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The declining quality of our produce

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As spring arrives in full bloom, winter takes its leave, leaving behind the crisp air and the whisper of fallen leaves. For many, winter is more than just a season. It's a time of brisk mornings, comforting chills, and, notably, its vibrant assortment of fresh vegetables.

Tomatoes, cauliflower, broccoli, carrots, cabbage, and beans are just a few of the seasonal delights that flood local markets during winter. These vegetables not only add colour to our plates but also bring with them the rich flavours that make winter's bounty so special. However, with advancements in agriculture and food preservation, many of these vegetables are now available year-round. While this convenience is undeniable, it raises an important question: Do they retain the same quality, freshness, and taste?

The answer, unfortunately, is often no. The natural flavours of seasonal produce are difficult to replicate in off-season cultivation, despite modern farming techniques. Additionally, the heavy reliance on pesticides and chemical preservatives in large-scale agriculture has sparked concerns about food safety and nutritional value.

A study on potato growing farmers in Bangladesh found that 96 percent use pesticides, with 16.6 percent applying them over five times per season. Alarmingly, 47.7 percent of these were unregistered, and 1.9 percent were banned, posing severe health and environmental risks. Additionally, 5.6 percent of registered pesticides were classified as highly hazardous, 24.8 percent as moderately hazardous, and 6.2 percent as slightly hazardous by WHO standards.

Pesticide residues in vegetables have been linked to cancer, kidney disease, and hypertension, with children being especially vulnerable to developmental and cognitive impairments. Research in Keraniganj, Dhaka, revealed extreme overuse, with farmers applying 21,479.4 grams per acre, leading to increased costs and health issues like skin diseases, headaches, and eye irritation. Shockingly, 88.3 percent of farmers were unaware of pesticide risks, and 98.3 percent did

not use protective gear. Meanwhile, a Bangladesh Rice Research Institute (BRRI) report found pesticide use tripled between 1997 and 2008, reaching 48,690 metric tons annually, contributing to declining vegetable exports and escalating health hazards.

Formaldehyde, calcium carbide, and sodium benzoate are among the most commonly used preservatives in Bangladesh, despite their known health risks. Experts advocate for safer alternatives like ethylene inhibitors and chitosan. Developed by Dr Mubarak Ahmad Khan of the Bangladesh Atomic Energy Commission, chitosan is a cost-effective preservative derived from shrimp and crab shells. It can be applied to fruits, vegetables, and fish, extending their shelf life while reducing reliance on harmful pesticides. Successful trials on mangoes and pineapples have shown that chitosan not only preserves freshness but also enhances production yields, making it a promising solution for safer food preservation.

Children are particularly vulnerable to pesticide exposure, which can disrupt organ development and weaken immunity. "Sustainable Development Goals include food safety to prevent malnutrition and foodborne diseases. Children's health is at risk from pesticide contamination," warns Dr Tanzana Noor, MD, Paediatrics. "Prolonged use of preservatives affects their central nervous system, liver, and kidneys."

She notes that while symptoms may not appear immediately, they can lead to gut infections, growth failure, and developmental issues. "Many farms are opting for organic farming, but parental awareness is key," she adds, advising proper washing, cooking, and choosing organic options.

Nutritionist Tarannum Tasnim mentions pesticide residues as a cause of oxidative stress, leading to neurological disorders, hormonal dysfunction, and cancer risks. "Washing, soaking in salt or vinegar, and proper cooking help reduce exposure," she suggests. To minimise pesticide use, she advocates for natural pest control and safer preservation methods like temperature control, curing,

and vinegar-based alternatives.

As consumers, we enjoy the convenience of having our favourite vegetables available year-round, but at what cost? The widespread use of chemicals to boost production and extend shelf life raises serious concerns about long term health risks, particularly for children, who are more vulnerable to pesticide residues linked to developmental issues, cognitive impairments, and chronic illnesses.

To address these concerns, experts emphasise the need for safer agricultural practices such as Integrated Pest Management (IPM), organic farming, and the use of bio-based alternatives. Stricter regulations, farmer education, and increased consumer awareness can also help reduce harmful chemical exposure.

While science continues to expand food availability, prioritising sustainable and natural farming methods ensures that we protect both health and the environment, perhaps a reminder that nature's cycle is best enjoyed in its own time.

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Artificial intelligence in creative spaces

Ethical dilemmas and the question of authorship and originality

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As AI takes bold steps into the creative world – generating art, writing poetry, composing music – it raises pressing ethical concerns. Can AI truly create, or is it merely repurposing human ingenuity?

This narrative essentially challenges the way we define creativity, and forwards the question of whether intentionality can exist outside the realm of human consciousness. That is, the creative process itself involves elements of individual expression, curated through emotions, lived experiences, and abstract thought – attributes that AI, as we currently acknowledge it, arguably lacks.

Instead, generative AI utilises neural networks to identify patterns and structures within mass datasets to generate outputs that resemble artistic creations. However, it does not do so out of thin air. There has to be an input in order for there to be an output.

AI generators have been accused of plagiarism by creative professionals on multiple occasions. Critics argue that large companies like OpenAI and others have trained their models on datasets consisting of copyrighted works of artists, and even images of real people scraped from the internet without permission from the owner.

Independent artists, freelancers, and salaried professionals are struggling to compete with the pace of AI-generated content, which can be produced in seconds at a fraction of the cost. Besides, AI's ability to replicate the distinctive style of a referred artist and generate identical artworks catering to an individual's personal style puts the original artist at risk of potential accusations of imitation.

At the heart of the ethical dilemma lies the question of authorship and originality. When an AI system produces a compelling poem or an intricate digital artwork, who reserves the right to be credited? The company developing the software and the user responsible for the provided prompt are both involved in the process, yet neither holds definitive authorship. The use of copyrighted works to train AI models further complicates



ILLUSTRATION: ADRITA ZAIMA ISLAM

the issue, raising concerns about whether original creators should receive royalties. There is no upholding of licensed authority, making AI-generated content a free-for-all in terms of ownership.

Such ambiguity has caused legal disputes, with several artists demanding rigid protection laws against AI companies accessing their works without consent.

What's more is that the limitations of AI put into question its ability to be accurate with citations, or just giving credit in general. The internet is now drowning under the weight of artificial data, a great deal of them existing without labels. This lack of transparency often leads to people being unaware that what they're consuming is AI generated and not authentic.

Furthermore, several media platforms and businesses, including newspapers, publishing houses, and advertising agencies – both physical and online – are also leaning towards the use of generative AI to deliver creative content. Yet, despite their growing dependence on automation, very few media houses have declared clear, public policies regarding their AI practices.

This opacity not only creates a place of confusion but also allows the spread of misinformation among people who lack a comprehensive understanding of AI and its applications. In the absence of clear indicators or proper attribution, hyper-realistic AI-generated content can be mistaken for authentic human work, leading audiences to unknowingly consume and share material in a way that misrepresents its origin.

Therefore, collective platforms and individual creators who choose to integrate AI into their work must also learn to take responsibility and navigate these ethically grey areas. While the presence of generative AI in the creative field is unlikely to face decline anytime soon, the establishment of necessary regulations and ethical guidelines are both possible and imperative.

Technology will only continue to advance, but it should not come at the cost of rightful attribution and taking away opportunities from human creators. Creativity should be cherished not merely for its outcome but for the journey that shapes it. True creativity cannot be constricted to algorithms; it is, and always will, remain as the soul for human expression.

Are oarfish really harbingers of imminent disaster?

ADRIN SARWAR

On March 11, 2011, a magnitude 9.0 earthquake struck off the coast of Tohoku, Japan, experienced a devastating tsunami, taking nearly 20,000 lives. Towns were swallowed whole within minutes – cars, homes, schools, and people swept away by waves that reached over 40 meters in some areas. In Rikuzentakata – a city of nearly 24,000 – almost everything was flattened. The Fukushima Daiichi Nuclear Power Plant system failure that followed resulted in a level-seven nuclear meltdown – the worst nuclear disaster since Chernobyl.

Disasters of such magnitude rarely offer a warning before they happen. Even the most advanced early warning systems fail to provide any clear prediction for an earthquake. Unlike cyclones that come with satellite-tracked wind patterns, earthquakes are notoriously unpredictable. Beneath Earth's surface, tectonic plates grind and shift in silence for years before releasing the energy that

reshapes landscapes and shatters lives in a matter of minutes.

In the case of the 2011 Japan earthquake, despite Japan's world-renowned earthquake preparedness and monitoring technology, the sheer scale of the disaster left everyone grappling with the aftermath. Even though all the scientific tools failed to warn of the upcoming disaster, Japan's coastal villagers had a hunch of what was coming months before the disaster struck.

According to Japanese legend, the sight of oarfish in shallow waters is an omen of earthquakes. The belief dates back to the 17th century when the ghostly fish was known as "ryugu no tsukai" or a "messenger from the sea god's palace". The myth says that the appearance of the oarfish, which live under the islands of Japan, nearshore is a sign of future natural disasters. People believed oarfish would come up from the deep to warn people when an earthquake was imminent. This myth received strong support in 2011 when several

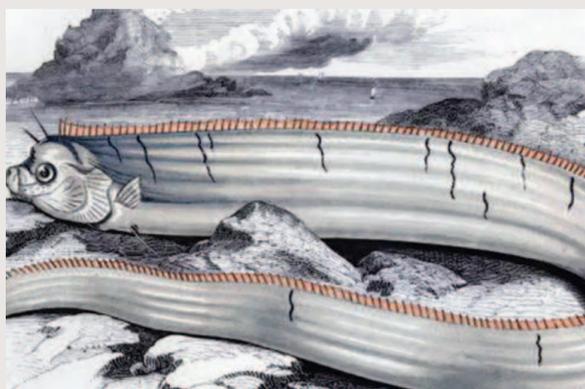


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oarfish washed up on beaches in Japan, only months before the destructive Tohoku earthquake and tsunami. This further reaffirmed the folklore of "doomsday fish".

Oarfish are long, ribbon-like deep-sea creatures. They are known for their silvery scales and striking red fins. Often called the "sea serpents" of folklore, they can

grow up to 36 feet in length. It is the longest bony fish in the ocean. Despite their size, they are elusive and rarely seen alive, as they usually dwell in deep waters up to 3,300 feet beneath the surface.

Although the link between oarfish and natural disasters might appear to be mythical, scientists have presented some theories to explain

this phenomenon. According to some scientists, deep-sea fish such as oarfish could be more sensitive to seismic activity underwater because they live near the fault lines. Such sensitivity might lead them to come to the surface before an earthquake. Another group of scientists believes that oarfish are more likely to be pushed to the surface because of the current or illness.

Conversely, some researchers believe that the appearance of oarfish near the surface may be due to changes in ocean temperature patterns, particularly during El Nino years. According to a bulletin from the California Academy of Sciences, El Nino events cause surface temperatures to rise by several degrees. On the other hand, deep waters remain cooler than usual. Deep sea creatures like oarfish feed on plankton and small fish. As a result of El Nino, plankton and other small fish tend to migrate upward toward the warmer surface. Following its food source, oarfish also migrate toward the surface, thus increasing the chances of

being spotted or stranded.

The belief that oarfish is a predictor of earthquakes is not only limited to Japan. In August 2017, two oarfish washed ashore in the Philippines, a day before a 6.6 magnitude earthquake hit the island of Luzon.

While the Oarfish's rare appearances continue to spark myth and speculation among the public, one thing is becoming increasingly clear – these deep-sea dwellers may or may not be rising to the surface to warn us of earthquakes but of global warming. Having evolved over thousands of years to survive in the cold, pressurised depths of the ocean, oarfish are now being forced out of their natural habitat by rising sea temperatures and shifting ecosystems. This sudden adaptation may not only endanger their survival but also hint at broader disruptions in our oceans. We must remember that the sea holds far more mysteries than we've yet to understand, and perhaps, it's already trying to tell us something.