messages. "Some are used for trading — for foods, tools or weapons," he says. "Others might carry messages of peace after war."

Researchers think that people cut notches into this baboon bone some 40,000 years ago as an early form of counting.Credit: F. d'Errico & L. Backwell

Overmann has developed her own hypothesis to explain how number systems might have emerged in prehistory — a task made easier by the fact that a wide variety of number systems are still in use around the world. For example, linguists Claire Bowern and Jason Zentz at Yale University in New Haven, Connecticut, reported in a 2012 survey that 139 Aboriginal Australian languages have an upper limit of 'three' or 'four' for specific numerals. Some of those

languages use natural quantifiers such as 'several' and 'many' to indicate higher values[9]. There is even one group, the Pirahã people of the Brazilian Amazon, that is sometimes claimed not to use numbers at all[10].

Overmann and other researchers stress that there's nothing intellectually lacking about societies that use relatively simple number systems. But she wondered whether such societies might provide clues about the social pressures that drive the development of more elaborate number systems.

Counting on possessions

In a 2013 study[11], Overmann analysed anthropological data relating to 33 contemporary hunter-gatherer societies across the world. She discovered that those with simple number systems (an upper limit not much higher than 'four') often had few material possessions, such as weapons, tools or jewellery. Those with elaborate systems (an upper numeral limit much higher than 'four') always had a richer array of possessions. The evidence suggested to Overmann that societies might need a variety of material possessions if they are to develop such number systems.

In societies with complex number systems, there were clues to how those systems developed. Significantly, Overmann noted that it was common for these societies to use quinary (base 5), decimal or vigesimal (base 20) systems. This suggested to her that many number systems began with a finger-counting stage.

This finger-counting stage is important, according to Overmann. She is an advocate of material engagement theory (MET), a framework devised about a decade ago by cognitive archaeologist Lambros Malafouris at the University of Oxford, UK[12]. MET maintains that the mind extends beyond the brain and into objects, such as tools or even a person's fingers. This extension allows ideas to be realized in physical form; so, in the case of counting, MET suggests that the mental conceptualization of numbers can include the fingers. That makes numbers more tangible and easier to add or subtract.

The societies that moved beyond finger-counting did so, argues Overmann, because they developed a clearer social need for numbers. Perhaps most obviously, a society with more material possessions has a greater need to count (and to count much higher than 'four') to keep track of objects.

Overmann thinks MET implies that there is another way in which material possessions are necessary for the elaboration of number systems. An artefact

such as a tally stick also becomes an extension of the mind, and the act of marking tally notches on the stick helps to anchor and stabilize numbers as someone counts. These aids could have been crucial to the process through which humans first began counting up to large numbers[13].

Eventually, says Overmann, some societies moved beyond tally sticks. This first happened in Mesopotamia around the time when cities emerged there, creating an even greater need for numbers to keep track of resources and people. Archaeological evidence suggests that by 5,500 years ago, some Mesopotamians had begun using small clay tokens as counting aids.

Ancient stone tools hint at settlers' epic trek to North America

According to Overmann, MET suggests that these tokens were also extensions of the mind, and that they fostered the emergence of new numerical properties. In particular, the shapes of tokens came to represent different values: 10 small cone tokens were equivalent to a sphere token, and 6 spheres were equivalent to a large cone token. The existence of large cones, each equivalent to 60 small cones, allowed the Mesopotamians to count into the thousands using relatively few tokens.

Andrea Bender, a psychologist at the University of Bergen in Norway and another leader of the QUANTA project, says that the team members plan to gather and analyse large amounts of data relating to the world's numeral

systems. That should allow them to test Overmann's hypothesis that body parts and artefacts might have helped societies to develop number systems that ultimately count into the thousands and higher. But Bender says she and her colleagues are not presupposing that Overmann's MET-based ideas are correct.

Others are more enthusiastic. Karim Zahidi, a philosopher at the University of Antwerp in Belgium, says that although Overmann's scenario is still incomplete, it has real potential to explain the development of the elaborate number systems in use today.

Linguistic leads

Overmann acknowledges that her hypothesis is silent on one issue: when in prehistory human societies began developing number systems. Linguistics might offer some help here. One line of evidence suggests that number words could have a history stretching back at least tens of thousands of years.

Evolutionary biologist Mark Pagel at the University of Reading, UK, and his colleagues have spent many years exploring the history of words in extant language families, with the aid of computational tools that they initially developed to study biological evolution. Essentially, words are treated as entities that either remain stable or are outcompeted and replaced as languages spread and diversify. For instance, English 'water' and German 'wasser' are clearly related, making them cognates that derive from the same ancient word — an example of stability. But English 'hand' is distinct from Spanish 'mano' — evidence of word replacement at some time in the past. By assessing how frequently such replacement events occur over long periods, it is possible to estimate rates of change and to infer how old words are.

Using this approach, Pagel and Andrew Meade at Reading showed that low-value number words ('one' to 'five') are among the most stable features of spoken languages[14]. Indeed, they change so infrequently across language families — such as the Indo-European family, which includes many modern European and southern Asian languages — that they seem to have been stable for anywhere between 10,000 and 100,000 years.

This doesn't prove that the numbers from 'one' to 'five' derive from ancient cognates that were first spoken tens of thousands of years ago, but Pagel says it's at least "conceivable" that a modern and a Palaeolithic Eurasian could have understood one another when it came to such number words.

Pagel's work has its fans, including Gray, another of QUANTA's leaders, but his claims are challenged by some scholars of ancient languages. Don Ringe, a historical linguist at the University of Pennsylvania in Philadelphia, says it isn't clear that the stability of lower-number words can just be projected far back into prehistory, regardless of how stable they seem to be in recent millennia.

That all adds up to a slew of open questions about when and how humans first started using numbers. But despite the debate swirling around these questions, researchers agree it's a topic that deserves a lot more attention. "Numbers are just so fundamental to everything we do," says Gray. "It's hard to conceive of human life without them."

Numbers might even have gained this importance deep in prehistory. The notched baboon bone from Border Cave is worn smooth in a way that indicates that ancient humans used it over many years. "It was clearly an important item for the individual who produced it," says D'Errico.

Not so for the Les Pradelles specimen, which lacks this smooth surface. If it does record numerical information, that might not have been quite as important at the time. In fact, although D'Errico and his colleagues have spent innumerable hours analysing the bone, he says it's possible that the Neanderthal who chipped away at that hyena femur some 60,000 years ago spent very little time using it before tossing the bone aside.

6. Gendered division of labor shaped the human spatial behavior

Navigating, exploring and thinking about space are part of daily life, whether it's carving a path through a crowd, hiking a backcountry trail or maneuvering into a parking spot.

For most of human history, the driving force for day-to-day wayfinding and movement across the landscape was a need for food. And unlike other primates, our species has consistently divided this labor along gender lines.

In new research published in *Nature Human Behaviour*, scientists including James Holland Jones of Stanford and lead author Brian Wood of University of California, Los Angeles, argue that the increasingly gendered division of labor in human societies during the past 2.5 million years dramatically shaped how our species uses space, and possibly how we think about it.

Underlying these conclusions is a huge and detailed trove of travel data revealing stark differences in the ways men and women among the nomadic Hadza people of Tanzania use space. A contemporary hunter-gatherer society, the Hadza provide a window into a highly mobile lifestyle, which was the norm for our species before the widespread adoption of agriculture.

"We're taking gender differences as a given in this particular cultural setting, and then asking what consequences they have downstream," said Jones, an associate professor of Earth system science at Stanford's School of Earth, Energy & Environmental Sciences (Stanford Earth) and a senior fellow at Stanford Woods Institute for the Environment.

A better understanding of this dynamic could yield clues about why men and women seem to think about space differently. Research in many human populations suggests men and women are better at different types of spatial tasks. On average, women tend to excel on spatial memory tasks, while men tend to score higher on two basic measures of spatial cognition associated with movement: mental rotation of objects and accurately pointing to distant locations.

'Male work is more navigationally challenging'

The paper examines a popular theory that men's hunting for wild game would produce more extensive and sinuous travel, and that women's harvesting of plant foods would lead to more concentrated, straight-line travel to and from known locations.

While previous efforts to substantiate the theory have relied heavily on verbal accounts, the researchers here tested it by examining more than 13,000 miles of travel logged on lightweight GPS trackers worn by Hadza foragers between 2005 and 2018. "One or two researchers would walk through camp early in the morning as people were rousing," the authors write. "We would greet people at their homes or hearths and hand out GPS devices to be worn during the day."

Around nightfall, when most people had returned to camp, Wood and assistants hired in the Hadza community removed the devices. They ultimately used data from 179 people, representing 15 camps and ranging in age from two to 84 years old.

The authors also examined the degree of overlap in the lands visited by men and women. "One of the most surprising results of this study was the fact that Hadza men and women essentially occupy different worlds from a young age. In our data, most of the landscape was effectively gender-segregated," said Wood, an assistant professor of anthropology at UCLA who began working on this paper a decade ago as a postdoctoral scholar at Stanford.

To analyze the movement data, the researchers adopted techniques from the field of movement ecology and also developed custom software. As expected, the results show men walked further per day, covered more land in less direct paths and were more likely to travel alone. "In this hunting and gathering context, male work is more navigationally challenging," the researchers write.

Although some individual day journeys extended to 20 miles or more, Hadza men overall averaged eight miles per day and women -- many of them accompanied by young children -- averaged nearly five miles. Gender differences emerged by the age of six. From the mid-forties, the gender difference declined, mostly due to decreasing travel by men while women sustained more of their daily mileage.

Human mobility in a changing world

Detailed spatial data like those amassed in this study will aid future comparative research into human mobility, according to the authors. This holds particular resonance in light of a pandemic that has forced sudden revisions of normal movement patterns and heightened attention to the costs and benefits of different spatial habits.

Already, Wood has begun to apply technical, logistical and scientific lessons from this study to a new National Science Foundation project meant to help identify research and policy priorities to prepare the U.S. for inevitable future pandemics -- in part by measuring mobility and modeling patterns of social interaction. "The study of human movement can be used to identify at-risk communities for disease transmission and spread," Wood explained.

Even when we're not in a pandemic, Jones said, people's mobility drives economic activity, social cohesion and environmental impacts. And the environment, in turn, shapes spatial behavior. That feedback loop is at the heart of some of the internal migration patterns already emerging as a response to global warming. As once-rare weather events become commonplace, Jones explained, migrant laborers will likely travel longer distances for work; more people will engage in seasonal migration to pursue agricultural work or escape hurricanes and droughts, and crop failures will drive more rural residents to urban areas.

"Changing mobility is going to be one of the key ways that humans adapt to a heated world," Jones said. "Knowing more about gender differences and other

drivers for spatial behaviors across a wide swath of human populations and ecological contexts will help us anticipate how this adaptation will play out and inform policies to manage it."

The research received funding from the National Science Foundation, the Leakey Foundation, the Wenner-Gren Foundation, the National Geographic Society, Yale University, UCLA and the Max Planck Institute for Evolutionary Anthropology.

7. Culture drives human evolution more than genetics

In a new study, University of Maine researchers found that culture helps humans adapt to their environment and overcome challenges better and faster than genetics.

After conducting an extensive review of the literature and evidence of long-term human evolution, scientists Tim Waring and Zach Wood concluded that humans are experiencing a "special evolutionary transition" in which the importance of culture, such as learned knowledge, practices and skills, is surpassing the value of genes as the primary driver of human evolution.

Culture is an under-appreciated factor in human evolution, Waring says. Like genes, culture helps people adjust to their environment and meet the challenges of survival and reproduction. Culture, however, does so more effectively than genes because the transfer of knowledge is faster and more flexible than the inheritance of genes, according to Waring and Wood.

Culture is a stronger mechanism of adaptation for a couple of reasons, Waring says. It's faster: gene transfer occurs only once a generation, while cultural practices can be rapidly learned and frequently updated. Culture is also more flexible than genes: gene transfer is rigid and limited to the genetic information of two parents, while cultural transmission is based on flexible human learning and effectively unlimited with the ability to make use of information from peers and experts far beyond parents. As a result, cultural evolution is a stronger type of adaptation than old genetics.

Waring, an associate professor of social-ecological systems modeling, and Wood, a postdoctoral research associate with the School of Biology and Ecology, have just published their findings in a literature review in the *Proceedings of the Royal Society B*, the flagship biological research journal of The Royal Society in London.

"This research explains why humans are such a unique species. We evolve both genetically and culturally over time, but we are slowly becoming ever more cultural and ever less genetic," Waring says.

Culture has influenced how humans survive and evolve for millenia. According to Waring and Wood, the combination of both culture and genes has fueled several key adaptations in humans such as reduced aggression, cooperative inclinations, collaborative abilities and the capacity for social learning. Increasingly, the researchers suggest, human adaptations are steered by culture, and require genes to accommodate.

Waring and Wood say culture is also special in one important way: it is strongly group-oriented. Factors like conformity, social identity and shared norms and institutions -- factors that have no genetic equivalent -- make cultural evolution very group-oriented, according to researchers. Therefore, competition between culturally organized groups propels adaptations such as new cooperative norms and social systems that help groups survive better together.

According to researchers, "culturally organized groups appear to solve adaptive problems more readily than individuals, through the compounding value of

social learning and cultural transmission in groups." Cultural adaptations may also occur faster in larger groups than in small ones.

With groups primarily driving culture and culture now fueling human evolution more than genetics, Waring and Wood found that evolution itself has become more group-oriented.

"In the very long term, we suggest that humans are evolving from individual genetic organisms to cultural groups which function as superorganisms, similar to ant colonies and beehives," Waring says. "The 'society as organism' metaphor is not so metaphorical after all. This insight can help society better understand how individuals can fit into a well-organized and mutually beneficial system. Take the coronavirus pandemic, for example. An effective national epidemic response program is truly a national immune system, and we can therefore learn directly from how immune systems work to improve our COVID response."

8. Perceptual links between sound and shape may unlock origins of spoken words

Paper 1 Chapter 7

Most people around the world agree that the made-up word 'bouba' sounds round in shape, and the made-up word 'kiki' sounds pointy -- a discovery that may help to explain how spoken languages develop, according to a new study.

Language scientists have discovered that this effect exists independently of the language that a person speaks or the writing system that they use, and it could be a clue to the origins of spoken words.

The research breakthrough came from exploring the 'bouba/kiki effect', where the majority of people, mostly Westerners in previous studies, intuitively match the shape on the left to the neologism 'bouba' and the form on the right to 'kiki'.

An international research team has conducted the largest cross-cultural test of the effect, surveying 917 speakers of 25 different languages representing nine language families and ten writing systems -- discovering that the effect occurs in societies around the world.

Publishing their findings in *Philosophical Transactions of the Royal Society B,* the team, led by experts from the University of Birmingham and the Leibniz-Centre General Linguistics (ZAS), Berlin, says that such iconic vocalisations may form a global basis for the creation of new words.

Co-author Dr Marcus Perlman, Lecturer in English Language and Linguistics at the University of Birmingham, commented: "Our findings suggest that most people around the world exhibit the bouba/kiki effect, including people who speak various languages, and regardless of the writing system they use."

"Our ancestors could have used links between speech sounds and visual properties to create some of the first spoken words -- and today, many thousands of years later, the perceived roundness of the English word 'balloon' may not be just a coincidence, after all."

The 'bouba/kiki effect' is thought to derive from phonetic and articulatory features of the words, for example, the rounded lips of the 'b' and the stressed vowel in 'bouba', and the intermittent stopping and starting of air in pronouncing 'kiki'.

To find out how widespread the bouba/kiki effect is across human populations, the researchers conducted an online test with participants who spoke a wide range of languages, including, for example, Hungarian, Japanese, Farsi, Georgian, and Zulu.

The results showed that the majority of participants, independent of their language and writing system, showed the effect, matching "bouba" with the rounded shape and "kiki" with the spiky one.

Co-author Dr Bodo Winter, Senior Lecturer in Cognitive Linguistics at the University of Birmingham, commented: "New words that are perceived to resemble the object or concept they refer to are more likely to be understood and adopted by a wider community of speakers. Sound-symbolic mappings such as in bouba/kiki may play an important ongoing role in the development of spoken language vocabularies."

Iconicity -- the resemblance between form and meaning -- had been thought to be largely confined to onomatopoeic words such as 'bang' and 'peep', which imitate the sounds they denote. However, the team's research suggests that iconicity can shape the vocabularies of spoken languages far beyond the example of onomatopoeias.

The researchers note that the potential for bouba/kiki to play a role in language evolution is confirmed by the evidence they collected. It shows that the effect stems from a deeply rooted human capacity to connect speech sound to visual properties, and is not just a quirk of speaking English.

9. How Cultural Anthropology Helps Us Understand Language, Media, and Business, with Adam Gamwell

Applying anthropology to business means asking the big questions. How does communication influence culture? How does language continue to evolve? And what are the hidden assumptions that shape our consumer behavior and attitudes towards food?

These are the questions that Design Anthropologist Adam Gamwell explores on a daily basis. They are also among the many questions he explores on his popular podcast, This Anthro Life. We recently spoke with Adam about the anthropological perspective, food science, and the keys to a successful podcast.

The media landscape continues to shift, becoming more and more fragmented. Compared to previous eras, people now have a much wider range of sources for news, information, and content - all of which shape their worldview. How do you think changing the media landscape is influencing culture? Is it a problem that we're increasingly getting our "news" from different, oftentimes niche sources?

The changing media landscape is a double-edged sword. As you noted, we have unprecedented access to more sources of information, ideas, and commentaries on current events. However, more options don't mean we're each reading more or more diverse sources. In this sense, culture is fragmenting. It is becoming more complex as we generate new and more diverse meanings. There are more niche groups that can become increasingly insulated from others. And within each of our bubbles, we tend to seek out information and ideas that reinforce our own.

Our worldviews are increasingly shaped by niche and different news and content sources. This creates a challenge for building consensus because there

isn't an agreed-upon source of truth.

As an anthropologist, I like to think about culture as a guidebook for how to make sense of the world. It's a guidebook that gets read to us as kids, that we then interpret and write for ourselves and then pass on to our kids. Culture is how we tell stories. It's storytelling design. The trick is culture is often like water is to a fish. It's invisible and difficult to detect without something to contrast it, like air. And even when a fish is in the air, they may not realize it, they just don't feel good.

In the same way, we may see a news story or source or perspective and not like it, yet we can't necessarily articulate why. And that's how different meanings end up becoming more visible to us. Culture helps us decode why we don't agree on news or information sources. The media landscape does influence culture. But culture also influences how we react to the media landscape.

It's amazing how specialized, and community-specific language can be - especially when we examine how online communities speak to each other. Each platform and the online community seems to have its own unique communication style - rich with emojis, gifs, cultural references, and slang which "outsiders" aren't privy to. How do you see the connection between language (broadly defined) and online culture/subcultures?

Language is a tool for assigning, referencing, and expressing meaning. Creating insider-only language builds community and fosters intergroup cohesion. It's really no different from any offline community, except members don't have to be colocalized. Expressing oneself with emojis and memes is just a way to represent belonging to a group.

Why I love emojis, gifs, and memes, in particular, is because they're kind of like the digital equivalent to pictography, a form of writing that uses representational, pictorial drawings (think stop signs), and hieroglyphics, a form of writing that uses drawings as phonetic (pronounceable) letters. Memes by and large are used for humorous commentary. Emojis to add more expressiveness to text. I hope the success and global adoption of these forms of communication help us realize that alphabetic writing is just one of the many creative ways humans express themselves.

The same words – or symbols – can mean radically different things to different groups. And those meanings will change over time too. Emojis were invented in

Japan as a way to cut down on bandwidth issues from people sending photos on their mobile phones (sounds ironic today, right?). But they've inspired people all over the world and are now accessible on every smartphone. They provide another way to express ourselves beyond letters or characters. What I love about them is that they are intentionally open to interpretation.

And that interpretability is precisely what seems to be annoying so many Gen-Zers about Millennials, who supposedly have ruined emojis and use them wrong. This gets to a fundamental anthropological question – who gets to decide what is the "correct" way to use a language or system of expression and why? The answer directly highlights how we use language to draw boundaries around who belongs in a group and who doesn't.

It seems that our attitudes towards the foods we eat are based on cultural views, assumptions, and taboos. Since you have a background in cultural anthropology, sustainability, and food, I'm curious about how to see the connection between these? For example - insects may provide a perfectly nutritious, sustainable source of protein, but the (perhaps unexamined) attitudes towards them may prevent their widespread adoption. How do you see this playing out and are these hindrances things that can be overcome?

What we commonly eat is largely dictated by culture. Insects and sustainability provide an interesting question into how and why people change their minds about what they will and won't eat. You may ask someone why they eat what they do, and they'll tell you they try to eat healthily, and are mildly aware or feel society should eat more sustainably. But then ask them if they would ever eat insects – given that they are a healthy and sustainable source of protein – and most people will likely say no thanks. Or, sure I'd at least try it. As anthropologist Margaret Mead put it, what people say, what people do, and what people say they do are entirely different things.

If we're trying to change behavior, i.e., getting people to focus more on health and sustainability around food, we have to understand not just cultural attitudes today, but also what historical particularisms, as Franz Boas called them, what unique events in history shaped those attitudes. Take quinoa. The golden grain has joined the pantheon of so-called superfoods, nutrient-dense foods that carry with them connotations of health, longevity, naturalness, and maybe the environment. It turns out historically quinoa went from being one of the sacred crops to Andean South American peoples for thousands of years, to being

banned and shunned by Spanish colonists, and then associated as food for the rural poor. In other words, middle-class and wealthier urban Andeans came to see the food as essentially backward, low class, and socially inferior – the same characteristics they assigned to rural and poor farmers. Food tends to take on the qualities people associate with other groups. Food is social. Over the past half-century, following cultural trends in healthier eating, sustainable and organic farming, and desires for authenticity and connectedness, quinoa (and many Andean crops that had been deemed inferior) underwent a tremendous amount of cultural reworking. Now it is the poster child of the Peruvian Gastronomy movement, darling of superfoodies, a point of cultural pride for rural farming communities, and one of the most important and robust crops for mitigating the effects of a changing climate. This tells us that perceptions, attitudes, and even taboos can change.

So what's a food sustainability entrepreneur to do? Understand cultural taboos. In the case of eating insects, you can change people's behaviors if you can successfully nudge people's associations by 1. Removing the visible ick factor and 2. Aligning with positive cultural notions of food – sustainability, high protein, nutritious, comfort, etc. You don't even need to go all the way to insects to see how this works. As consumers became warier of sugar in sodas, and thus became less likely to drink soda, bottling companies started selling diet and sugar-free versions that align with (and influence) changing consumer perceptions of what is good to drink. People could continue to drink their soda without the feelings of guilt or associations of being unhealthy. They're making the taboo acceptable by changing their form.

You have a prolific podcast, This Anthro Life, which has been delivering incredible episodes for now over 8 years! How has podcasting changed in the time you've been involved? Is there anything you know now that you wish you would have known when you first started?

I started This Anthro Life in the fall of 2013 before podcasting was a household word. Around that time Serial from This American Life came out. Podcasting had – and to some extent still has – an indie, DIY element. Anyone can make one and put it out to the world. But there's also been this incredible flourishing professionalization of the medium, which has upped the game of many shows. This also has made it increasingly hard to compete without editorial or financial backing. First came large public radio companies like NPR and PRX converting some of their most popular radio shows for the on-demand format of podcasting.

Then they started creating podcast-first content. As podcasting has become ever more popular, celebrities and Hollywood have gotten into the game, bringing in ever larger audiences and interest from advertisers. Today podcasting is on track to become a billion-dollar industry within the next year.

I wish I knew just how rich, sophisticated, and lively the podcast industry would become. The opportunities, avenues, and infrastructures for professional podcasting available today didn't really exist 8 years ago. So, while we have more tools and services at our disposal today, you're also competing with a lot more noise.

Podcasting for me has always been a mix of occupational therapy, professional exploration, an exercise in making anthropology mainstream, and personal branding.

From the standpoint of market research, what would you say is unique about the anthropological/ethnographic approach? What is it able to deliver that other methodologies don't?

Traditionally, market research puts consumers into segments like Millennial moms who want to stay fit or climate-forward spend-thrift, Gen-Z students. This entails grafting industry perspectives and terminology onto people, rather than meeting people where they are at. Anthropology is intensely curious about how people label themselves, others, and their world. Market labels say more about marketers than they do about consumers, while anthropology aims to understand the world from the consumer's cultural perspective.

Consumer segments may not reflect reality because culture is porous and organic. Younger people influence older people and vice versa, as the emoji debate or "OK Boomer" memes show us. Anthropology aims to capture this porousness by studying people on their own terms and by continually moving between the forest (culture) and the trees (individuals).

About Adam Gamwell

Dr. Adam Gamwell is a business and design anthropologist. He created and hosts This Anthro Life Podcast, co-founded Missing Link Studios (a social impact storytelling and human insights studio), and is a Senior Anthropologist at

MotivBase.

This Anthro Life has received multiple educational and media grants and brings listeners unique conversations with some of the top innovators and minds dedicated to decoding people and making our world more humane, including TED Allstars, MacArthur Geniuses, editors of global publications, documentarians, entrepreneurs, artists, scholars and more.

10. Study shows the games we play reflect our culture

In a new study making use of historical data, researchers from Germany (Leipzig, Jena, Gera) and Australia aimed to answer the question of whether the games that different cultures play correspond to how cooperative they are. The findings of the study were published in the journal 'PLoS ONE'.

"If you live in Germany, chances are high that you played a competitive game," said Sarah Leisterer-Peoples, a researcher at the Max Planck Institute for Evolutionary Anthropology in Leipzig. "We think that games might reflect aspects of human cultures, such as how competitive and cooperative the cultures are," added Leisterer-Peoples.

Previous research suggests that in socially hierarchical cultures, or those with differences in status and wealth, competitive games are played frequently. And the opposite has also been suggested--in egalitarian cultures, or those with little or no differences in status and wealth, games tend to be more cooperative. However, previous studies have investigated this relationship in only a small handful of cultures, thus limiting the breadth of this claim.

In a first step, the research team sorted through a database on historical games played by cultures located in the Pacific. "The cultures in our study lived in a broad geographic range, spanning the Pacific Ocean. The cultures were very diverse, but also shared similarities, which allow for comparison on several aspects of the cultures," said Leisterer-Peoples.

For example, when two groups live next to each other, it might be that they share some characteristics, such as how they get their food, but they might differ in other aspects, such as the norms surrounding competitive behaviour. "We tried

to hone in on these differences while accounting for their similarities," said Leisterer-Peoples.

In a second step, the scientists identified characteristics of cultures that indicate how cooperative they might be. "One of the difficulties with historical data is that you can't go back in time to do interviews with people from different cultures, but have to rely on the historical documentation of these cultures," said Leisterer-Peoples.

For example, they looked at how socially hierarchical cultures were structured, how often members of a cultural conflict with each other, how often cultures conflicted with other cultures, and how often group members hunt and fish in groups. "These are real-world proxies for cooperative behaviour", said Leisterer-Peoples.

In the end, they were able to identify 25 cultures that had historical information readily available on both the games they played and relevant cultural characteristics. The researchers found that the cultures that frequently engage in conflicts with other cultures have more cooperative games than competitive games. On the other hand, cultures with frequent conflicts with their own community members have more competitive games than cooperative games. How socially hierarchical the cultures were and whether they fished and hunted in groups did not reliably relate with what kinds of games were played.

"These findings might be non-intuitive at first glance, but make sense in light of theories on the evolution of cooperation in cultural groups. In times of conflict with other cultures, group members have to cooperate with one another and compete with their opponents," explained Leisterer-Peoples. "This is reflected in the kinds of games that are played--games with competing groups. And when there's a lot of conflict among the members of a group, they tend to play games that are competitive. These findings suggest that the games we play reflect the socio-ecological characteristics of the culture that we are in," added Leisterer-Peoples.

Games mimic real-world behaviour and may be one avenue in which group norms are learned and practised during childhood. "Science lives through replication of previous findings. It's important that future studies investigate this finding further, especially in other parts of the world and in modern-day cultures. We don't know whether this effect is still relevant in today's gaming culture. Nowadays, store-bought games and video games have overtaken the

traditional games that were played in children's free time. Future studies also need to investigate the specific skills that are learned through games, not just the degree of cooperation in the games," said Leisterer-Peoples.

"This is just the beginning of studies on games across cultures. There's much more to uncover," concluded Leisterer-Peoples.

INDIAN & TRIBAL ANTHROPOLOGY

1. Government's special focus on tribal villages

Ahead of assembly elections in nine tribal-dominated states over the next two years, the Centre is set to start a phased transformation programme across 1.45 lakh tribal villages to convert them into model villages.

The new programme — Pradhan Mantri Adi Adarsh Gram Yojana — will be initiated across India in multiple phases. The first phase will include 36,428 villages, with at least 50% tribal population. Over the first five years, the Centre will give funds to districts to develop health, education, livelihood opportunities, roads, vocational training centres, drinking water and electricity supply, and provide mobile and internet connectivity in these villages.

The tribal affairs ministry has begun the spadework for the programme, which would be initiated in this fiscal itself. According to sources, the ministry has written to states to identify villages in different districts and ascertain the development gaps where the Centre's intervention is required. States' tribal welfare departments have been asked to analyse village-wise development gaps and prepare detailed action plans. The states are conveying to the ministry a list of villages that should be included in the first phase from 2021-2026.

The programme will gradually go down to all villages with over 25% of ST population. A government source told ET: "This programme will facilitate tribals to have access to basic services and infrastructure facilities by covering 14 sectors of development." The ministry has conducted a gap analysis based on Census 2011 and Mission Antyodaya data of rural development ministry and has found that there are about 1.45 lakh villages with over 25% of population where there are development gaps.

The ministry expects to converge resources from state tribal sub-plan, Schedule Tribe Component with central line ministries (which remains unutilised or has notional expenditure) and District Mineral Fund.

The initiative will be a massive tribal outreach ahead of elections in at least nine tribal-dominated Schedule V and VI area states in 2022 and 2023. These include Gujarat, Himachal next year and Meghalaya, Tripura, Chhattisgarh, Rajasthan, Mizoram, Telangana and MP in 2023.

2. What is PESA Act, and politics behind its implementation in Chhattisgarh

PESA empowers gram sabhas to play a key role in approving development plans and controlling all social sectors. Panchayat Minister Singh Deo is facing opposition over the much-awaited implementation of PESA, a byproduct of the tussle with Chief Minister Bhupesh Baghel.

The Chhattisgarh government has formulated draft rules under PESA Act, 1996, terming it the Chhattisgarh Panchayat Provisions (Extension of the Scheduled) Rules, 2021. The draft rules were circulated to departments before a meeting of MLAs was called by Panchayat Minister T S Singh Deo last Wednesday. The

draft rules are soon expected to be put before the cabinet, after amendments are made based on suggestions from the departments.

What is the PESA Act, 1996? Why are its rules being formed in the state now?

The Panchayat (Extension of the Scheduled Areas) Act, 1996 or PESA, was enacted by the Centre to ensure self-governance through gram sabhas (village assemblies) for people living in scheduled areas. It legally recognises the right of tribal communities, residents of the scheduled areas, to govern themselves through their own systems of self-government, and also acknowledges their traditional rights over natural resources. In pursuance of this objective, PESA empowers gram sabhas to play a key role in approving development plans and controlling all social sectors. This includes the processes and personnel who implement policies, exercising control over minor (non-timber) forest resources, minor water bodies and minor minerals, managing local markets, preventing land alienation and regulating intoxicants among other things.

State governments were required to amend their respective Panchayat Raj Acts without making any law that would be inconsistent with the mandate of PESA.

In Chhattisgarh, the Congress government made PESA an election issue, and promised laws under the Act, instituting devaluation of power, and strengthening the gram sabhas at the village level.

Almost a year ago, Singh Deo as the panchayat minister started a series of consultations, organised with village-level representatives of all the scheduled areas. The minister heard the tribal representatives, who discussed the intricacies of 10 broad topics ranging from dispute resolution to mining, and from management of markets to management of minor forest produce. After layered consultations, a draft of the rules in nine chapters was prepared. Six states have formed the PESA laws, and Chhattisgarh would become the seventh state if the rules are enacted.

Why are rules under PESA important? What topics will be covered?

PESA rules enable the residents of scheduled areas to strengthen their village-level bodies by transferring power from the government to the gram sabha, a body of all the registered voters of the village. The powers of gram sabhas include maintenance of cultural identity and tradition, control over schemes affecting the tribals, and control over natural resources within the area of a village.

The PESA Act thus enables gram sabhas to maintain a safety net over their rights and surroundings against external or internal conflicts. Without proper rules, its implementation is not possible as it is an exercise in decentralising the power from institutionalised structures, back to the village residents.

The laws, once formed, will give gram sabhas the power to take decisions not only over their customs and traditionally managed resources, but also on the minerals being excavated from their areas. The rules state that the gram sabha will have to be kept informed by any and all agencies working in their village, and that the gram sabha has the power to approve or stop the work being done within the village limits.

The rules also give power to the gram sabhas over management of resources over *jal, jangal, zameen* (water, forest and land), the three major demands of tribals; minor forest produce; mines and minerals; markets; and human resources. The gram sabha would have the powers to monitor and prohibit the manufacturing, transport, sale and consumption of intoxicants within their village limits. It also has a duty to maintain peace and resolve conflicts arising in the village, while protecting tribal customs and traditions, and encouraging customs like *ghotul*.

Where is Chhattisgarh in the process? What next for the draft rules?

In November 2020, Singh Deo held the first of a chain of meetings in Chhattisgarh's Kanker, with representatives of more than 15 tribal blocks from five districts. The meeting held by the department, along with the Sarv Adiwasi Samaj, was the first step in the formation of the rules.

After the meetings with the representatives, the department held consultations with experts in the field, and with other departments, etc.

A draft has been formulated based on these consultations, which has been sent to the departments and have been shared with MPs and MLAs that represent the scheduled areas. Following their feedback, the draft will be presented before the chief minister and the state cabinet. After the cabinet approves the rules, it will be tabled in the legislative Assembly for discussion. Once the Assembly passes the rules, the governor will have the powers to frame the laws.

What is the politics surrounding the PESA Act?

Tribals in Chhattisgarh have been demanding the enactment of PESA rules for some time, as it would give them more power over their resources.

In respect to the mineral resources in the state, the PESA rules would embolden the gram sabha's decisions over that of the central and state governments. The Sarv Aadiwasi Samaj, in its several recent protests, have demanded that the government bring rules under PESA.

While the Panchayat department was working on the draft rules, the state planning commission made a special working group for PESA in August, which held several meetings.

The cold war between Chief Minister Bhupesh Baghel and Singh Deo for the post of CM made PESA a hot topic, as sources close to both the ministers claimed they were working on the draft rules. However, the panchayat department won that round, with the draft already circulated to the other departments.

3. Study shows the games we play reflect our culture

In a new study making use of historical data, researchers from Germany (Leipzig, Jena, Gera) and Australia aimed to answer the question of whether the games that different cultures play correspond to how cooperative they are. The findings of the study were published in the journal 'PLoS ONE'.

"If you live in Germany, chances are high that you played a competitive game," said Sarah Leisterer-Peoples, a researcher at the Max Planck Institute for Evolutionary Anthropology in Leipzig. "We think that games might reflect aspects of human cultures, such as how competitive and cooperative the cultures are," added Leisterer-Peoples.

Previous research suggests that in socially hierarchical cultures, or those with differences in status and wealth, competitive games are played frequently. And the opposite has also been suggested--in egalitarian cultures, or those with little or no differences in status and wealth, games tend to be more cooperative. However, previous studies have investigated this relationship in only a small handful of cultures, thus limiting the breadth of this claim.

In a first step, the research team sorted through a database on historical games played by cultures located in the Pacific. "The cultures in our study lived in a broad geographic range, spanning the Pacific Ocean. The cultures were very diverse, but also shared similarities, which allow for comparison on several aspects of the cultures," said Leisterer-Peoples.

For example, when two groups live next to each other, it might be that they share some characteristics, such as how they get their food, but they might differ in other aspects, such as the norms surrounding competitive behaviour. "We tried to hone in on these differences while accounting for their similarities," said Leisterer-Peoples.

In a second step, the scientists identified characteristics of cultures that indicate how cooperative they might be. "One of the difficulties with historical data is that you can't go back in time to do interviews with people from different cultures, but have to rely on the historical documentation of these cultures," said Leisterer-Peoples.

For example, they looked at how socially hierarchical cultures were structured, how often members of a cultural conflict with each other, how often cultures conflicted with other cultures, and how often group members hunt and fish in groups. "These are real-world proxies for cooperative behaviour", said Leisterer-Peoples.

In the end, they were able to identify 25 cultures that had historical information readily available on both the games they played and relevant cultural characteristics. The researchers found that the cultures that frequently engage in conflicts with other cultures have more cooperative games than competitive games. On the other hand, cultures with frequent conflicts with their own community members have more competitive games than cooperative games. How socially hierarchical the cultures were and whether they fished and hunted in groups did not reliably relate with what kinds of games were played.

"These findings might be non-intuitive at first glance, but make sense in light of theories on the evolution of cooperation in cultural groups. In times of conflict with other cultures, group members have to cooperate with one another and compete with their opponents," explained Leisterer-Peoples. "This is reflected in the kinds of games that are played--games with competing groups. And when there's a lot of conflict among the members of a group, they tend to play games that are competitive. These findings suggest that the games we play reflect the

socio-ecological characteristics of the culture that we are in," added Leisterer-Peoples.

Games mimic real-world behaviour and may be one avenue in which group norms are learned and practised during childhood. "Science lives through replication of previous findings. It's important that future studies investigate this finding further, especially in other parts of the world and in modern-day cultures. We don't know whether this effect is still relevant in today's gaming culture. Nowadays, store-bought games and video games have overtaken the traditional games that were played in children's free time. Future studies also need to investigate the specific skills that are learned through games, not just the degree of cooperation in the games," said Leisterer-Peoples.

"This is just the beginning of studies on games across cultures. There's much more to uncover," concluded Leisterer-Peoples.

4. 'Proud to witness Niyshi tribe's ancestral ritual': Arunachal Pradesh CM shares video

Holding spears in their hands, wearing traditional attires, the performers made their moves in unison leaving the audience spellbound.

Through a video on Twitter, Arunachal Pradesh Chief Minister Pema Khandu Wednesday shared a performance by the Nyishi tribe during an event in Chayang Tajo to showcase what he termed as an "ancestral ritual".

Talking about the ritual, Khandu said, "Our ancestral tradition & rituals are not imported practices. They evolved with our ancestor's intimate relationship with the mother nature. Proud to witness one such ancestral ritual of Nyishi tribe at Chayang Tajo, performed for well-being of the society."

The clip shared by him also showed Union Minister of Law Kiren Rijju along with other officials enjoying the performance.

Holding spears in their hands, wearing traditional attires, the performers made their moves in unison leaving the audience spellbound. Symbolic to their tradition, the performers could also be seen making sounds with their mouth, rendering an enthralling rhythmic effect. The cloudy sky hovering over the lush green hills seen in the backdrop of their performance added to the visual treat of the viewers.

Khandu also laid the foundation for an 18-kilometre road from Jayang Bagang to Paje Solung village and the road from Domdilla to Tajo village at Chayang Tajo on the same day. Adding impetus to development, he also inaugurated two 100 kilowatt Rapo hydel stations, hydel connectivity for evacuation of power from hydels, a sub-division office of the Rural Works Department and a 50-metre bridge over Wase river.

"My first visit to Bameng Assembly Constituency. Priority will be improvement of Pakke-Bameng road, the main route leading to Bameng headquarters. Also Bameng-Lada and Pakke-Khenewa road. For want of good mobility, the constituency remained under-developed. Now change awaits!" read Khandu's tweet.

5. Nourishing The Tribal Food Systems

Food systems aggregate the food value chain, nutrition, livelihoods and climate systems, range of actors that provide a right to life and a life to live with dignity. The tribal food system is dependent on dryland agriculture, forests, common property, water resources, and biodiversity. The tribals have been fighting for Jal (water), Jangal (forest) and Jameen (land).

Agricultural and food policies have largely focused on increasing food production and mitigating hunger and energy inadequacy. The food subsidies on rice and wheat, urbanisation, globalisation and the consumption of highly refined and processed foods given the societal changes have impacted tribal food systems.
In particular, traditional food systems in the tribal areas, the local diversity from plants and crops that are rich food sources of macro and micro-nutrients, notably the millets, wild edible foods, leafy vegetables, nuts, seeds and fruits are being largely eroded and losing their rightful place.
The diluted food systems have caused multiple burdens of malnutrition, namely, undernutrition, micronutrient malnutrition as well as overweight/obesity which are conditions favourable for emerging non -communicable diseases.
Malnutrition is not only impairing the cognitive potential, demographic dividend, growth, and productivity but is also increasing the burden of the disease.

Reforms in the Food Systems

Investment in tribal food systems will supercharge demographic dividends. It calls for a leadership agenda of action. To increase the availability, accessibility, affordability, and consumption of safe and nutritious foods; the undernourished tribals need a caring, resilient, inclusive, nutrition-sensitive and sustainable food system. The suggested reforms are as follows:

1. Structural Reforms- A new legislation on food systems that can take care of a) sustainable food and nutrition, b) food safety and c) preserving biosafety and biodiversity is necessary for a dignified living and just and equitable governance. Effective implementation of the provisions under the Forest Rights Act- 2006, Panchayat Extension to Scheduled Areas (PESA) Act and the NITI Aayog's Model Agricultural Land Leasing Act- 2016 will go a long way in increasing entitlements. There is a high incidence of physical violence and early marriage among tribal women. Investment in women's empowerment and rights and workable institutional arrangements will be key drivers in addressing exclusions and gender-based disparities. Special food systems strengthening measures for aboriginal extinctive primitive tribes is needed as they suffer from multiple marginalisations.

2. First and Second Windows of Opportunity- The food systems for tribals need to prioritise actions for the First 1000 Days of life- The First Window of Opportunity and adolescent girls-The Second Window of Opportunity. During the first 1000 days, through inter-personal counselling and home contacts by the grassroots functionaries, initiatives should be taken to promote appropriate infant and young child feeding. Prevention and control of adolescent anaemia and improving reproductive health and life skills of adolescent girls will pave the way for a safe and healthy outcome in newborns.

3. Atmanirbhar POSHAN (Nutritional Self Reliance)- It is one of the critical policy measures on revitalising food systems. Each district must be self-sufficient in at least six food groups- this can bring food and nutritional self-sufficiency at the sub-national level. These food groups constitute cereals and millets, pulses, milk and milk products, roots and tubers, green leafy vegetables, other vegetables, fruits, sugar, fat/ oil and meat, fish, poultry, and eggs.

4. Integrated Strategy to Address Disease Burden- There must be an integrated strategy on addressing issues of malnutrition, lymphatic filariasis and malaria, childhood TB, sickle cell anaemia and HIV reduction. In this regard, India needs to establish a centre of excellence. In the endemic areas, screening of filaria and malaria need to be incorporated specifically in routine antenatal care, village health nutrition and sanitation days (VHNSD) and in the gram sabhas.

5. Addressing All Forms of Hunger- Addressing protein, calorie and hidden hunger, known as micronutrient malnutrition, would require investing in the tribal cultural endowments, traditional diets, dryland agriculture and crops with high nutrition (millets, pulses, wild edible foods among others) which were traditionally consumed by the tribals. It calls for expanding food programs and income safety nets, diversifying both production and farming system to include poultry, fishery, and dairy. Increasing dietary diversity, promoting food fortification and bio-fortification, and streamlining the existing supplementation programs would control hidden hunger. Working with India's Jal Jeevan Mission to increase access to safe water and making the water a source of nutrients would be a significant milestone.

6. Prevention and Control of Overweight and Obesity- It would require multiple strategies on addressing the local food system to improve access to safe and nutrient-dense foods and discourage the intake of high salt, sugar, and fatrich foods. Food-based dietary guidelines need to be used as a tool in agriculture, food, and health planning to set targets in healthy food production and consumption. India's food regulating body FSSAI, Micro Small and Medium food Enterprises and Farmer's Cooperatives can play an enabling role in reducing the impending double burden on malnutrition.

COVID-19 provides an opportunity for new world order. It is a critical wake-up call to redesign the food systems that promotes and protects biodiversity, delivers a nutritious and affordable diet for all. All the stakeholders need to come together to systematically solve the food and nutrition divide for sustainable food systems and the planet.

6. Christianity and Politics in Tribal India; Baptist Missionaries and Naga Nationalism by G Kanato Chophy

G Kanato Chophy disputes the conventional understanding that missionaries who came to India's northeast highlands worked in tandem with the colonial powers to convert gullible tribal people with an exotic belief-system and the white man's halo. The truth was far more complicated with the relationship between the American Baptist missionaries and the British administrators being more confrontational than cordial

In the conventional historiography of the colonial period in India, the Christian missionaries were hardly accorded a place of pride. They were portrayed as handmaidens of the colonial masters who did their "soul-saving" works riding on the coat tails of the colonial power. Not surprisingly, the average Indian perceives missionaries as duplicitous zealots who preyed on and ensnared gullible tribal folk with an exotic belief system and the white man's halo. That missionaries tricked, induced and bribed is what we have heard *ad nauseam*.

Chophy disputes the conventional understanding that missionaries who came to the northeast highlands worked in tandem with the colonial powers or, under their protection. In fact, the relationship between the two was more often confrontational than cordial. The colonial power was British while the missionaries who reached the wild Naga country in the late 19th century were

American. The colonial administrators, some of whom were anthropologist-scholars, were keen that the "exotic" lives of the tribal people be preserved. The missionaries, who often started off by learning the tribal dialects, creating a script for the natives and then starting schools, often ended up changing not just the tribals' religious faith, but their entire way of life. This was resented by the administrators who regarded it as a loss of valuable culture.

These missionaries, mainly under the American Baptist Mission, first set up their tents in the Assam plains in the early half of the 19th century. However, they found these fertile plains barren in terms of soul harvesting. At the fag end of the century, an exasperated missionary complained, "Must it not be admitted that the Assamese have been offered the Gospel and have not received it… Can it be believed, that Paul or other New Testament evangelists would have spent so long a time on such a field and not tried hard to find a heathen people more favourable to Christianity than the Assamese." The missionaries blamed their problems in Assam on the "old iron-clad institutions and traditions" governing social life which they found hard to penetrate.

The missionaries then shifted their gaze up to the hill ranges flanking the Assam plains and found a receptive audience in the headhunting tribes. These tribes didn't have a common print or a literary culture. Theirs was an oral tradition. That, in the author's opinion, made it easy for the missionaries.

The missionaries began by learning the village dialects. It could not have been easy. They waylaid villagers who were off to work in their fields and picked up new words and sounds from them by gesturing and pointing at common objects. From there, they created a script to cater to the tribal tongue and then translated the Bible and gospel literature into that new language. Then, they opened schools. This took time and resources, but it worked.

As to the link between Christianity and Naga nationalism, the takeaway from the book is that there indeed was a correlation between the two. But it is doubtful if the missionaries can be blamed for it. They didn't preach nationalism or secession. Their aim was entirely other worldly. The motto was to "rescue the perishing souls." Yet, by introducing a common script and print culture, they unwittingly helped consolidate amorphous identities into solid ones. By educating the tribals and exposing them to the ideas and political winds around them, they helped engender self-respect, ethnic pride and ultimately, a recalcitrant nationalism.

In the book's telling, "During British times, political agents had expressed displeasure at the new religion for irrevocably changing traditional ways of life; in the post-independence period, many political leaders of the new Indian state saw it as a rabble-rousing faith, and thus an impediment to national integration." It didn't help that the two most serious movements for independence in the northeast after Indian independence were in the two most Christianized states – Nagaland and Mizoram. By the mid-1950s, foreign missionaries were thrown out of Nagaland, and the same happened in Mizoram in the 1970s.

But as the book shows, most Nagas have no regret over their acceptance and adoption of the Baptist faith. It is an identity, a badge they wear with pride. The book argues that there is now a kind of hierarchy within the tribes with those that accepted the faith first feeling superior to those that followed later.

Something similar also happened in southern Manipur from where I am. It is common there to hear people talk of how villages and chiefs that welcomed the missionaries grew more prosperous over time than those that rejected or persecuted them. Curiously, the book privileges political boundaries over social and cultural ones and focuses only on the tribes of the state of Nagaland. Thus, the exploits of William Pettigrew amongst the Tangkhul Nagas and of Watkin Roberts amongst the Zo tribes in Mizoram and south Manipur, among others, remain untold.

The book also touches on the internal fractures within the Naga Baptist world, the BJP's attempt to co-opt traditional figures like Jadonang and Rani Gaidinliu, the waning influence of traditional institutions, and the encounter between communist ideology and the Naga movement.

This is an ambitious work on a neglected area of research. It helps the reader unlearn much received wisdom. However, the book lacks thematic coherence and the chronology is hard to follow. At close to 500 pages, it looks daunting from the outside. Nevertheless, it is sure to become essential reading for anyone interested in the social history of the tribes of the northeast.

7. Patnaik Launches Air Health Services For Remote Tribal Districts

Odisha Chief Minister Naveen Patnaik on Monday launched the 'Mukhyamantri Vayu Swasthya Seva' (Air Health Services) under which specialist doctors will be flown to remote areas of the state to treat people suffering from serious diseases.

Odisha Chief Minister Naveen Patnaik on Monday launched the 'Mukhyamantri Vayu Swasthya Seva' (Air Health Services) under which specialist doctors will be flown to remote areas of the state to treat people suffering from serious diseases.

Patnaik flagged off a flight carrying specialist doctors to the tribal-dominated and Maoist-hit Malkangiri district. The doctors after reaching Malkangiri will treat the people suffering from certain serious diseases.

Apart from Malkangiri, the 'Mukhyamantri Vayu Swasthya Seva' will also be available in the tribal-dominated districts of Nabarangpur, Nuapada and Kalahandi in the first phase. Other districts will be covered under the programme in a phased manner, Patnaik said.

Odisha's Health and Family Welfare Minister N K Das said specialist doctors required for the treatment of critical patients admitted to various district headquarters hospitals (DHHs), will go to the remote districts to treat patients.

He said doctors from medical colleges and corporate hospitals will be flown to the remote districts through aircraft/ helicopters for prompt treatment of the patients. If required, the patients will be airlifted to various healthcare facilities in Bhubaneswar and Cuttack, the minister said.

So far, the minister informed that a team of doctors of the SCB Medical College and Hospital in Cuttack has been formed for this purpose. Later, doctors of MKCG Medical College and Hospital in Berhampur, VIMSAR in Burla and other private hospitals empanelled under the Biju Swasthya Kalyan Yojana (BSKY) will be engaged in the service.

The service will be offered free of cost to the patients, the minister said.

He said the poor patients who were deprived of better treatment by specialists/ experts due to location disadvantage, will now avail the benefit from this initiative.

Specialist doctors of neurology, nephrology and cardiology department will be flown to the district headquarters hospitals. The follow-up treatment of the patients will be carried out through telemedicine, he said.

8. The search for an end to the complex Naga conflict

The Centre must note that most armed insurgencies find resolution in a grey zone called 'compromise'

Despite having huge strategic significance, India's northeastern frontier has largely remained marginal in the country's popular imagination as well as mainstream politics. The region has witnessed multiple crises including bloody insurgencies, but still lacks the emotional resonance of the Kashmir conflict due to geographical, cultural, and ethnic factors.

Rooted in the politics of sub-nationalism, complexities of regional geopolitics and the evolving dynamics of counterinsurgency tactics, the Naga insurgency has defied a lasting solution; it is an extraordinarily complicated conflict whose management has involved a mix of violent response and bargaining.

The absence of R.N. Ravi, the Nagaland Governor and the Centre's interlocutor for Naga peace talks, in the recently-held meeting of the Naga peace process in New Delhi and the subsequent involvement of the Intelligence Bureau to carry the talks further only testifies the intractable nature of the conflict. But it is not negotiating table alone where various issues pertaining to the Naga problem are being discussed and addressed. The politics of its 'resolution' is taking place at multiple sites.

'Ceasefires' and factions

The Naga insurgency has come a long way, and so has the politics to contain it. In the early phase, the Naga insurgents were provided with what has come to be known as 'safe haven' in Myanmar. India's adversaries (China and Pakistan) also provided them with vital external support at one point of time. A major accommodative tactic in the form of statehood to Nagaland in 1963 was not successful. Thereafter, the constant pressure from security forces coerced the Naga National Council (NNC) to sign the Shillong Accord of 1975, whose offspring was the National Socialist Council of Nagalim (NSCN). When the NSCN split into several factions, the Centre responded with entering into peace negotiations with almost each of them. But the undesirable outcome of these 'ceasefires' has been the creation and existence of unspoken 'spheres of influence'. It is these spheres that have come under increasing scrutiny and attack from the Centre through the Nagaland Governor.

The Modi government and the National Socialist Council of Nagalim (Isak-Muivah), or the NSCN-IM, the most powerful of the Naga insurgent groups which has been in peace talks with the Centre since the 1997 ceasefire, had signed a framework agreement in August 2015 which was claimed a historic achievement at that time. But a final accord has remained elusive since. When the Centre realised that privileging one insurgent group could eventually distort the contours of the final peace accord, it subsequently enlarged the peace process by roping in seven other Naga insurgent groups under the umbrella of Naga National Political Groups (NNPG). But another important group, the NSCN-Khaplang, whose cadres are reported to be inside Myanmar, is still outside the formal process.

Culture of extortion

Given this complex backdrop, Mr. Ravi's recent letter to Nagaland's Chief Minister Neiphu Rio seems to have opened a Pandora's box. In his widely-

circulated letter, Mr. Ravi had expressed his anguish over the culture of extortion and the collapse of general law and order situation in Nagaland, where organised armed gangs run their own parallel 'tax collection' regimes. Extortions in the name of taxes have been a thorny facet of the Naga issue. The 'taxes' levied by insurgent groups are so intricately intertwined in almost all developmental activities in Nagaland that any serious discussion of the issue has been conveniently avoided. One of the major aims of the NSCN-IM has been to acquire formal recognition to this informal practice through negotiations.

As the Governor has crossed the proverbial Rubicon, the NSCN-IM cannot be happy for the simple reason that it is loath to being branded as an 'armed gang' and is vehemently opposed to the treatment of the Naga issue as a 'law and order' problem. Offended by military actions initiated against its cadres in recent months, the NSCN-IM is equally unnerved over a recent directive by the Nagaland government asking its employees to self-declare the membership of any of their close relatives with underground groups.

Unease over interpretations

There has already been much debate and controversy about the interpretation of 'sovereignty', as reflected in the latest "Naga Independence Day" speech by NSCN-IM chief Thuingaleng Muivah. Demand for a separate flag and a 'constitution' has been a key hindrance in building trust among the parties. Some Indian States contiguous to Nagaland have been affected through the mobilisation of the Naga population in these States. That is why they are apprehensive of the demand for 'Greater Nagalim', which would imply a ceding of their Naga-inhabited territories. Another significant issue is how the weapons in the NSCN-IM camps are going to be managed. As a 'ceasefire' group, its cadres are supposed to retain their weapons inside the designated camps for self-defence only, but more often than not, many influential cadres are seen moving with weapons in civilian localities, leading to many problems. It would be an uphill task for the Centre to ensure that all weapons are surrendered at the time of the final accord.

The last word

The NSCN-IM has demanded the removal of Mr. Ravi as the Centre's interlocutor in the peace process, asking for affirmation of the 2015 framework agreement as being "alive in its original form". What has further widened the trust deficit is the allegation by the NSCN-IM that the interlocutor has subtly

manipulated the framework agreement. Was it a case of over-promise and under delivery on the part of Mr. Ravi? Nevertheless, the Centre must keep in mind that most of the armed insurgencies across the world do not end in either total victory or comprehensive defeat, but in a grey zone called 'compromise'. It has become even more urgent in view of China's unusually aggressive behaviour in Ladakh. One need not forget that some high-profile NSCN-IM commanders are reported to have fled last year to China's Yunnan province to seek Beijing's support.

9.24 Tribal Men Face Social Boycott In Kerala For Consuming Beef

Twenty-four tribal men in Kerala's Idukki district have been allegedly socially ostracised by the "oorukoottams" (council of tribals) for allegedly consuming beef, which is against their custom.

Twenty-four tribal men in Kerala's Idukki district have been allegedly socially ostracised by the "oorukoottams" (council of tribals) for allegedly consuming beef, which is against their custom.

Police said the incidents were reported from Marayoor forest areas in this hill district and the authorities of the local self government and tribal department are trying to resolve the issue by talking to chiefs of tribal communities.

They said no case has been registered as no one has come forward to launch a formal complaint with the police on the matter.

Police said they have launched an investigation based on the information they received from various quarters on the issue of social boycott of tribal men.

A senior police officer told PTI that 24 men allegedly consumed beef after coming out of their hamlets in forest areas.

The oorukoottams, which came to know about it, assembled under the leadership of their chiefs and ordered social boycott of the men who allegedly violated the centuries old tradition and customs of the community, police said.

Police said the men facing social boycott could not be contacted as they have reportedly withdrawn deep inside the forests following the oorukoottams' decision.

Their family members including parents, siblings, wives and children have been allegedly prevented from meeting them, police said.

"If the family members meet the ousted men, they will also face similar problems. That is the situation prevailing there" police said.

Kerala Minister for Welfare of Scheduled Castes, Scheduled Tribes K Radhakrishnan told PTI that efforts were on to resolve the issue. He said such customs and practices are still prevalent in tribal communities in the state and efforts were on to bring them to the mainstream.

10. This LSR student's initiative ensures that tribal students don't drop out of education due to COVID

Arpita Chowdhury launched #EducationForAll, an initiative where student volunteers teach Class XII tribal students to help them prepare for the Board exams

In the summer of 2019, Arpita Chowdhury **was volunteering with the NGO Rajendra Ashram in New Delhi. At the time, she had started her classes at Lady Shri Ram College for Women and she would teach English to the tribal children of Classes IX and X that the NGO supported. Shortly after completing her volunteering stint, she decided to launch her own initiative —** Jazbaat Foundation**. "I was operating it in collaboration with the NGO and I was able to offer career counselling as well as arts and crafts workshops to these students," says Arpita. But all this changed in 2020, when the lockdown was imposed.**

Narrating the experience, Arpita says, "When the pandemic hit, the students were asked to return home to their villages in Uttar Pradesh and Jharkhand. There were five students who had just appeared for their Board exams, but they didn't have the means to continue their education from their villages." Arpita decided to bring these students back to Delhi and help them resume their education. "I consulted with my mother and uncle, who were also involved with the NGO, and they helped me bring them back. So many children were forced to drop out of their studies due to the lockdown as not everyone had access to the technology required," states Arpita. She didn't want these students to face the same. "When I was teaching them, I realised that they were enthusiastic to learn and wanted to improve their livelihood," she recalls.

So, Arpita decided to launch #EducationForAll**, an initiative where she took the responsibility of ensuring that these five students didn't suffer from**

learning loss and were given the opportunity to study. "We found them housing in Delhi, installed an internet connection and arranged for a second-hand laptop," says Arpita. But that's not all. Arpita soon realised that online classes at school were not enough to help these students. "They couldn't understand a lot of things that were being taught online," she recalls. It was around this time that Arpita decided to continue coaching them in English. She asked a few of her classmates to help and then the word spread to other colleges in Delhi. "Students with various educational backgrounds, studying at different colleges under Delhi University, wanted to volunteer and help these students learn. Soon, we formed a team of 30 volunteers that even went beyond colleges in Delhi," says Arpita.

Arpita and the team of volunteers conduct classes online since a few of the volunteers are from outside Delhi. "We also wanted to ensure that the students remain safe and so do our volunteers. The volunteers teach these students for one hour every Monday to Friday. The students now get one-on-one attention and they can understand what's being taught in class. They are now in Class XII and will appear for their Board exams in 2022," says Arpita, who adds that these students study at government schools in Delhi. "They scored really well in their Class X Board exams and we are hopeful that they will score well in their Class XII exams too," she adds.

But #EducationForAll is not just about the coaching classes. When these students had to come back, Arpita and her friends started a social media campaign seeking donations. "A lot of people donated books and stationery for these students. Someone even sponsored the internet connection at their residence," says Arpita. One of the students who is preparing for JEE received books from a student who's now in an IIT. "Some of the volunteers, who are not teaching the children anymore, still continue to help in whatever way they can — from clearing doubts to providing mentorship to even extracurricular activities," adds Arpita.

11. Helping dropouts find their way back to school

Through his Lakshya Foundation, a BMC staffer has been voluntarily teaching rural and tribal students for 12 years, writes Sudhir Suryawanshi

The dropout rate of children at rural and tribal areas of Maharashtra has become a major concern. However, Shirish Patil, an engineer at Asia's largest civic body – the Brihanmumbai Municipal Corporation – believes he can turn the tide.

For over 12 years, Patil has been running the Lakshya Foundation (LF) that works for the welfare of educationally deprived and oppressed students. After office hours, Patil, as part of LF, visits tribal hamlets and meets students who dropped out of school for various reasons.

Over the years, he witnessed many bright students give up on their studies because the government school in their village teaches only up to Class 4. Their parents found it expensive to relocate and get them enrolled in better schools. Patil noticed that the government runs many programmes for school students, but almost no programme for dropouts. “My aim is to bring every dropout to mainstream education, by encouraging them to resume their studies and complete their choice of course,” he says.

Patil notes that these students wish to study further, but often the situation is not in their favour. “We live in the 21st century and talk about technology. In rural and tribal areas, students are deprived of basic facilities, including education. Much work is needed for this section,” says Patil.

The BMC staffer decided to set up the foundation while doing fieldwork in Dharavi. “My boss had rang me up, instructing me to fix a pipeline leak. When I went there, I saw a woman teaching slum children next to a pipeline. That incident made me want to do something similar for needy students,” said Patil. To help dropouts return to school, he began private classes for them where the focus is on primary subjects such as English, Mathematics and Science. “Once they have the will, we fill up Form 17 that gives them the direct opportunity to appear for Class 10 and 12 board exams. Once students clear these exams, they can apply for any vocational course or pursue higher education,” he says.

Patil also revamped existing government community halls for his cause. “With the help of a friend, I started a library at one such hall for local students. We put in a bookshelf and even set up computers,” Patil said.

When schools had shut down and many underprivileged students had no access to a smartphone/laptop to avail of online learning, Patil devised another option. “We trained bright school students to visit the houses of fellow students in their locality, every morning and evening.” Tutorials, lasting 20-25 minutes long, were conducted outside such homes, which helped students to continue to remain in touch with their studies.

What keeps him going is encounters with his past students, who were once dropouts but went back to studying, completed their graduation or vocation training, and now earn quite well. “One student went on to become the sarpanch in her village, and is doing good work here,” says Patil, with a sense of pride.

12. Banished for bleeding: Tribal Indian women get better period huts

The "period huts" where thousands of tribal women and girls are banished during their menstruation in the western Indian state of Maharashtra are getting a makeover.

A Mumbai-based charity, Kherwadi Social Welfare Association, is replacing the mostly-dilapidated huts - known as kurma ghar or gaokor - with modern resting homes that have beds, indoor toilets, running water and solar panels for electricity.

But the drive has put the spotlight on the need to fight the stigma associated with what is a natural bodily function. Critics say a better strategy would be to get rid of these period huts altogether. But campaigners say they offer women a safe place to go, even if the period-shaming continues.

In India, periods have long been a taboo, with menstruating women considered impure and forced to live under severe restrictions. They are barred from social and religious functions and denied entry into temples, shrines and even kitchens.

But the exclusion the women of Gond and Madia tribes in Gadchiroli, one of India's poorest and most underdeveloped districts, face is extreme.

Their traditional beliefs mean they have to spend five days every month in a hut, located mostly on the outskirts of the village on the edge of the forest. They are not allowed to cook or draw water from the village well and have to depend on food and water delivered by female relatives. If a man touches them, he has to immediately bathe because he too becomes "impure by association".

The women of Tukum village - where the first modern period hut was built last year - say for the 90 menstruating females in their village, life is a lot easier now.

Earlier, they say, as their date would approach, the thought of going to the crumbling hut would fill them with dread. The mud and bamboo structure with a thatched roof had no door or windows and lacked even the most basic facilities. For bathing or washing clothes, they had to walk to a river one km away.

Surekha Halami, 35, says during the summer, it was unbearably hot and infested with mosquitoes; in the winters, it would be freezing cold; and during the rains, the roof would leak and puddles would form on the floor. Sometimes, stray dogs and pigs would also come in.

Sheetal Narote, 21, says when she had to stay alone in the hut, she couldn't sleep at night from fear. "It was dark inside and outside and I wanted to go home but I had no choice."

Her neighbour, 45-year-old Durpata Usendi, says 10 years back, a 21-year-old woman staying in the hut died from a snake bite.

- Why are menstruating women removing their wombs?
- Stripped for standing up to 'period-phobic' college

"We were woken up just after midnight when she ran out of the hut, crying and screaming. Her female relatives tried to help her, they gave her some herbs and local medicines.

"The men, even those from her family, watched from a distance. They couldn't touch her because menstruating women are impure. As the poison spread through her body, she lay on the ground writhing in pain and died a few hours later."

On a video call, the women give me a tour of their new hut - made from recycled plastic water bottles filled with sand, it's painted a cheerful red with hundreds of blue and yellow bottle caps embedded in the walls. It has eight beds and "most importantly" - the women point out - indoor toilets and a door they can lock.

Nicola Monterio of KSWA says it cost 650,000 rupees ($8,900; £6,285) and took two-and-a-half months to build. The NGO has built four period huts and six more are due to open in mid-June in neighbouring villages.

Dilip Barsagade, president of Sparsh, a local charity that has been working in the area for the past 15 years, says a few years back, he visited 223 period huts and found that 98% were "unsanitary and unsafe".

From anecdotes the villagers provided, he collated a list of "at least 21 women who died while staying in the kurma huts from totally avoidable reasons".

"One woman died from a snake bite, another was carried away by a bear, a third was running high fever," he says.

- Why are Indian women 'Happy to Bleed'?
- India women fight to enter temples

His report prompted India's National Human Rights Commission (NHRC) to instruct the state government to "eradicate the custom" as it constituted "a serious violation of women's human rights... their safety, hygiene and dignity" but years later, the tradition remains deeply entrenched.

All the women in Tukum - and neighbouring villages - I spoke to said they didn't want to go to the period hut, that the lack of facilities sometimes made them angry, but added that they felt powerless to change a practice steeped in centuries of tradition.

Surekha Halami said she feared that if they defied tradition, they would face the wrath of gods and invite illness and death in the family.

"My grandmother and mother went to kurma ghar, I go there every month, and one day I would send my daughter too," she told me.

Chendu Usendi, a village elder, told the BBC that the tradition could not be changed because "it's been decreed by our gods".

He said defiance was punished and those who broke tradition had to provide a feast for the entire village with pork or mutton and alcohol or pay a monetary fine.

Religion and tradition are often cited as main reasons for justifying restrictions, but increasingly, urban, educated women have been challenging these regressive ideas.

Women's groups have gone to court demanding entry into Hindu temples and Muslim shrines and social media campaigns such as #HappyToBleed have been organised to de-stigmatise periods.

"But this is a very backward area and the change here is always gradual. Experience shows that we can't fight this headlong," says Ms Monterio.

The new huts, she says, will provide women a safe space now while we pursue the future goal of eradicating the practice by educating the community.

And that is easier said than done, Mr Barsagade says.

"We know better huts are not the answer. Women need physical and emotional support during menstruation which is only available at home. But we have seen that resistance is not easy. We don't have a magic wand to change the situation."

The biggest problem so far, he says, is that even women don't understand that it's a violation of their rights.

"But now I see the attitudes are changing and many of the younger, educated women are beginning to question the custom. It will take time but we will see the change someday in future," he says.

13. Karigar Mela in partnership with Tribes India launches by Amazon

Amazon India launched Karigar Mela in partnership with Tribes India. As part of this initiative, customers will be able to access and shop from a selection of over 1.2 lakh unique traditional tribal and local Indian handicrafts and handloom selections.

Some of the unique art forms that will be available in products listed for purchase as part of Karigar Mela include Bidri, Dhokra, Ikkat, Patachitra, Blue Art Pottery etc.

"The launch of Karigar Mela will play an important role in helping artisans and weavers revive their livelihoods and accelerate their growth during these challenging times," said Arjun Munda, minister, Tribal Affairs, Government of India.

"To help generate online demand for artisans and weavers' products while supporting them with working capital as they look to bounce back from the recent disruptions, we have launched the 'Karigar Mela' storefront," said Amit Agarwal, global senior vice president and country head, Amazon India.

As part of the Karigar Mela initiative, Karigar sellers will also benefit from a 100 per cent Selling on Amazon (SoA) fee waiver for two weeks starting from August 30, 2021 to September 12, 2021.

"With Amazon introducing the Karigar Mela initiative towards the revival of this segment, tribal artisan sellers will benefit from a dedicated store as it will bring customer attention to their unique and differentiated products while providing them with a host of relaxations and benefits of selling online," said Pravir Krishna, MD, Trifed, Government of India.

In the last one year, Amazon launched initiatives such as Stand for Handmade for small sellers which enabled over 4,500 Pochampally weavers from 56 villages of Telangana, and weavers and artisans from several other States who are associated with sellers that are part of Amazon Karigar programme to resume their handlooms and handicrafts business.

14. Why raise legal age of marriage for women, or why not

What is the rationale in raising the legal age of marriage for women to 21? Why are experts opposing this? Who will be affected by this decision?

The Cabinet's decision to **raise the legal age of marriage** for women is based on the recommendation of a panel led by Jaya Jaitly.

The rationale

The task force was set up by the WCD Ministry to re-examine age of marriage and its correlation to health and social indices such as infant mortality, maternal mortality, and nutrition levels among mothers and children. Jaitly has said the recommendation is not based on the rationale of population control (India's total fertility rate is already declining) but more with women's empowerment and gender parity. The committee has said access to education and livelihood must be enhanced simultaneously for the law to be effective.

The opposition

Experts have been opposing a raised age of marriage on two broad counts. First, the law to prevent child marriagesdoes not work. While child marriage has declined, it has been marginal: from 27% in 2015-16 to 23% in 2019-20, according to National Family Health Survey (NFHS) 5. The decrease was, however, dramatic in NFHS 4, from 47% in NFHS 3.

The marriage age at 18 was set in 1978, but child marriage started to decline only in the 1990s, when the government stressed primary education of the girl child and took measures to reduce poverty. The experts said girls being taken out of school to be married off is a reasoning blown out of proportion; often the girl child drops out after primary school simply because she has no access to higher education, and is then married off.

The second objection being raised is the criminalisation of a large number of marriages that will take place once the law comes into effect. While 23% of marriages involve brides under age 18, far more marriages take place under age 21. The median age at first marriage for women aged 20-49 increased to 19 years in 2015-16 from 17.2 years in 2005-06, but remained under 21 years.

Who will be affected?

Experts noted that 70% of early marriages take place in deprived communities such as SCs and STs, and said the law will simply push these marriages underground instead of preventing them. According to NFHS 4 (2015-16), the median age at first marriage for women aged 25-49 is higher among the social categories of Others (19.5 years), OBC (18.5), ST (18.4) and SC (18.1).

The experts said rural women will be affected more than urban women. According to NFHS 4, the median age at first marriage (age 25-49) for urban women (19.8) is 1.7 years more than that for rural women (18.1).

A study by the International Centre for Research on Women has found that girls out of school are 3.4 times more likely to be married or have their marriage already fixed than girls who are still in school.

According to the State of the World Report 2020 by UNFPA, in India, 51% of young women with no education and 47% of those with only a primary education had married by age 18, compared to 29% of young women with a secondary education and 4% with post-secondary education.

15. Karnataka government sanctions houses for tribal who lived on a tree, 25 others

The state government has decided to allot houses to Jeenu Kuruba tribal Gajja who was residing on a mango tree for two years and 25 other families under Rajiv Gandhi Housing scheme.

MYSURU: The state government has decided to allot houses to Jeenu Kuruba tribal Gajja who was residing on a mango tree for two years and 25 other families under Rajiv Gandhi Housing scheme.

After a story titled 'With no shelter, this man lives on a mango tree' was published in Express, the Revenue, Tribal Development and Panchayat officials visited Malanagere Tribal Colony and also gave a patient hearing to Gajja, whose damaged hut forced him to live on a mango tree.
Though the government under Tribal Rights Act has sanctioned 28 guntas land to all 26 families including Gajja, three Jenu Kuruba families are not in a position to erect their own hut.
Deputy Commissioner D Randeep said all the 26 families are now registered for houses under Rajiv Gandhi Housing Corporation. He said the officials will ensure that the houses are sanctioned at the earliest.

Since, Gajja said he can't afford to put up a hut, the district administration has also assured to extend financial support to Gajja and his two brothers to have their own huts till the Forest Department gives its nod for the housing project.The government will give funds to erect temporary shed.

Responding to a different query by Congress member Okay. Harish Kumar, the Minister stated his division is dedicated to offering homes for five lakh

households. The beneficiaries could be chosen by gram panchayats. The quantity could be credited to the accounts of the beneficiaries in three instalments.

16. Maharashtra Uses Drones To Deliver COVID Vaccines For Tribals In Palghar's Remote Village

While Maharashtra has been recording the maximum number of Omicron cases with 40 patients, it recorded fresh 902 COVID-19 cases on Friday.

In a first of its kind attempt, the Maharashtra Public Health Department along with the Palghar district administration have delivered COVID-19 vaccines to a tribal-dominated Palghar district on Thursday via drones. The vaccine drive, which was inaugurated by Additional Chief Secretary of Health Dr Pradeep Vyas, went through a lot of uneven terrain to deliver the vaccines to the Zaat village in just 9.5 minutes.

Speaking on the same, District Collector Dr Manik Gursal who also coordinated in the experimental trial, said that it was carried out successfully and is probably the first of its kind in the state, covering 20 km.

According to a release issued by the district administration on Friday, it informed that a batch of 300 COVID-19 vaccines were transferred from Jawhar to Zaat village, and delivered to the local public health centre. "The task, which would have otherwise taken more than 40 minutes, was completed in just a little over nine minutes", it added. Also, district health officer Dr Dayanand Suryavanshi, lauding the private entities, said that this would not have been

possible without the help of those who came forward to help.Meanwhile, Maharashtra CMO on its official Twitter handle congratulated the officials and staff of the public health department and the Palghar district administration for carrying out the successful experiment.This came in the view of the awareness programs being conducted by the Ministry of Civil Aviation for drone usage keeping in mind the vision of Prime Minister Narendra Modi to make a drone-manufacturing hub by 2030.

Maharashtra COVID-19

While Maharashtra has recorded the maximum number of Omicron cases with 40 patients, it also reported 902 fresh COVID-19 cases on Friday, taking the total tally to 66,47,840.

The highest number of Omicron patients have been detected in the Pune district as many patients in the district have had a history of international visits. According to the data released by the Maharashtra government, 6,00,365 people were vaccinated in 10,152 sessions on December 17, taking the total inoculation numbers to 12,71,41,475 as of December 18.

17. Tribal Affairs Ministry has taken up several initiatives to promote leadership qualities and talent among tribal youth

GOAL (Going Online as Leaders) is a joint initiative of Ministry with Facebook for digitally-enabled mentorship and empowering tribal youth to become leaders in their area of interest. Through GOAL initiative, renowned people from industry, arts, politics, business etc., known for their leadership skills or roles, are mobilized to personally mentor tribal youth through digital medium. GOAL program has so far covered 23 States / UTs.

Ministry of Tribal Affairs continuously strives for fostering partnerships with reputed organizations working for the welfare of tribal like Microsoft, Art of Living Foundation, Tata Foundation, SECMOL aimed at taking project with community participation and for creating awareness about leadership among tribal youth.

Further NESTS an autonomous organization under Ministry has collaborated with CBSE and National Council of Educational Research and Training (NCERT) for Innovation Ambassador Programs and National Initiative for School Heads' and Teachers' Holistic Advancement (NISHTHA**)** to build capacities of teachers and students and to identify hidden talent amongst tribal youth.

Ministry in partnership with IIPA has started initiative of Tribal Talent pool, in order to get connect with Tribal talent of 4000 research scholars funded by Ministry for doing PhD, harness their strength by understanding their areas of interest and empowering them to develop as entrepreneurs, researchers and make them aware about various other schemes of Govt of India for their welfare.

This information was given by Minister of State for Tribal Affairs Smt. Renuka Singh Saruta in Lok Sabha today.

18. Witch hunting: 83% of Odisha's cases in six districts, says report

Most of the victims were targeted for "causing health issues or crop failure"

Witch-hunts are still highly prevalent in 12 of Odisha's 30 districts — especially Mayurbhanj, Keonjhar, Sundargarh, Malkangiri, Gajapati and Ganjam — a new report has claimed.

Most victims of such superstitious practices were targeted for "causing health issues or crop failure". Around 27 per cent cases were triggered by health issues in children, 43.5 per cent by health issues of an adult family member, 24.5 per cent by misfortune or land grabbing and 5 per cent due to crop failure, according to the study.

Witch Hunting in Odisha was jointly released by the Odisha State Commission for Women and Action Aid, an international non-governmental organisation, December 20, 2021. The findings were based on 102 case studies of victims of witch hunting and witch branding collected by Action Aid from all over the state.

The archaic and brutal practice of witch hunting and witch branding is mostly prevalent in 12 states of India — Jharkhand, Bihar, West Bengal, Odisha, Haryana, Gujarat, Rajasthan, Madhya Pradesh, Uttar Pradesh, Assam, Chhattisgarh and Maharashtra.

The number of killings as a part of this malpractice is the second-highest in Odisha, after Jharkhand, according to the National Crime Records Bureau (NCRB).

Odisha witnessed 19 witchcraft-related murders in 2019, while there were 18 murders each in 2018 and 2017 as well as 25 in 2016, the NCRB data showed.

The cruel practices were common in communities with unequal socio-economic systems and gender inequality, inadequate healthcare and widespread illiteracy. Women, especially Dalits and tribal people, bore the brunt of exploitation and brutality, the report observed.

Minati Behera, chairperson of Odisha State Commission for Women, said the study report collated evidence of various forms of human rights violations due to witch hunting and witch branding. The research tried to identify gaps in implementation of the existing law – the Odisha Prevention of Witch Hunting Act, 2013 – with an aim to suggest measures for strengthening it, she added.

"The Commission considers witch persecution of women as violation of the rights of women. As suggested by the study, the Commission will work on further steps to bring necessary amendments in the existing law to ensure adequate safeguarding to victims of witch branding," Behera said.

Further, she said, the commission would engage with different stakeholders to ensure convergence and strategic actions by different departments towards addressing the issue of witch branding.

19. Challenges of Nomadic Tribes

Nomads and Semi-Nomads are social groups who undertakes a fairly frequent, usually seasonal physical movement as part of their livelihood strategy and moves from one place to another.

Ministry/Department of Social Justice and Empowerment vide Gazette Notification dated 21.02.2019 has constituted Development and Welfare Board for Denotified, Nomadic and Semi-Nomadic Communities (DWBDNCs) for Development and Welfare of Denotified, Nomadic and Semi-Nomadic Communities for a period of three years extendable upto 5 years with following responsibilities:

- To formulate and implement Welfare and Development programmes, as required, for Denotified, Nomadic and Semi-Nomadic Communities.
- To identify the locations/areas where these communities are densely populated.
- To assess and identify gaps in accessing existing programmes and entitlements and to collaborate with Ministries/implementing agencies to ensure that ongoing programmes meet the special requirements of De-notified, Nomadic and Semi-Nomadic Communities.

- To monitor and evaluate the progress of the schemes of Government of India and the States/UTs with reference to Denotified, Nomadic and Semi-Nomadic Communities.

The Department is implementing the Centrally Sponsored Scheme for educational upliftment of De-notified, Nomadic and Semi-Nomadic Tribes (DNTs) namely Dr. Ambedkar Pre & Post Matric Scholarship for students through Implementing Agencies (States/UTs). The scheme of Pre-matric Scholarship for DNT students is helpful in spreading education amongst DNT children especially the girl child.

This information was given by Minister of State for Social Justice and Empowerment **Shri Krishan Pal Gurjar** in a written reply in Rajya Sabha today.

20. Killing two birds with solitary out-of-box idea

Forest officer replaces slingshots with sports equipment and books so that birds are saved and tribal children turn into sports champions, writes Sudhir Suryawanshi

A 2018-batch Indian Forest Officer has decided to tap the potential of tribal children in sports so that they compete at international level and earn medals for India in Olympics and other sports. “If property guided and trained, many of

these tribal kids can excel in archery and hockey," says Ananda Reddy, who loves wildlife photography and is posted in Nasik district of Maharashtra. "Soon after joining, I went out with my camera. I was surprised that several common types of birds were missing in the dense forest area. I inquired about it," said the IIT-Madras graduate.

He was told that many tribal children hunted these birds with their traditional weapon called gulel or a slingshot. He decided to visit a nearby village. "I was astonished by the rampant killing of birds by tribal kids. I had two options: punish them under the Animal Protection Act with seven years' imprisonment or think out-of-the-box. I chose the latter," says Reddy.

The first option was easy to implement, while the second one held a prospect for a long-term positive effect. Reddy informed his office staff to call a meeting with the villagers along with their children. Initially, no one attended the meeting fearing some punishment. Persuasion eventually worked. People started coming in for the meeting. "I told them that they wouldn't get much from killing birds. I also told them about the irreparable damage they would cause to the very ecology on which they depended for livelihood," Reddy said.

That helped in reducing the bird killing. But I wanted to do more; I wanted to end that practice permanently," recalls Reddy. "I told the children that they could exchange their slingshots for sports equipment, cycles or books. I got a very good response." As of July 11, 92 out of 93 villages have responded and as many as 674 slingshots have been surrendered by children.

Reddy says he had no budget to purchase sports equipment. He decided to use his pocket money. Other staffers also pitched in. "When we went to the market to buy sports equipment, the shopkeepers asked us why we were buying so many balls, bats, bicycles, etc. We told them about the campaign to save nature. They too were excited. They offered us a good discount," he said.

Today, as Reddy makes the rounds of these forest-connected villages, most of these tribal children, who had been busy killing birds not long ago, are seen playing various games. "I am sure very soon, we will see birds returning to our forests. By then, I pray, some of these tribal children would have an international presence in sports for India," says Reddy.