

Special Issue

April (Week 4)

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All about Blue Stragglers

Source: [The Hindu](#)

Context: *It's not only humans who appear eccentric; stars can have their own ideas of eccentricities, too. One such case is that of blue stragglers, a particular type of star seen in clusters and also, sometimes, alone. Scientists try to understand their eccentricity and, after studying them for long years, Indian Institute of Astrophysics, Bengaluru, researchers have found support for one way to understand their aberrant behaviour. For this, the researchers also made use of the observations by the UVIT instrument (Ultra Violet Imaging Telescope) of ASTROSAT, India's first science observatory in space.*

Stellar ageing

- To know what blue stragglers are, it is necessary to understand how stars are classified and their evolution, studied.
- Our Sun, for example, is what is called a main sequence star, and, given its mass and age, it is expected that once it has converted all its hydrogen into helium, its core will get denser, while outer layers expand. So, it will bloat into a red giant. After this phase, its fuel spent, it will shrink, becoming a smaller, cooling star called a white dwarf star at the end of its life.
- To study the behaviour of the star, you could plot a graph of the colour of a star, which is an indication of its surface temperature, against its magnitude, which is related to the total energy given off by it. If you do this for all the stars in a globular cluster, a large number of stars are seen to find a place within a band known as the main sequence.
- Our Sun is a main sequence star, too, and the expectation is that all main sequence stars follow a pattern of evolution pretty much like our Sun's fate, which was described earlier.
- There are a few stars that, just at the stage of their lives, when they are expected to start expanding in size and cooling down, do just the opposite.
- They grow brighter and hotter and blue in colour, thus standing out from the cooler red stars in their vicinity in the colour-magnitude diagram. Since they lag behind their peers in the evolution, they are called stragglers, more specifically, blue stragglers, because of their hot, blue colour.

Blue straggler

- The puzzle of why a blue straggler is more massive, and energetic, than expected may be resolved in several ways:
 - One, that these do not belong to the family of stars in the cluster, and hence are not expected to have the group properties. But if they actually belong, the evasive behaviour is due to these stars gaining mass from a binary companion.
 - Second, the straggler draws matter from the giant companion and grows more massive, hot and blue, and the red giant ends up as a normal or smaller white dwarf. The third possibility is that the straggler draws matter from a companion star, but that there is a third star that facilitates this process.
- The IAP researchers have shown evidence that supports the second of the hypotheses listed above.
- "The team carefully selected the target star clusters based on the likelihood of such stars present in them. It was not an easy task to prove that these stragglers belong to the group," says Annapurni Subramaniam from IAP in whose lab this work was done. Not just this. It was also no mean task to choose objects that were safe for collecting data using the sensitive UVIT. They developed unique tools to differentiate binary systems among the blue stragglers.
- "All of these took time, but the persistent study of the team consisting of several PhD students led to the conclusive evidence of white dwarf companions to blue stragglers," she adds.



All about India Art Fair returns

(Source: [Indian Express](#))

Context: *The India Art Fair (IAF) opens on April 28 in New Delhi after a year's break owing to the Covid-19 pandemic. It is the biggest event for Indian art and artists, besides the Kochi-Muziris Biennale, which, unlike the fair, is not aimed at commerce. This will be the 13th edition of the fair.*

The story of the fair

- The IAF was conceived in 2008 by Neha Kirpal, a graduate in political science from Lady Shri Ram College in New Delhi, who worked in public relations before studying marketing at the University of Arts in London. Kirpal persuaded her employers to give her a loan of Rs 1 crore for what was initially known as the India Art Summit, and planned the first edition in just four months.
- When the announcement was made at a Delhi hotel, much of the Indian art world was sceptical of the business model Kirpal was proposing, but she still managed to get 30-odd galleries on board.
- The summit started at Pragati Maidan, primarily as a trade platform where the public also interacted with artists, and workshops and interactions were aimed at educated discussions.
- While Kirpal sold her majority stake in the fair in 2016, over the years, the event has grown in size and impact. The 13th edition, which will continue until May 1 at the NSIC Grounds in Okhla, will have over 70 exhibitors, including art institutions, museums, and private foundations.

Role of fairs in art

- Centered around trade and networking, an art fair is essentially a commercial platform. Art galleries and enterprises rent booths to exhibit their collections, with the aim to sell to multiple categories of clients.
- Organisers usually do not interfere with what a gallery chooses to exhibit, apart from collaborative sections where they might make curatorial interventions. For instance, at the India Art Fair, apart from the booths, there are live performances by artists, outdoor projects, curated walks, and book launches.
- The other major format of a cultural art event is the Biennale, which, compared to fairs, is more focussed on cultural exchange and discussions, and is a showcase with a curatorial vision.

Art fairs in history

- Religious festivals are seen as the oldest precursors to art fairs. These gatherings, which were often annual, and centred on religion and commerce, saw the representation and display of rare items, often from faraway places. Festivals of this kind were held in the Roman Empire, and under the Greek and Han dynasties.
- In medieval times, one of the earliest art fairs was hosted in 1460 in the courtyard of the Church of Our Lady in Antwerp, where manuscripts, paintings, sculptures, and illustrations were displayed. The 17th and 18th centuries saw the rise of sample fairs aimed at advertising and promoting new items.
- The birth of the modern-day art fair is traced to the Cologne Art Market, started in 1967 by two gallery owners based in Cologne, Germany. It was conceived as a trade fair where German galleries set up temporary stalls to exhibit works.
- The following year, a similar event started in Basel, with the participation of international galleries. Since then, their numbers have only increased. In 2015, The European Fine Art Fair Market Report estimated that art fair sales amounted to approximately EUR 9.8 billion in 2014, 40 per cent of total dealer sales.

World's biggest art fairs



- The first art fairs opened in Europe and the US, but according to UBS's Art Market Report, there were almost 300 international art shows in 2018 across every continent, with about 52 per cent of the fairs being held in Europe.
- While New York's annual Armory Show has showcased modern and contemporary art since 1994, Art Basel in Switzerland is widely considered to be the biggest contemporary art fair. Art Basel established Art Basel Miami Beach in 2002, and also expanded to Asia, with Art Basel in Hong Kong since 2013.
- The Frieze Art Fair in London expanded to New York in 2012. South Africa has Art Rio, and major art events are held during Singapore Art Week and Art Dubai.

