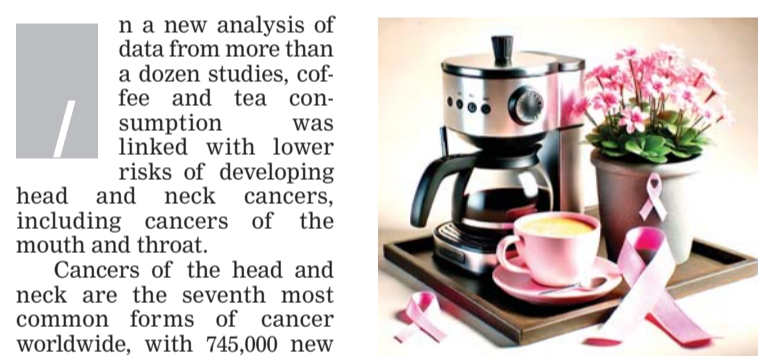


## #RESEARCH

### Does coffee prevent certain cancers?

While there has been prior research on coffee and tea consumption and reduced risk of cancer, this study highlighted their varying effects with different sub-sites of head and neck cancer, including the observation that even decaffeinated coffee had some positive impact.



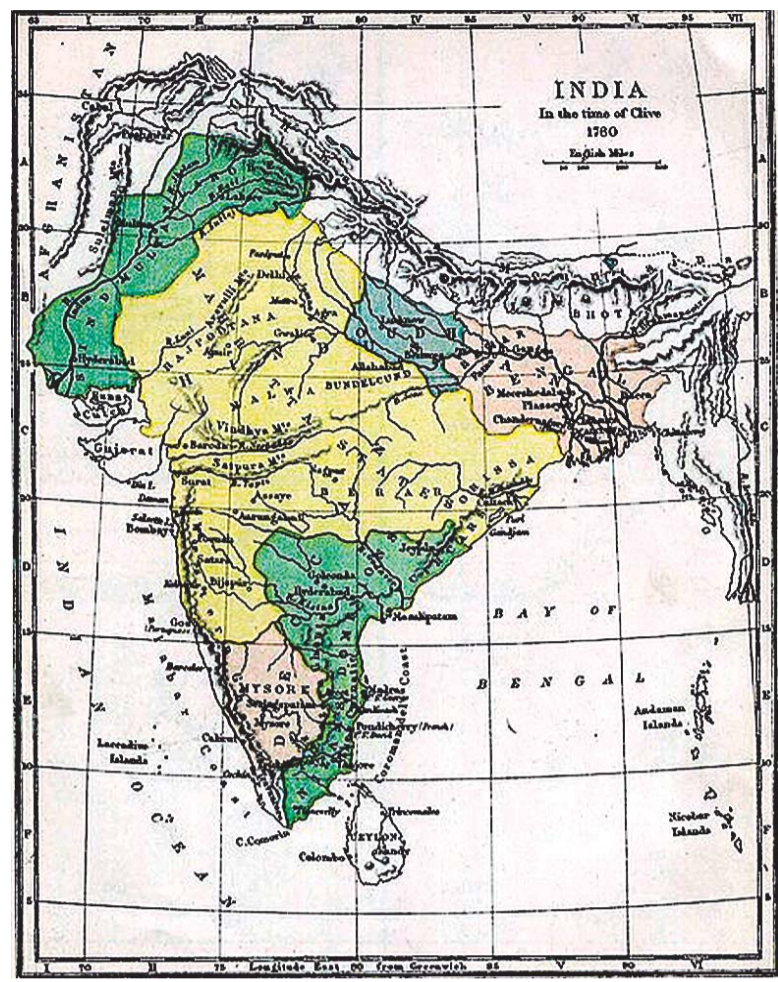
In a new analysis of data from more than a dozen studies, coffee and tea consumption was linked with lower risks of developing head and neck cancers, including cancers of the mouth and throat.

Cancers of the head and neck are the seventh most common forms of cancer worldwide, with 745,000 new cases and 364,000 deaths in 2020, and rates are rising in low- and middle-income countries.

Many studies have assessed whether drinking coffee or tea, which contain bioactive compounds with potential antioxidant, anticancer, and anti-inflammatory effects, is associated with decreased risks of head and neck cancer, with inconsistent results.

To provide additional insight, investigators, led by the University of Utah's Huntsman Cancer Institute, examined data from 14 studies by different scientists associated with the International Head and Neck Cancer Epidemiology (INHANCE) consortium, a collaboration of research groups around the globe. Study participants completed questionnaires about their prior consumption of caffeinated coffee, decaffeinated coffee, and tea in cups per day/week/month/year.

While there has been prior research on coffee and tea consumption and reduced risk of cancer, this study highlighted their varying effects with different sub-sites of head and neck cancer, including the observation that even decaffeinated coffee had some positive impact," says senior author, Yuan-Chin Amy Lee, an adjunct associate professor for the Division of Public Health in the University of



Extent of Maratha confederacy.



Anjali Sharma  
Senior Journalist & Wildlife Enthusiast

The Marathas, after the demise of Aurangzeb and faced with weakening sons of Aurangzeb, began a rapid growth. It is aptly illustrated in this document.

### Grant Duff, describing the Maratha army

The lofty and spacious tents, lined with silks and broadcloths, were surrounded by large gilded ornaments, conspicuous at a distance. Vast numbers of elephants, flags of all descriptions, the finest horses, magnificently caparisoned, seemed to be collected from every quarter. It was an imitation of the more becoming and tasteful array of the Mughuls in the zenith of their glory. The Marathas had gained control of a considerable part of India in the intervening period (1712-1757). In 1758, they nominally occupied Delhi, captured Lahore and drove out Timur Shah Durrani, the son and viceroy of the Afghan ruler, Ahmad Shah Abdali.

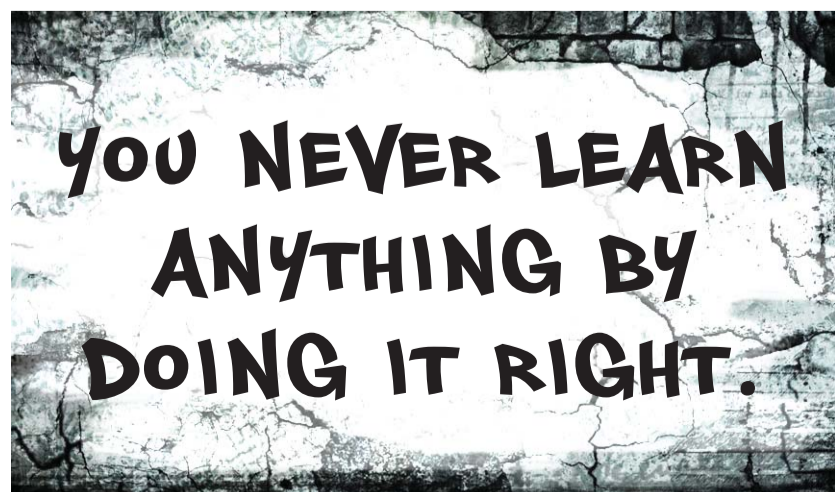
This was the high-water mark of Maratha expansion, where the boundaries of their empire extended north of the Sindhu river, all the way down south to northern Kerala. This territory was ruled through the Peshwa, who talked of placing his son Vishwasrao on the Mughal throne. However, Delhi still remained under the control of Mughals, key Muslim intellectuals, including Shah Waliullah, and other Muslim clerics in India

"Coffee and tea habits are fairly complex, and these findings support the need for more data and further studies around the impact that coffee and tea can have on reducing cancer risk."

When investigators pooled information on 9,548 patients with head and neck cancer, and 15,783 patients without cancer, they found that compared with non-coffee-drinkers, individuals, who drank more than four cups of caffeinated coffee daily had 17% lower odds of having head and neck cancer overall, 30% lower odds of having cancer of the oral cavity, and 22% lower odds of having throat cancer. Drinking three to four cups of caffeinated coffee daily had 17% lower odds of having head and neck cancer overall, and a 27% lower risk of hypopharyngeal cancer.

Also, drinking one cup or less of tea daily was linked with a 9% lower risk of head and neck cancer overall, and a 27% lower risk of hypopharyngeal cancer, but drinking more than one cup was associated with 38% higher odds of laryngeal cancer.

## THE WALL



Vishwasrao was on the Delhi throne. At this point, the Jats withdrew their support from the Marathas. Their withdrawal from the ensuing battle was to play a crucial role in its result. The first blood was drawn when the leader of the Rohillas, an Indian Muslim named Qutb Khan, attacked a small Maratha army, led by Dattaji Shinde at Barari Ghat. Dattaji camped at the Buradi Fort, south of Panipat, deciding to only engage with Abdali with the aid of Malharao Holkar. He was beheaded and killed in an attack by Qutb Khan.

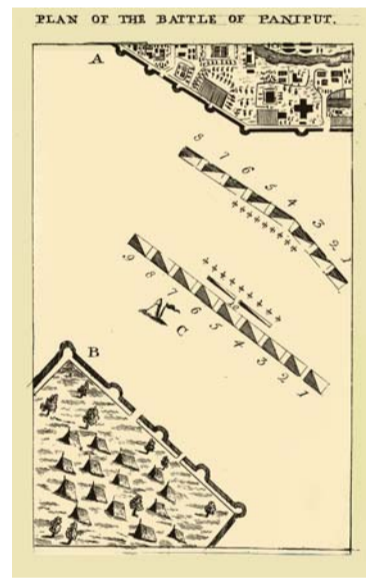
# The Rise of the Marathas

PART:2

## #THE BATTLE OF ALL BATTLES



Third Battle of Panipat.



Plan of the Battle of Panipat, 1761.

The Marathas had gained control of a considerable part of India in the intervening period (1712-1757). In 1758, they nominally occupied Delhi, captured Lahore and drove out Timur Shah Durrani, the son and viceroy of the Afghan ruler, Ahmad Shah Abdali. This was the high-water mark of Maratha expansion, where the boundaries of their empire extended.



Ahmad Shah Durrani in battle.

### Skirmishes before the battle, Afghan defeat at Kunjapura, Battle of Kunjapura

With both sides poised for battle, maneuvering followed, with skirmishes between the two armies, fought around Karnal and Kunjapura. Abdus Samad Khan, the faujdar of Sirhind, had come to Kunjapura, on the banks of the Yamuna river, 60 miles to the north of Delhi, with a force of more than ten thousand and supplies for the Afghan force. Kunjapura was stormed by the Marathas, who was running

short of supplies. Aided by the musketeers under Ibrahim Gardi, the Marathas achieved a rather easy victory at Kunjapura against an army of around 15,000 Afghans posted there. Some of Abdali's best generals, like Najabat Khan, were killed. Abdus Samad Khan, the faujdar of Sirhind, was also killed during the battle. Qutb Shah, who was responsible for beheading Dattaji Shinde at the battle of Barari

## Work Harder Day

The roots of Work Harder Day go back to 2016, marking the inception of a day dedicated to the spirit of persevering in work and putting in extraordinary effort. While the day is a relatively new addition to the year calendar, its ethos has long been a cornerstone of success stories throughout history. Work Harder Day reminds us of how easy it becomes to get caught up in the routine of simply getting things done. However, this special day of the year challenges us to push beyond our usual limits and strive for more.

### Afghans cross Yamuna and the Battles of Samalkha and Meerut

Ahmad Shah and his allies, on 17 October, 1760, broke up from Shahdara, marching south. Taking a calculated risk, Abdali plunged into the river, followed by his bodyguards and troops. Between 23 and 25 October, they were able to cross at Baghat (a small town about 24 miles up the river), unopposed by the Marathas, who were still preoccupied with the sacking of Kunjapura and visit to nearby Kurukshetra, an important Hindu pilgrimage destination.

After the Marathas failed to prevent Abdali's forces from crossing the Yamuna River, they set up defensive works in the ground near Panipat, thereby blocking his access back to Afghanistan, just as Abdali's forces blocked theirs to the south. However, on the afternoon of 26 October, Ahmad Shah's advance guard reached Samalkha, about halfway between Sonapat and Panipat, where they encountered the vanguard of the Marathas. A fierce skirmish ensued, in which the Afghans lost 1000 men but drove the Marathas back to their

main body, which kept retreating slowly for several days. This led to the partial encirclement of the Maratha army. In skirmishes that followed, Govind Pant Bundele, with 10,000 light cavalry, who weren't formally trained soldiers, was on a foraging mission with about 500 men. They were surprised by an Afghan force near Meerut, and in the ensuing fight, Bundele was killed. This was followed by the loss of a contingent of 2,000 Maratha soldiers, who had left Delhi to deliver money and rations to Panipat. This completed the encirclement, as Ahmad Shah had cut off the Maratha army's supply lines.

With supplies and stores dwindling, tensions started rising in the Maratha camp. Initially, the Marathas had moved in almost 150 pieces of modern long-range, French-made artillery with a range of several kilometres, these guns were some of the best of the time. The Marathas' plan was to lure the Afghan army to confront them while they had close artillery support.

### Preliminary Moves

During the next two months of the siege, constant skirmishes and duels took place between units from the two sides. In one of these, Najib lost 3,000 of his Rohillas and had nearly killed himself. Facing a potential stalemate, Abdali decided to seek terms, which Bhatt was willing to consider. However, Najib Khan delayed any chance of an agreement with an appeal on religious grounds and some still pressed whether the Marathas would honour any agreement. After the Marathas moved from Kunjapura to Panipat, Diler Khan Marwat, with his father Alam Khan Marwat and a force of 2500 Pashtuns, attacked and took control of Kunjapura, where there was a Maratha garrison of 700-800 soldiers. At that time, Atai Khan Baluch, son of the Shah Wali

Khan, the Wazir of Abdali, came from Afghanistan with 10,000 cavalry and cut off the supplies to the Marathas. The Marathas at Panipat were surrounded by Abdali in the south, Pashtun Tribes (Youzuzfai, Afridi, Khattak) in the east, Shuja, Atai Khan and others in the north and other Pashtun tribes (Gandapur, Marwat, Durrani and Kakars) in the west. Unable to continue without supplies or wait for reinforcements from Pune any longer, Bhatt decided to break the siege. His plan was to pulverise the enemy formations with cannon fire, and not to employ his cavalry until the Afghans were thoroughly softened up. With the Afghans broken, he would move camp in a defensive formation towards Delhi, where they were assured supplies.

### Formations

Plan of the Third Battle of Panipat based on Kashi Raja (Casi Raja) Pandit's account. The Marathas, which were pressurizing Sadashivrao Bhatt, to go to battle rather than perish by starvation, on 13 January, the Marathas left their camp before dawn and marched south towards the Afghan camp in a desperate attempt to break the siege. The two armies came face-to-face around 8:00 A.M.

The Maratha lines began a little to the north of Kala Amb. They had thus blocked the northward path of Abdali's troops and the same time were blocked from heading south, in the direction of Delhi, where they could get badly needed supplies, by those same troops. Bhatt, with the Peshwa's son and the royal guard (fuzurat), was in the centre. The left wing consisted of the Gardis under Ibrahim Khan. Holkar and Sindhia were on the extreme right. The Maratha line was formed up some 12 kms away with the artillery in front, protected by infantry, pikemen, musketeers and bowmen. The cavalry was instructed to wait behind the artillery and bayonet-wielding musketeers were ready to be thrown in, when control of the battlefield had been fully established. Behind this line was another ring of 30,000 young Maratha soldiers, who were not battle-tested, and then, the civilians. Many were ordinary men, women and children on their pilgrimage to Hindu holy places and shrines. Behind the civilians was yet another protective infantry line, of young, inexperienced soldiers. On the other side, the Afghans

formed a somewhat similar line, a few metres to the south of today's Sanoli Road. Their left was being formed by Nibh and their right by two brigades of troops. Their left centre was led by two Viziers, Shuja-ud-Daula with 3,000 soldiers and 50-60 cannons, and Ahmad Shah's Vizier, Shah Wali with 5,000 cavalry. Barchukdar Khan and Amir Beg covered the right with 3,000 Rohilla cavalry. Long-range musketeers were also present during the battle. In this order, the army of Ahmad Shah moved forward, leaving him at his preferred post in the rear of the line, from where he could watch and direct the battle.

To be continued... rajeshsharma1049@gmail.com



Dattaji Rao Shinde.

## #COSMOS

# Dark Energy May Not Exist

A mind-boggling implication is that it no longer makes sense to say that the Universe has a single unified age of 13.8 billion years. Instead, different regions would have different ages.



There might not be a mysterious 'dark' force accelerating the expansion of the Universe after all. The truth could be much stranger, bubbles of space where time passes at drastically different rates.

The passage of time isn't as constant as our experience with it suggests. Areas of higher gravity experience a slower pace of time compared with areas where gravity is weaker, a fact that could have some pretty major implications on how we compare rates of cosmic expansion, according to a recently developed model called timescape cosmology.

Discrepancies in how fast time passes in different regions of the Universe could add up to billions of years, giving some places more time to expand than others. When we look at distant objects through these time-warping bubbles, it could create the illusion that the expansion of the Universe is accelerating.

Two new studies have analyzed more than 1,300 supernovae to investigate how likely the concept could be, and found that the timescape model might be a better fit for observations than our current best model.

The standard model of cosmology does a pretty good job of explaining the Universe, provided we fudge the numbers a bit. There doesn't seem to be enough mass to account for the gravitational effects we observe, so, we invented an invisible placeholder called dark matter.

There also seems to be a strange force that counteracts gravity, pushing the cosmos to expand at accelerating rates. We don't know what it is yet, so, in the same spirit, we dubbed it dark energy. All of this comes together, along with ordinary matter, to form what we call the lambda cold dark matter model.

The problem is that this model uses a simplified equation that assumes the whole Universe is smooth, and expands at the same speed everywhere. But it's far from smooth out there. We see a colossal cosmic web, criss-crossed by filaments of galaxies, separated by vast



voids, emptier than we can comprehend. Timescape cosmology takes that 'lumpiness' into account. More matter means stronger gravity, which means slower time. In fact, an atomic clock located in a galaxy could tick up to a third slower than the same clock in the middle of a void. When you stretch that over the huge lifespan of the Universe, billions more years may have passed in

the voids than in the matter-dense areas. A mind-boggling implication of that is that it no longer makes sense to say that the Universe has a single unified age of 13.8 billion years. Instead, different regions would have different ages.

And since, so much more time has passed in the voids, more cosmological expansion has taken place there. Therefore, if you look at an object on the far side of a void, it would appear to be moving away from you much faster than something on this side of the void. Over time, these voids take up a larger proportion of the Universe, creating the illusion of an accelerating expansion, without needing to conjure up any dark energy.

In 2017, astronomers from the University of Canterbury in New Zealand tested timescape cosmology against observations, and found that it was a slightly better fit than lambda-CDM to explain cosmic expansion. More data was needed.

So, for the new studies, an astronomy team from the University of Canterbury and the German University of Heidelberg has collected and analyzed that extra data in the form of a catalog of 1,335 Type Ia supernovae. These explosions shine with a predictable brightness every time, so shifts in their light can reliably reveal distance, speed and direction of movement. As such, they're often called 'standard candles.'

This time, the astronomers say that they've found 'very strong evidence in favour of timescape over lambda-CDM.' This suggests a potential need to rethink the foundations of cosmology. "Dark energy is a misidentification of variation in the kinetic energy of expansion, which is not uniform in a Universe as lumpy as the one we actually live in," says David Wiltshire, a Physicist at the University of Canterbury. "The research provides compelling evidence that may resolve some of the key questions around the quirks of our expanding cosmos. With new data, the Universe's biggest mystery could be settled by the end of the decade."



By Rick Kirkman & Jerry Scott

## ZITS

## BABY BLUES



By Jerry Scott & Jim Borgman

