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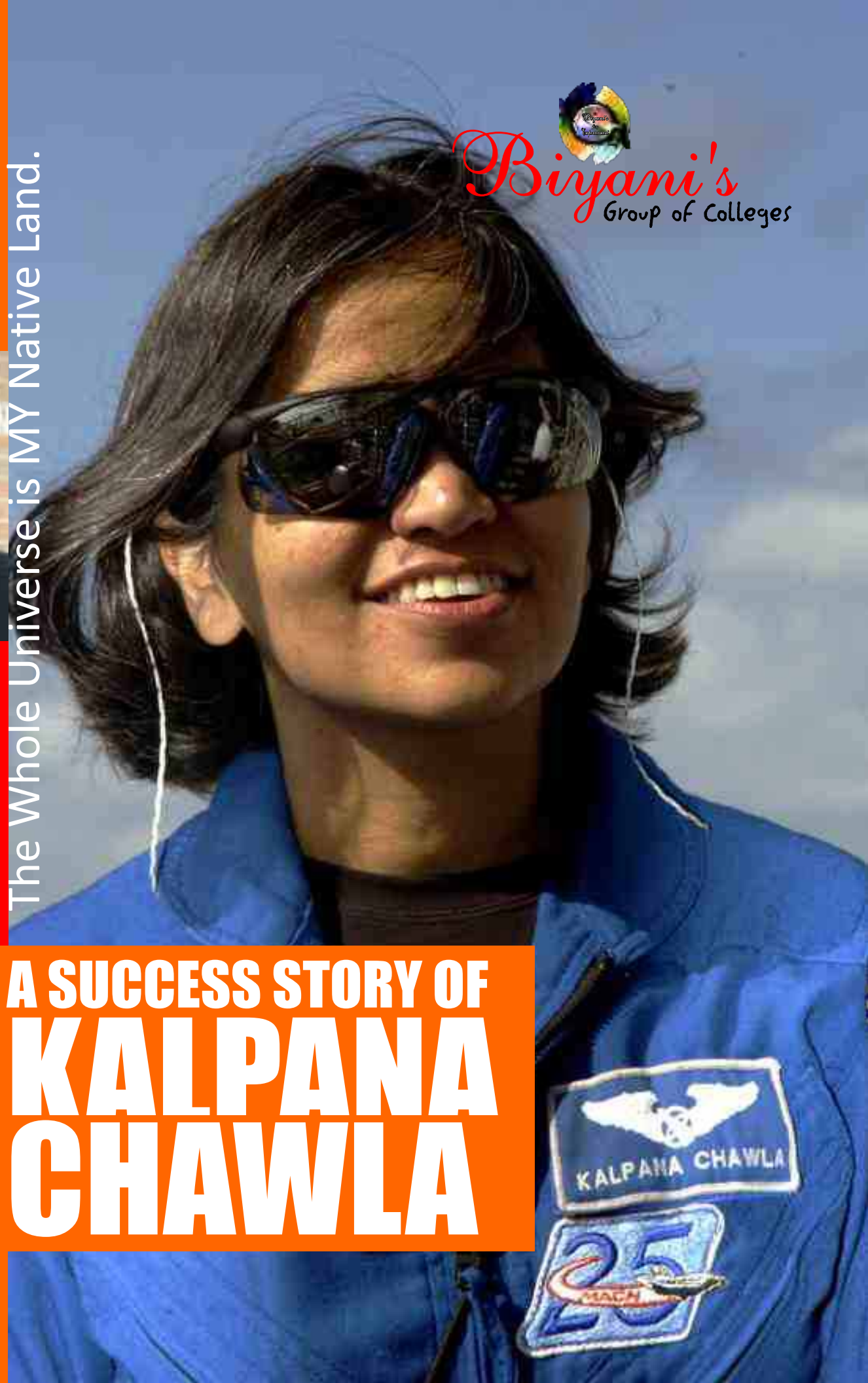
The Whole Universe is MY Native Land.



“I BELIEVE THAT
THERE IS KALPANA
IN EACH GIRL
RECEIVING
KALPANA CHAWLA
MEMORIAL AWARD
FROM BIYANI GIRLS
COLLEGE.”

—B.L. CHAWLA

A SUCCESS STORY OF KALPANA CHAWLA

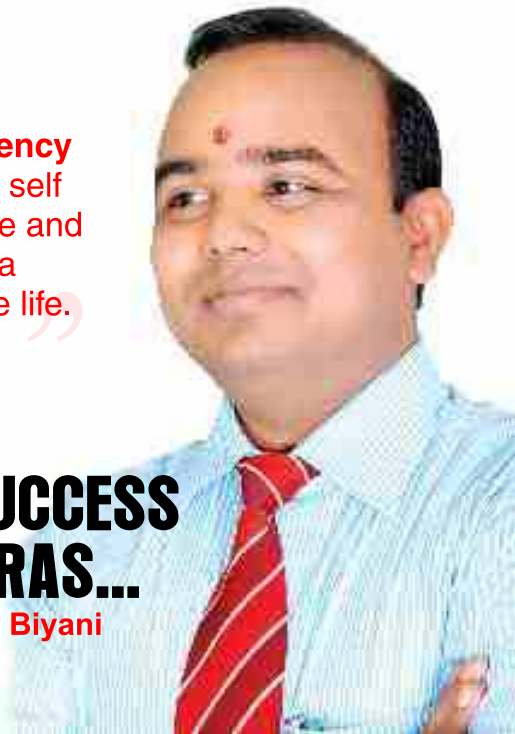


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A SUCCESS STORY OF KALPANA CHAWLA

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I can, I will, nothing can stop me are the key words to success. Remember the saying 'God helps those who help themselves'”



Kalpana Chawla epitomizes strength, struggle, dedication, hard work and success. It is indeed our pleasure to honour the spirit of Kalpana and to motivate girl students to soar high with their aspirations in their lives. I congratulate the winners of these awards and hope that they too will bring laurels to the nation and the world in the future. May you set lofty goals and achieve them by your perseverance and positive attitude.

People with positive attitude not only excel themselves but can motivate others also for better performance. Always remember, success and results in all endeavours cannot be predicted. We can only make efforts. Often we do commit mistakes and not succeed in the first attempt. We should not get angry or frustrated. But improve upon and make another effort. It is this attitude only which can ultimately bring success.

A handwritten signature in black ink that reads "Rajeev Biyani". The signature is written in a cursive style and is positioned above a horizontal line.

Rajeev Biyani
Chairman

When people were busy contemplating how women could be empowered, a simple next door girl from Karnal was totally lost in her imagination; she dreamt to touch the stars and walk over the moon. She achieved her dream and won the race of the life and became the real champion. She faced the challenges that life had thrown to her, she proved her mettle as a space woman. The world bent before her to honour the brave woman in her. I also salute her.

It is indeed my pleasure in retelling the success story of Kalpana Chawla. Kalpana Chawla is a popular name today, everyone idolizes her, but Kalpana was a very simple girl who had no hunger for fame. She only did what she wanted to, and she became successful because she chased her dream with sincerity. Kalpana always insisted that you should do the things of your interest because it makes you passionate and zealous towards your work. There is a great message in Kalpana's story that parents should not impose their expectations on their children, let them decide their path, and this will make them sincere towards their goal in life.

Kalpana Chawla Memorial Award holds a special place in my heart for two reasons; firstly that it is associated with the mission of Biyani Girls College which is to make women strong and significant in the society and secondly, it gave me an opportunity to know the great personality of Kalpana so closely. I also take the privilege here of thanking Shri. B.L Chawla for helping me with the incidents related to Kalpana's life. I sincerely hope that the **Success Story of Kalpana Chawla** will inspire the youth of today to be Kalpana of tomorrow.

Ms. Malti Saxena

Editor in Chief

Woman must not accept; she must challenge. She must not be awed by that which has been built up around her; she must have reverence for the woman in her which struggles for expression.
~ Margaret Sanger



SHRI B.L. CHAWLA

A FORWARD

I am pleased to know that your esteemed institution is bringing out a newsletter which is to be distributed among the students who are being honored with "Kalpana Chawla Memorial Awards" by your institution. I am quoting here a few lines about Kalpana, which will inspire & awaken the thoughts of young minds who are trying to emulate the good works done by virtuous personalities.

I feel the following quote by my daughter Kalpana summarises the essence of her being.

"Material interests are not the only guiding light. It is something you'd enjoy doing in the long run. Take the time to figure out how to get there. The quickest way may not necessarily be the best. The Journey matters as much as the goal. Listen to the sounds of Nature. Wishing you the best on your trek towards your dreams. Take good care of our fragile planet."

She not only said this but lived it in every moment of her life. Content with her simple needs, she encouraged family and relatives to donate time and money to credible organizations (e.g. WPSI) who are committed to protection of Nature and wild life.

And she cared for our 'Fragile planet'. She together with her friends would actually carry a big bag to pick up all the trash they encountered during their Birding walks and backpacking treks.

In another interview she said 'earth is the only campground that we have. There is no other campground'.

It is really hard to convey how remarkable an accomplishment it has been for my daughter to have become an American astronaut just 12 years after migrating to the US as a student with only fire in her belly, focus and fortitude in assimilating knowledge.

In 1994, she was in a group of just 20 or so astronauts selected from an application pool of 4000! She was one of the 6 civilians to have been selected. In her second mission, she was the only civilian astronaut. All the others were from military.

That means she qualified herself for the position (Academics, flying experience, research, adventure and physical fitness) without the benefit of being a military person. This would have been amazing enough for someone born and raised in the US, used to that country's educational system, society, culture, customs, work ethic and the professional atmosphere.

And she was ever grateful to her teachers right from her school days to her Doctoral studies in US and kept in touch with them all. When national science center Delhi asked her about an idea on what memento she would like to carry to space on their behalf, she suggested making a banner honoring the teachers of the world.

And I, like my dearest daughter Kalpana believe that there is a Kalpana in each of you. You only have to find it!



ABOUT US

The Biyani Shikshan Samiti was formed by a team of young, dynamic, result oriented and qualified persons. It is registered under the Rajasthan Society Registration Act, 1958 having Reg. No. 500/Jaipur/1997-98. The overall object of the Samiti is **Women Empowerment through Technical Education**. Param Pujya Shri Kirit Bhajji laid the foundation stone of college in the month of Feb. 2005. It came into the main stream of education with its affiliation to the University of Rajasthan in 2002 as Biyani Girls College. It has now enhanced its scope of education which includes more specialized and professional courses with the Biyani's Group of Colleges : Biyani Girls College (BGC); Biyani Institute of Science & Management (BISMA); Biyani School of Nursing & Para-medical Science (BSNPS); Biyani Girls B.Ed. College (BGBC); Biyani International Institute of Engineering & Technology



Glimpses of **Kalpana Chawla Memorial Award**



In today's world, when every body talks about equal rights for women in the society and the need of women empowerment, Biyani Girls College believes in actually achieving the mission of women empowerment through technical education. Biyani Girls College has grown with this dream of giving greater sense of confidence and self worth to women through advanced education. And it has also achieved this dream successfully as about 1000 girls every year pass out from here with flying colors.

Kalpana Chawla has been the role model for Biyani Girls College as this space woman achieved great success in her life and has set an excellent example for young girls. Her example will inspire the young to have faith in themselves and plan big in their lives and strive hard to attain it. Biyani Girls College

started **Kalpana Chawla Memorial Award** in the year 2007 in the honor of Kalpana Chawla and also with the objective to motivate girl students to be like Kalpana. Sh. B.L. Chawla was kind enough to give permission for using Kalpana Chawla's name and photograph in the college campus and publication.

Kalpana Chawla Memorial Award lightens the spirit of struggle and success among the award recipients. Girls get overwhelmed receiving the award and blessings from the father of this great woman; they share their thoughts and their objectives in their lives. It is like exploring their hidden desires and discovering themselves and promising the world to achieve great heights. The magic moment of the awards kindles hope in the hearts of students to achieve 'the extraordinary' in their lives. ■



KALPANA CHAWLA MEMORIAL AWARD

2023



2022



2021



KALPANA CHAWLA MEMORIAL AWARD-2020



KALPANA CHAWLA MEMORIAL AWARD-2019



KALPANA CHAWLA MEMORIAL AWARD-2018



KALPANA CHAWLA MEMORIAL AWARD-2017



Brave Cosmos Lady: Kalpana Chawla

“This may sound funny, but when I settle down I hope to live in a colony on Mars.”

Kalpana Chawla (17 March, 1962 - 1 February 2003) was an India-born American astronaut and space shuttle mission specialist. She was one of the seven crew members of Space Shuttle Columbia during mission STS-107 when the shuttle disintegrated upon reentry into the Earth's atmosphere. **Kalpana Chawla** is a posthumous recipient of the Congressional Space Medal of Honor. She was born in Karnal, Haryana, India. Kalpana is a Sanskrit name meaning "idea" or "imagination." Her interest in flight was inspired by J. R. D. Tata, a pioneering Indian pilot and an industrialist. ■



Early Life of Kalpana Chawla



Kalpana Chawla was born in the city of Karnal in Haryana, in a home of three elder sisters and one elder brother. During her early life, Kalpana was nurtured to an archetypal Indian family in the mid-20th century, with education taking centre-stage. However, she was unusual in every thing she did. Kalpana Chawla was born on March 17, 1962 in Karnal. Kalpana Chawla's parents originally came to Karnal (city in Haryana) from the Multan district of West Punjab (now in Pakistan) after the partition of India after Independence.

Even as a child, Kalpana Chawla began to show her independent nature and she even selected her own name "Monto" at home. Her parents were always wondering that Kalpana had not been formally named at a proper ceremony. When Sunita and her aunt took Kalpana for admission to a nearby nursery school, the Principal asked her name. Sunita answered that they had three names in mind - Kalpana, Jyotsna and Sunaina, but they were yet to decide. The Principal, therefore, asked the little girl (Kalpana) as to which name would she prefer. And she promptly replied, Kalpana. It becomes pretty obvious that early life of Kalpana Chawla had started with much fun and frolic, with dollops of discipline put in. Like the name she chose, which means `imagination`, Kalpana Chawla was a highly imaginative child.

During summer, when the family slept on the roof of their small house in an isolated corner of Model Town colony, she would watch the night sky. Staring at the twinkling stars, she wondered what they were dreaming, they beckoned her and left her wondering whether it was ever possible to reach them. She would often ask questions about space, but would rarely receive a satisfactory answer. Into her early years of life, stars captivated Kalpana so much that once when she and her classmates built a physical geography map of India covering the floor of an entire classroom in her school, Tagore Baal Niketan, she covered its ceiling completely with stars - sparkling dots marked on blackened newspapers.

Like stars in the night sky, the first things in the blue morning sky that caught her fancy were aeroplanes. Karnal is one of the few Indian towns with a flying club. It was called 'Karnal Aviation Club' and is now a part of the Haryana Institute of Civil Aviation. Here, small Pushpak planes and gliders regularly take off and land. As her house was a few kilometres away from the Club, her favourite pastime was to climb up to the roof and watch them go roaring over her head. Bewitched, she would wave her hand at the pilot if the plane flew low over the house. Since her early years in life, Kalpana Chawla was fantastically attracted to the blue emptiness above, and



was always eager to know more.

Whenever her teachers asked her class to draw scenery, she would always draw aeroplanes flying in the sky, while the rest made mountains, rivers and houses. She also loved making models of aeroplanes during craft classes. In one such incident during a class, Kalpana asked her teacher Daljit K. Madan whether she had ever flown in an aeroplane. When she said no, Kalpana enquired whether she was afraid of flying. At the tiny age of eleven, she persuaded her father to take her to

the Club and had a thrilling joyride aboard a Pushpak. From that day on, flying became her first love. She became as excited as a child whenever she saw planes or talked about them. Early life of Kalpana Chawla can be termed as an incredible breakaway from typical Indian girl's routine life, with variances gradually becoming a regular affair. Although Kalpana never scored the highest marks in her class, she was always among the first five. Sincere, hard-working and attentive, she respected and admired her teachers. She enjoyed subjects like English, Hindi and geography, but her favourite subject was science, taught by Nirmala Namboodripad, who took pains to make the subject simple and interesting. Kalpana also wrote poetry and danced at the annual day celebrations. She loved cycling and running and at sports meets she always came first in the races. Friendly and helpful, she often played badminton and dodge ball with boys. As she grew into a young woman, she cut her hair short and never put on any make-up. She refused to cook, never ironed her clothes and began to wear trousers or jeans. In those days, most girls in Karnal completed their education, got married and settled down. But Kalpana's teachers at school encouraged the girls not to waste their education and do something more worthwhile in life. Belonging to middle or lower middle class families, the girls were also keen on higher studies and earning a living. And here lies the yawning difference between Kalpana and her other counterparts. Since her early life, i.e., by the tenth class, Kalpana had also made up her mind. Whenever any visitor asked her what she wanted to become in life, she would readily reply, 'A Flight Engineer!' She thought that a flight engineer designs aeroplanes, as nobody had explained that a flight engineer navigates an aeroplane during its flight. Once she saw a photograph of the Viking lander on the planet Mars in a popular weekly and her imaginative mind woke up to the possibility of travelling in space and landing on the Red Planet like her elder sisters Kalpana was admitted to an exclusive girls college - DAV College for Women for her Pre-University. She passed her tenth class from the Haryana Board Examination in 1976. Actually, she was underage and got away by changing her date of birth from March 17, 1962 to July 1, 1961. Slowly passing from an early life, Kalpana Chawla had moved into the level of college education, the transition taking place quite subtly. ■

EDUCATIONAL LIFE OF KALPANA CHAWLA

Kalpana Chawla as a student was hugely interested in science and always desired to make it into engineering and the science of space. Hence her educational life pivoted around that very subject only. Hence, Kalpana took admission in DAV College for Women for her pre-University lessons. Later, she got herself admitted to Dyal Singh College, just to pursue engineering from the illustrious Punjab Engineering College, Chandigarh. Each of her dreams were answered, owing to her tremendous will power and zealotness towards studying aeronautics. Graduated from Tagore School, Karnal, India, in 1976. She did bachelor of science degree in aeronautical engineering from Punjab Engineering College, India, in 1982. and master of science degree in aerospace engineering from University of Texas, 1984. And she did doctorate of philosophy in aerospace engineering from University of Colorado, in 1988.

Kalpana Chawla studied aeronautical engineering at Punjab Engineering College in Chandigarh, India, in 1982 where she earned her Bachelor of Science degree. She was one of the three women in the school at the time. She moved to the United States in 1982 and



obtained a Master of Science degree in aerospace engineering from the University of Texas at Arlington (1984). Kalpana Chawla earned a second Master of Science degree in mechanical engineering in 1986 and a Ph.D. in aerospace engineering in 1988 from the University of Colorado at Boulder. Later that year she began working for NASA Ames Research Center. Kalpana Chawla held a Certificated Flight Instructor rating for airplanes, gliders and Commercial Pilot licenses for single and multiengine airplanes, seaplanes and gliders. She held an FCC issued Technician Class Amateur Radio license with the call sign KD5ESI. Kalpana Chawla married Jean-Pierre Harrison in 1983 and became a naturalized United States citizen in 1990.

Kalpana Chawla had an indeed redefining educational career, starting from India and extending to the top universities in the United States. She became well-known and admired in every institution she went. However, Kalpana's move in NASA can be called the most significant and crucial stint, from when her dream to fly beyond the earth took firm shape. In 1988, Kalpana Chawla started work at NASA Ames Research Center in the area of powered-lift computational fluid dynamics. Her research concentrated on simulation of complex air flows encountered around aircraft such as the Harrier in "ground-effect." Following completion of this project she supported research in mapping of flow solvers to parallel computers, and testing of these

solvers by carrying out powered lift computations. In 1993 Kalpana Chawla joined Overset Methods Inc., Los Altos, California, as Vice President and Research Scientist to form a team with other researchers specializing in simulation of moving multiple body problems. She was responsible for development and implementation of efficient techniques to perform aerodynamic optimization. Results of various projects that Kalpana Chawla participated in are documented in technical conference papers and journals. After finishing her Ph.D. in 1988, Kalpana Chawla joined the MCAT Institute, San Jose, California, as a Research Scientist for a project of National Aeronautics and Space Administration (NASA) Ames Research Center. Here, she did simulation and analysis of air flows around aircraft using powerful supercomputers like Cray. Five years



later, she joined Overset Methods Inc, Los Altos, California, as Vice President and Research Scientist. Kalpana headed the team that worked on how to optimise designs of aircraft by simulating the complex air flows encountered around them and studied the stability of fluids under conditions of very low gravity.

Although flying was her first love it was rather intensified in the company of Jean Pierre Harrison, Kalpana`s husband. She developed the inner urge to become an astronaut and travel in space. This was precisely the dream Kalpana harboured while in NASA. The walls of her hostel rooms in Chandigarh, Texas and Colorado were always covered with pin-ups of astronauts, spacecraft and space shuttles. Anyone with her computer expertise could have easily secured a cosy job in the Silicon Valley, but not Kalpana. When she saw the NASA advertisement for the selection of astronauts in aviation and space trade journals, essential qualifications being a bachelor`s



degree and three year related experience, she decided to try. Harrison supported her decision, though it meant giving up his job of a flying instructor at the flying club in California and shifting to Houston, where the NASA trained their astronauts. Later, the couple also decided not to have children, as it would affect her career as an astronaut.

Kalpana Chawla`s first attempt in NASA was a partial failure. She was not selected when she applied the first time. It was only in her second attempt that she passed the written test, was called for an interview and selected for the job. When she received the call letter from the NASA Astronaut Office in December 1994, she rang up Harrison, who was out of town, and left a message on voice mail. In her excitement she simply said, `I`m in!` For some time Harrison could not understand what she meant and had to ring her back to check.

She was one of the five women of total 23 astronauts selected out of 2962 applicants that year. She was also among seven non-Americans and the only civilian to be selected. She had to undergo a series of medical and psychological tests and interviews. During the process of selection, even a watch is kept on the behaviour of the applicants during their stay in the NASA hostels. Apart from qualifications and experience, the qualities that NASA looks for in an astronaut are: character, integrity, intelligence, team spirit and even public speaking skills. Kalpana excelled in all these. Kalpana Chawla`s initiation in NASA thus set about a historical beginning, the end of which was truly unimagined and unprecedented. ■

KALPANA CHAWLA'S MAIDEN SPACE MISSION

Kalpana Chawla's maiden space mission was like an impossible dream coming true to her, owing to her severe perseverance and determination to make it big in aeronautics. Her first mission was to fly in Space Shuttle Columbia flight STS-87, which began in the late months of 1997. She was a part of the six-member international crew on board. Kalpana had many emotional moments with her members during her journey into depths of darkness. Kept under strict discipline and control in the maiden mission, Kalpana had to monitor several functions of the planet, including zero gravitational activities. After initial minor malfunctions of Payload Bay, Kalpana's first mission was a huge success after touchdown. Overnight Kalpana Chawla had become a legend.

In March 1995, Kalpana joined the NASA Astronaut training camp at Johnson Space Center at Houston. It lasted for fourteen months and during the training, the participants are called 'Astronaut Candidates' (ASCANS). It is only after the completion of the rigorous training that the candidates are given the Astronaut designation. The astronaut training consists of several parts. Firstly, a theoretical knowledge of space flight, namely navigation and astronomy are imparted. Then, hands-on experience with various systems of the Space Shuttle, their repair and maintenance; undergoing space-like conditions of vacuum and zero gravity in artificial simulators and even high altitude flying. Undergoing high acceleration conditions experienced during take-off in flight simulators; training in the mock-ups of a Space Shuttle, practising various manoeuvres and undergoing emergency drills. Besides, astronauts are also tested for their physical endurance, stamina and survival skills in a crisis. For instance, they are dropped into the sea, over mountains and jungles by boats or aeroplanes without food and water and have to find



their way back on their own. Here, Kalpana's outdoor adventures with Harrison came in handy and she came through with flying colours.

Becoming a NASA astronaut does not guarantee a journey into space. That opportunity is offered to a few astronauts depending upon the requirements of a space mission. At the NASA Astronaut Office, astronauts perform many kinds of tasks from looking into the feasibility of scientific experiments submitted for execution in space, to liaison with industries, laboratories, schools and colleges. They take classes, train astronauts and man the Houston Mission Control to share their experience and know how to deal with astronauts in trouble in space. These initial hurdle stages were smoothly and effortlessly passed by Kalpana Chawla, to begin her eventful chapter while in NASA. When on December 7, 1996, Kalpana received a phone call from the former Mission Specialist and astronaut David Leestma asking her if she was interested in working for him, she knew she had been selected for a space mission. Finally, her dream of a space flight would come true.

Kalpana had been selected for the Space Shuttle mission, called Space Transportation System-87, where 87 was the Flight tail number. It was called 'STS-87' in short. Columbia, named after the first American ship which circumvented the earth, was the shuttle selected for the mission. It was due to be launched in November 1997. She was selected as its Mission Specialist and Prime Robotic Arm Operator. After a lifetime of striving Kalpana knew she would become the first Indian woman to travel in space and her name would now be a part of Indian history. It had been a long journey from Karnal into outer space. Truly, Kalpana Chawla's journey into NASA turned towards a constructive direction, the direction she had longed for, only to create further history. ■

KALPANA CHAWLA'S FINAL SPACE MISSION



Columbia accidentally broke down just 16 minutes before landing, burning and annihilating everything and everyone with it. This shocking affair though did bodily terminate Kalpana's journey in the universe, but she shall always be remembered as that heroic lady who fought every fear to pursue her passion in the world as well as in NASA.

Her brother, Sanjay Chawla, remarked "To me, my sister is not dead. She is immortal. Isn't that what a star is? She is a permanent star in the sky. She will always be up there where she belongs."

"None of our astronauts traveled a longer path to space than Kalpana Chawla," U.S. President George W. Bush said. "She left India as a student but she would see the nation of her birth, all of it, from hundreds of miles above."

Kalpana Chawla's final space mission was in association with NASA yet again, on board the Space Shuttle Columbia, the one in which she made her first voyage, with flight STS-107. In spite of a first flight, she was most eager to resume a space flight, a rare among astronauts. Her mission this time however was purely scientific, with more complex work to be performed. Kalpana was assigned as the Flight Engineer and the Mission Specialist for STS-107. Her experiments in space would bring about path-breaking results for earth and its population.



"When the sad news reached her hometown," Bush said, "an administrator at her high school recalled, 'She always said she wanted to reach the stars. She went there and beyond.' Kalpana's native country mourns her today and so does her adopted land." ■

In 2000 Kalpana Chawla was handpicked for her second flight, as part of the crew of STS-107. This mission was stayed back time and again owing to scheduling conflicts and technical inconvenience, like the July 2002 discovery of cracks in the shuttle engine flow liners. On January 16, 2003 Kalpana eventually returned to space aboard Columbia on the doomed STS-107 mission. Everything was cut short quite pathetically, when

**She left India as a student,
but she would see the
nation of her birth all of it,
from hundreds of miles
above.**

President George W. Bush



Kalpana, you are not lost. Your dream is alive with us!

Tragedy in Space U.S. Space Shuttle Columbia breaks into flames

In an unprecedented space tragedy, U.S. Space Shuttle Columbia, carrying India-born American astronaut Kalpana Chawla and six others, broke apart in flames as it streaked over Texas towards its landing strip on Saturday, 1 February 2003, killing all seven on board. The shuttle lost contact with NASA at about 9 a.m. (19.30 hrs 1ST) as it came in for landing. It was flying at an altitude of over 200,000 feet and traveling at over 20,000 km. per hour when ground control lost contact with the shuttle. Columbia had lifted off on 16 January 2003, from the Kennedy Space Center, Florida. It had stayed in orbit for 16 days and the seven-member crew conducted 80 experiments before it began its downward journey, which ended in tragedy. This was Columbia's 28th space flight and the shuttle was said to be good for 100 flights.

TRIBUTE TO OUR HEROES

Our Heroes !
Oh ! Our Astronauts, Our Heroes !
You Did Complete Wonderful Jobs !
And You Returned On Your Flight
But You Disappeared In The Sky
You All Will Fly More And More High
Into The Heaven Plenty Of Light
Enjoy Happiness Most Delight
You're Around Us, Never Die
Now, You're Angel... You Can Fly.



Rick Husband



William McCool



Laurel Clark



Kalpana Chawla



Ilan Ramon



Michael Anderson



David Brown



AWARDS

Kalpana Chawla was posthumously awarded:

- Congressional Space Medal of Honor
- NASA Space Flight Medal
- NASA Distinguished Service Medal
- Defense Distinguished Service Medal (DDSM)

MEMORIAM

- Asteroid 51826 Kalpana Chawla, one of seven citations named after the Columbia's crew
- On February 5, 2003, India's Prime Minister announced that the meteorological series of satellites, "METSAT", will be renamed as "KALPANA". The first satellite of the series, "METSAT-1", launched by India on September 12, 2002 will now be known as "KALPANA-1". "KALPANA-2" is expected to be launched.
- 74th Street in the "Little India" section of Jackson Heights, Queens, New York City has been renamed 74th Street Kalpana Chawla Way in her honour.
- The University of Texas at Arlington (where Chawla obtained a Master of Science degree in Aerospace Engineering in 1984) opened a dormitory named in her honor, Kalpana Chawla Hall, in 2004.
- Kalpana Chawla Award was instituted by the government of Karnataka in 2004 for young women scientists

SOME FACTS about **Dr. Kalpana Chawla**

- The girls hostel at Punjab Engineering College, is named after Kalpana Chawla. In addition, an award of INR twenty five thousand, a medal, and a certificate is instituted for the best student in Aeronautical engineering department
- NASA has dedicated a super computer to Kalpana.
- Amar Chitra Katha (Immortal Illustrated Classics) has released a comic book biography of Kalpana Chawla's life.
- One of Florida Institute of Technology's student apartment complexes, Columbia Village Suites, has halls named after each of the astronauts, including Chawla.
- NASA Mars Exploration Rover mission has named seven peaks in a chain of hills, named the Columbia Hills, after each of the seven astronauts lost in the Columbia shuttle disaster, including Chawla hill after Kalpana Chawla.
- Steve Morse from the band Deep Purple created a song called "Contact Lost" in memory of the Columbia tragedy along with her interest in the band. The song can be found on the album, "Bananas".
- Kalpana Chawla has inspired several young Indians aspiring to be astronauts.
- First and only Indian-American in space (she was born in India and became a naturalized U.S. citizen)
- Selected as an astronaut in 1994; first mission in 1997, this was her second mission
- U.S. doctorate & M.S. in aerospace engineering and B.S. in aeronautical engineering from India
- Second Indian in space, after Indian citizen Rakesh Sharma, who flew on a Soviet mission
- One of only a handful of Asian American astronauts and the only South Asian Married to Frenchman Jean-Pierre Harrison, a freelance flying instructor. ■

KALPANA CHAWLA AS A PERSON

Kalpana Chawla was a strict vegetarian. On her mission, she carried a white silk banner as part of a worldwide campaign to honor teachers, as well as nearly two dozen CDs, including ones by Abida Parveen , Yehudi Menuhin , Ravi Shankar , and Deep Purple . She went to her first rock concert, a Deep Purple show, in 2001 with her husband. "Kalpana is not necessarily a rock music aficionado," her husband said of a Deep Purple show they went to in 2001. "But (she) nevertheless characterized the show as a 'spiritual experience.'" The administrator for the Hindu temple in Houston where Kalpana attended when her schedule permitted said "She was a nice lady ... and very pious."

"Kalpana, or K.C. to her friends, was admired personally for her extraordinary kindness and technically for her strive for perfection," he said. "She had a terrific sense of humor and loved flying small airplanes with her husband and loved flying in space. Flying was her passion. She would often remind her crew as her training would be delayed and become extended, she would say, 'Man, you are training to fly in space. What more could you want?'" Kalpana Chawla was a motivated person who made an impression on others.

Kalpana was beyond doubt a person with a peculiar independence of mind, strong determination and great will power. These qualities were easily discernable from the way she went ahead to select the discipline of

Aeronautical Engineering for her studies at the college despite the fact that the aeronautical branch of engineering was not that popular at the time even with men students what to talk of the girls. There were not many openings in the area which could promise good salaries to prospective graduates. But for Kalpana this was hardly a consideration for selecting profession to engage herself in her life. The size of the pay cheque, prestige and status in society were of absolutely no consideration to her. She came into aerospace



engineering not because she saw the prospect of high salaries but because she had developed a special liking for the flying machine and had fallen in love with the blue skies above.

These however were not the only qualities that Kalpana possessed. She was committed and devoted to her job at hand, hard working, ever aspiring to higher performance, soft spoken, honest and truthful, ever smiling, unassuming, always ready to help others, sacrificing and caring. You name any desirable trait and

you will find it manifest in the person of Kalpana Chawla. As an example of her honesty and love for truth, here are some factual instances related to her life.

1) When she had been selected to go on board the shuttle mission STS-107, she wrote to the Administrator Chandigarh who was also the Governor of Punjab, informing him that she was due to go on a space mission and that she would like to carry with her, a memorabilia

of the city of Chandigarh where she had stayed for four years during her studies at the Punjab Engineering College. The Administration was greatly moved by her affectionate remembrance of the city and immediately requested the local College of Architecture to design and prepare a suitable memento for the purpose. When the design was ready it was thought that it would be very useful for inspiring the future student community to be exposed to it later after the completion of Kalpana's space mission, It was therefore thought that Kalpana should be requested to return this banner with a message to the future students. Consequently they took the liberty of drafting a message and sent it to her for approval. In reply she had very politely said that though the message was superb but it would not be ethical for her to put her signatures on it because she had not written it. Instead she sent her own version of the message to be put on the banner. That was the extent of her unflinching concern for truth and ethics. 2) As an example of her readiness to help others, when she was studying at the P.E.C. Chandigarh she used to save some part of her money received from her parents to pay for the fees of needy students. This aspect of hers was seen by the whole world on the T.V. when during the flight STS 107 she volunteered to forego her rest time so as to complete an experiment for which the earmarked flight time had expired. That was the extent of her devotion to work.

3) Her devotion to the job at hand was so great that she always wanted to devote maximum time to it. When she was at the P.E.C during her undergraduate studies, her professor once handed over to her class in 1982, a proforma containing some questions to be answered to serve as a feed back to him as to how the students themselves felt about their performance in a test that he had given to them in the subject that he was teaching them. Kalpana's responses were very interesting and special. She had then said that she was not completely satisfied by her performance in the test and felt she could do better if she had been able to devote more time to contemplate on the subject in the hostel. These are some instances to demonstrate just a few of the great qualities of head and heart of this special girl for which

we all are proud of.

Here are a few other things her friends knew Kalpana was able to live up to:

Buy paper products made from recycled paper.

- Re-use old paper for writing notes.
- Have cloth towels handy (and thus use fewer paper towels).
- Don't buy "overly packaged" or already prepared foods-spend quality time cooking with the family.
- Use old calendars, maps and magazines for wrapping paper (you can be quite creative).
- In the winter, keep homes heated to a lower temperature and wear more sweaters.
- In the summer, allow homes to stay at a higher temperature so the air conditioner cycles on less frequently; wear cotton and go barefoot.
- Don't use electric appliances unless needed-let your hair dry naturally get a great workout using a push mower, and don't iron clothes that are just slightly wrinkled!
- Don't use a clothes dryer....in good weather, hang your laundry outside and it will smell fresh and lovely.... In rainy or cold weather hang it inside (on hangers, on a closet pole) and it will contribute to humidity to make the house more comfortable!
- Re-use old containers, especially water bottles.
- Recycle! Deliver paper, glass and plastic to the city recycling collection station.
- Don't eat "fast food," not only for its ecological cost (read "Fast Food Nation" for all the facts), but also for the cost of debasement of human lives.
- Carry a cloth bag in your car for purchases.
- Buy local produce and products whenever possible, to cut down on transportation of goods.
- Buy in bulk and save money.
- Eat lower on the food chain.

Kalpana was a vegetarian eating lower on the food chain. This requires fewer resources to produce sufficient nutrients for each person. For example, the National park Service has estimated that in the United States 2500 gallons of water are needed to produce a pound of beef, compared to 25 gallons needed for a pound of wheat. A feedlot-raised cow requires grain, hay and water, and complex cleaning of the environment to remove waste products. This puts a strain on already limited Western water rights and availability, as well as contributing to water contamination and acid rain. Overgrazing by livestock causes soil compaction and erosion, leading to a loss in water storage capacity.

Kalpana always believed in the power of women. She believed that mothers, even those living in a traditional society, can make things easier for their daughters by not pressing them to conform to society's norms. Says Chawla: "I think I wouldn't even call my mom conservative, though she is from a conservative family, and I think everyone thinks of her that way. But as far back as I can remember, she's always said that you really must do what pleases you."

Kalpana continued her association with her school in Karnal. On her first space flight in 1997, she asked the school to send a T-shirt to carry with her as a souvenir.

In 1998 the International Space School Foundation at NASA asked Kalpana to suggest some Indian students for a Kalpana continued her association with her school in Karnal. Namita Alung and Sanpreet Kaur, who were selected for the programme, fondly remember Kalpana didi. Sanpreet recalls, "When we were at NASA, I was sick of eating American food. One daya Kalpana didi took us home and cooked chole, aloo gobi and paranthas." "To be with her was an experience of a lifetime and we carefully heard every word she said," the girls said.

Kalpana Chawla had successfully blended her Indian values with her Western education. She didn't have any role models in the workplace while growing up, so how did she believe enough in herself to go in for something which was considered totally a man's job? She says, "I honestly didn't think of it that way. When I joined engineering, there were only seven girls in the whole engineering college. I was the first girl to go into

aerospace engineering. The department chair kept trying to channel me into electrical or mechanical, and I thought this is weird, why is he trying to do that?" Finally, the professor got the message that she was determined to pursue aerospace engineering, and he



would tell his other students, all males, "She's here because this is what she wants to do." She adds, "That's the message I'd want to give other women: do something because you really want to do it. So even if it is a goal which is not necessarily within reach--it may be something which only a handful can do--but if you really like what you do, then you've never really lost anything. But if you're doing it just for the goal, and don't enjoy the path, then I think you're cheating yourself. ■

"Do something because you really want to do it. If you're doing it just for the goal, and don't enjoy the path, then I think you're cheating yourself."

—Dr. Kalpana Chawla

KALPANA'S HABITS



Kalpana simply loved gardening and flower arrangements. She had designed the backyard and frontyard with almost 40 kinds of different flower beds in her Karnal's house. Perhaps her house had the maximum no of types of flowers in the whole city. She would not pluck young flowers from the plants and would look for flowers that were about to fall off in any case. She would every year, before the winters, send an elaborate drawing of the backyard showing the shapes of the flower beds and the type of flowers that would be planted. And once the season was over, would daintily save the flower seeds for the next season, wrap them up, neatly label them and store them - despite her various other preoccupations then such as reading, learning Karate and of course studying for her degree.

She went to U.S. for further studies, but her genuine concern for nature remained alive there also. When she bought a house after being assigned for the second mission in late 2001, the insurance company eventually asked her to get rid of some trees that were bending too dangerously towards the roof of the house or else be willing to pay a higher premium. As expected, she chose

the latter option. Once again the drainage in her bathroom choked up and the investigation by the plumber revealed that the old trees in the backyard had sent too many roots that had entered the drainage pipe and the advise was to cut the trees around to avoid the problem. Kalpana said '**No Ways**'.

Kalpana was so particular about personal hygiene, that she would hand wash her own clothes in the hostel bathroom, not on the floor but using the walls as the floor was too unclean. She would not eat in the hostel canteen but cook her own food in the tiny little cubicle that she had in the hostel even though it meant using her precious time out of studies for buying veggies and cooking. Her friends and acquaintances from those days in Chandigarh recall Kalpana biking towards the hostel with veggies from a vendor on her bicycle- unmindful of what her peers might think of this.

Even as a kid, she loved Nature and solitude. When the entire household would be asleep in the mornings, she would sneak out on her bicycle into the wilderness around. The younger cousins loved her as she would at times let them also accompany her for little makebelieve adventures into the unknown.

Kalpana was never like other girls of her age spending money on clothes, accessories etc. She cut her own hair till she got her first job at NASA Ames. As she felt it was a waste of money to pay somebody just for cutting your hair.

Her clothes lasted her forever as she did not discard them just because they were old fashioned. The simple solution she found was not to buy what was in fashion as that would surely go out of fashion.

Even after she started earning, she would rather repair her shoes than buy new ones even though that would cost her more. She had a very solid reason for that; she did not want to take from mother earth for her survival more than was absolutely essential. ■

FATHER DAUGHTER RELATIONSHIP



Kalpana, daughter of Banarasi Lal Chawla was very much like her father. Kalpana's father was forced to flee his home (now in Pakistan) during the Partition; he had seen the worst. When he came to India with his large family and settled in Karnal, Haryana, he worked hard to establish himself. It is evident that Kalpana acquired his attitude of never giving up and not knowing failure.

'The Odyssey of the Chawlas'

On February 1, just 16 minutes before the Columbia space shuttle was to make its scheduled touchdown at the end of its 28th mission, it exploded over Texas, at a height of 200,000 feet.

Lost in that explosion were seven lives, including that of Kalpana Chawla, 42 -- a horrific end to a life that had its genesis in horror of a quite different kind.

It was sultry, and dark, on an August evening in 1947 when Banarasi Lal Chawla, then 14, lay on a railway track, thirsty, hungry, unconscious, and bleeding.

Around him, open coal wagons echoed with the cries of children, most of whom were living the final hours of their lives.

Chawla remembers that day in August 1947, when a fifth of the world's population was convulsed by Partition and forced to flee their homes.

"People were packed into the open wagons from 8am like potatoes. Hardly had it moved a few kilometres than the train was stopped at Shahdra, on the outskirts of Lahore. While my family, including my mother, was sitting inside the wagon, I had to be content with a perch on top of a joint between two wagons. That is where I got a place."

As the warm morning made way for a blistering hot noon and faded to evening, people began a desperate search for water. Food, by then, was a luxury not even thought of. Chawla joined hundreds of other men, women and children lining up to sip the dirty water that had filled the pits near the track -- water from the rains the day before.

He then returned to his perch, and that is all he recalls. Around 10pm, his uncle found Chawla unconscious, precariously close to the wagon wheel -- he had fallen off his perch in his stupor.

His uncle took him to yet another pit, gave him more dirty water to drink, and washed the deep

gash in the same water. Chawla returned to his perch, his feet dangling down the side of the wagon's cabled joint, and continued his vigil along with several hundred others.

As night progressed, a mob that had gathered began firing, with the intent of avenging itself for the killing of Muslims in India. One bullet whistled past Chawla, brushing his ears. That hiss, of death passing within inches, remains a landmark sound among the many that comprise the noisy, eventful, maverick life that Chawla went on to lead.

He was 14 then -- and it was not even his first brush with death.

A few days earlier, as news of the massacres of Hindus in Pakistani villages began pouring in, Chawla, his mother, two brothers, and a sister had moved to Choorkana Mandi from their village Shehupura. With his father away in Bikaner on work, it was left to Chawla to lead the family's exodus from their ancestral village.

Despite moving to the safety of his uncle's house in Choorkana Mandi, Chawla couldn't get over the thought of his cattle, which were left unattended in the village. So he coerced his uncle to accompany him to their village to rescue the cattle. En route, an acquaintance met them and warned of mass killings, and pleaded with them to go back.

Chawla's uncle sent the boy back and went forward on his own. He never returned.

"I was saved because I returned to town," Chawla recalls, with little show of visible emotion as he talks of a past that changed his life forever. Chawla's exodus from the dusty outskirts of Lahore into northern India where he rebuilt his life was to peak when his daughter Kalpana became an astronaut.

Chawla saw Kalpana's achievement as vindication, as the final sign that the wounds of Partition had healed.

Kalpana's story is incomplete without the story of

her parents, especially that of Banarasi Lal Chawla, who landed in the wilderness of Karnal a few days after August 15.

Chawla's father had been awaiting his family for days at the Amritsar railway station. It was a hopeless wait, since a group of refugees from Lahore had told him that his children and brother had been killed. Later, he was told they were alive -- and he did not know what to believe.

On August 18, at about 2am, when the open coal wagons sidled into Amritsar carrying hundreds of refugees, many of them dead, Chawla was into his sixth day of waiting. The family, now reunited, took a train leaving for Delhi, then the ultimate destination for the millions of refugees fleeing Pakistan.

The Chawlas -- the extended family at this point numbered 20 -- did not go all the way, but preferred to hop off at Karnal in Haryana, some 130 kilometres from Old Delhi.

The family moved into the first available vacant building: a mosque approximately 15x18 feet, with no doors and just a dirty well in one corner. Chawla and his father set out to seek food.

Chawla recalls cleaning up the 60-foot well and searching for a job, while his father teamed up with a relative and set up a small shop. However, the strain told on the elder Chawla, who fell ill a few months after the family settled down in Karnal.

For Chawla junior, that was when life began in earnest.

He remembers his first job, as an attendant in a shop that sold chutney and such. "I was to carry the big chutney containers from the rear of the shop to the front when customers required it. On my first day on the job, a big jar fell from my hand and broke. I was fired."

When he talks of those days, he is emotionless -- it is almost as if, having seen it all, having endured it all,

he can no longer be roused by mere memories.

His next job was as an assistant in what was then Karnal's only automobile workshop (the town, in fact, had only a couple of motor vehicles), on a lordly salary of Rs 10 a month.

He worked eight months without receiving a naya paisa. On the eve of Diwali, Chawla asked his employer for his salary. He remembers the disdain on the face of the man as he thrust a Rs 5 note into his hand. "I didn't take the money. I ran away crying," Chawla recalls.

Amidst such gratuitous cruelty came brief moments of respite -- a colleague in the garage, for instance, gave him Rs 5 to buy new clothes.

Chawla's restless mind hit upon an idea: to manufacture small and cheap metal boxes for storage. He started making three to four boxes each day, an endeavour that fetched him around 10 annas.

After some months, he gave up box-making and started selling soap. "I carried them on my head, and went around the locality," Chawla recalls. But when that too failed to click, he shifted to selling groundnuts and, later, dates.

He wouldn't give up -- that was not in his nature. Chawla moved on to selling toffee at Karnal station, his customers the refugees who continued to pour in from across the border.

It was then that he finally found his niche -- Chawla went back to making boxes, this time for the hordes of refugees who had thronged Karnal with nothing to store the rations the government was distributing. He began selling five to 10 boxes a day, and the business boomed as shops too began demanding his wares.

Shortly thereafter, he married Sanjogta Kharbanda, the educated daughter of a doctor who, too, had fled the horrors of Partition. As the business prospered, the family expanded -- daughters Sunita and Deepa came first, then son Sanjay, then the

baby of the family, Kalpana, in 1961.

Sunita remembers the box-manufacturing shop. "The shop was there till I was in class 8," Sunita, who went on to secure a master's degree from Punjab University with a gold medal, recalls.

Chawla tried his hand at running a textile shop in partnership, but that did not last long. The experience, however, helped him set up an exclusive showroom of Binny Textiles, which dominated India's retail textile market before Dhirubhai Ambani came on the scene with Reliance.

The Binny's showroom was a major success, and Chawla admits earning "much beyond my expectations". It was during this period that Chawla bought a secondhand scooter for himself -- a rarity in Karnal.

A tyre burst, one day -- and again, the seemingly innocuous incident was to prove a turning point in the saga of the Chawlas.

"I went to Punjab for a new tyre. But they said it was not available," Chawla recalls. He asked his younger brother, who was staying in Delhi, to get him one, but failed again. Finally, Chawla went to Delhi and began scouting the capital's markets for a new scooter tyre.

Near Gurdwara Rakabganj, Chawla finally found someone who could get him a new tyre, but on two conditions: he had to deposit the amount in advance, and wait for a few days. It was weeks before Chawla finally managed to procure the tyre he needed.

Most people, in such situations, would have fumed. Chawla, tempered by his trials, pondered the shortage of tyres in Indian markets, then dominated by foreign brands such as Goodyear and Dunlop.

"Immediately after returning to Karnal, I advertised for people with the technical knowhow of tyre manufacturing." Many applied, fully as many

scoffed at his idea of setting up a tyre-manufacturing plant with self-designed machinery and told him only international companies could do it.

Chawla, however, found two young engineers willing to buy into his quixotic idea -- and that was the genesis of Super Tyres.

The new factory was located a few kilometres from Karnal, on the road to Delhi. "After about one and a half years, when the machines were being assembled, both the engineers left the job."

By then, Chawla had sunk all his money into the project, his children were growing up, and he was out of funds.

His younger brother came visiting from Delhi. "Your ship is sinking," the brother said. "When the ship sinks, the captain also goes with it," Chawla responded.

The younger brother returned, in tears, to Delhi -- then called his brother and told him to go ahead and not worry about the money. With his brother's support and his family's backing, Chawla pushed ahead. He hired new engineers, continued designing machinery, and refused to give up when the early prototypes failed.

Finally, in 1969, Chawla's machines began functioning.

Chawla believes his was the first company in Asia that produced tyres with "indigenous technology". Whatever the merit of that belief, Super Tyres began cutting into the market share of the majors.

Meanwhile, his children were growing up, and proving to be intelligent. In fact, Chawla saw nothing special about Kalpana, in that respect -- eldest daughter Sunita is a gold medallist from Punjab University.

Chawla by then was leading a hectic life, travelling extensively within India and outside, visiting his offices around India and attending tyre exhibitions in Europe and the US.

Son Sanjay joined the Karnal flying school, and Kalpana, engineering classes. Ironically, by then Chawla was so busy he was unaware his youngest daughter had opted for aeronautical engineering -- of no use to the owner of a flourishing tyre business. "I thought my son and Kalpana would join me in the business," Chawla recalls.

During a break from studies, Kalpana accompanied her brother to flight school, but the authorities demanded she get the written consent of her guardian. Chawla refused consent. As Sunita remembers it, Sanjay was to give Kalpana some valuable advice: "Everyone fights their own battles."

Chawla was in the US when Kalpana learnt that she had topped Punjab University in the engineering finals, and was offered a job in her own college. But she had already begun applying to several American universities, and was accepted by the University of Texas for a master's in aeronautical engineering.

Her father was away and in the male-dominated household, no one else could take a decision. So Kalpana went back to Punjab Engineering College and took up a teaching job.

"I returned after two months and reached Karnal late one evening," Chawla recalls. "Kalpana was supposed to be home, but she wasn't. I asked about her. She is in Chandigarh, I was told. And then, someone said, anyway why are you asking? You don't have time for her."

It triggered a family revolt, with his wife, whom Chawla calls "liberal and advanced" and the three elder children ganging up on behalf of their baby of the household.

"I asked them what she was doing in Chandigarh. They said, why don't you go and find out?"

Early next morning, on August 26, Chawla reached Kalpana's hostel in Chandigarh, but she wasn't there. So he went to the college to visit the



principal, whom he knew.

"Chawla, you have only money, nothing else," the principal said, and told the astonished father about how brilliant Kalpana was, and that time was running out if she was to get into a US college. Chawla and the principal walked over to where Kalpana was taking classes. "She was writing on the blackboard, with her back to the class. After a while, she turned, wiping the chalk dust off her hands, and as she turned, she saw me.

"She walked up to me in tears and said, Papa, you have destroyed my career. You never have time for me."

The date was August 26 -- and the last date for admission to Texas was the 31st of that month. Kalpana had no passport, no visa, no tickets, nothing.

Chawla cried, tears of genuine distress. And through his tears he asked his daughter, "Do you want to go to the US?"

"Yes. I will go on my own money," Kalpana replied.

"You can do that, but I can fund you, as well," Chawla said.

"Anyway, now I can only go next year," his dejected daughter said. "I have no passport, no visa, nothing."

If his life had taught him one thing, it was to never give up. Do you want to go this year, Chawla asked his daughter. Yes, Kalpana said.

"Then come with me," he said, telling her to resign from her job that instant.

Kalpana was reluctant, fearing that her father would force her to join Super Tyres. "She thought I was trying to trick her into coming back to Karnal, and once there, I wouldn't let her leave," Chawla recalls.

Pulling every string he knew, drawing on all his accumulated goodwill, Chawla got his daughter's passport the same day. A day later, the visa was

organised. On August 28, Kalpana, accompanied by brother Sanjay, boarded a British Airways flight at midnight.

The story was to take another twist, when the flight was first delayed, then cancelled.

The Chawla family, which had gone to see Kalpana off, was in tears. But Chawla, even then, did not know the meaning of failure. He began calling friends in the US, and finally arranged for Kalpana to be admitted behind schedule -- in fact, the university even organised a pickup for Kalpana and her brother from the airport.

Nirmal Kutiya continues to be run by his disciples, providing succour to Karnal's poor.

"My mother was old and weak, but she would work several hours with my father, preparing rotis for the poor," Chawla says. When she died, over 10,000 people -- many of whom had eaten the food she had so lovingly prepared -- turned up for her funeral.

The family tradition of serving society is now being carried on by Chawla's younger brother, Amrit Chand Chawla. The industrialist from Mumbai has left his factory to managers and spends his time in Karnal, where he runs a well-furnished old age home for some 160 people, and a school where around 2,000 poor children are provided education and basic necessities free. He also provides some 700 poor families a monthly allowance to meet their needs.

Meanwhile, a second generation was growing up -- and taking inspiration from Kalpana's odyssey from Karnal to outer space. Megha, a standard five student, told this correspondent shortly before Kalpana took off on what was to be her last voyage, that she wanted to be an astronaut like her aunt.



Shortly before Kalpana took off on her ill-fated last flight her father, now deeply into religion, philosophized about his youngest daughter's achievements. Good things happen in families where good people are born," he said.

He recalled how, when his father Lala Labhamal was around 45 years old and still struggling to establish himself after the trauma of Partition, he met a guru and became his disciple. He built a matth in Karnal and ran it till he was 85. He died in 1997 -- the same year that Kalpana took off on her maiden space sojourn.

Till the evening of Saturday, February 1, the story was pure Horatio Alger -- a man who survived untold horrors and went on to make a fortune; and his daughter who, against the odds, went on to make her name in one of the most challenging of careers.

Today, that daughter's life, her achievements, ended in a fireball that destroyed her spacecraft. And left behind, by that explosion, is an old man who, finally, finds a tragedy too great for even his innate stoicism to withstand. ■

FATHER SPEAKS ABOUT HIS BRAVE DAUGHTER



"THE PATH FROM DREAMS TO SUCCESS DOES EXIST. MAY YOU HAVE THE VISION TO FIND IT, THE COURAGE TO GET ON TO IT, AND THE PERSEVERANCE TO FOLLOW IT?"

Kalpana could say this with so much conviction because she herself had lived out this path.

Traits such as curiosity, adventure, fun and complete belief in fond dreams are usually associated with children. Growing up, most adults lose these qualities and in short change themselves going through life with an occasional long sigh. Kalpana retained them and lived life to the fullest.

Kalpana, my daughter was the youngest of four siblings in a joint household of about 16 members with a total family income of perhaps less than 1000 Rupees per month at that time. As a result she was enrolled at the age of 3 in school where already 6 children from our household were getting their education.

Not many people know and the media doesn't care to report that this School was just a small four room school with less than 100 students in total and where 2 classes were held in one room at the same time.

My father would every year visit the principal in every new session to plead that we could not afford to pay the annual increase in the tuition fee for 7 children which at that time amounted to a royal sum of 5 rupees. Every year the Principal

would be carried away by the earnestness shown by my father and in order to retain good students, he would accept for us to continue to pay a very minimal amount. God bless his soul! As you can imagine the consequences if he had not agreed to waive off the fees.

Perhaps in this incident, one can trace Kalpana's wish to support students who are desirous of getting education but can not afford it. Mind you my friends, this is different than supporting education of the poor!

Kalpana, a small-town girl dared to dream big and had the self-belief to chase that dream. She chased it half way across the globe, caught up with it and then, lived it.

But it was not an easy path. At the young age of just sixteen, she dared to choose 'aeronautical branch' in Engineering degree course at Panjab Engineering college, Chandigarh; becoming the first girl student in this subject in that college, while all her girl friends followed the more traditional degrees like Medicine, arts etc; needless to say, in the face of opposition from all around.

P.E.C. did not have a girls Hostel at that time but she did not let that deter her. She practically lived out of a small suitcase for those 4 years shifting endless



times from one hostel to another where she could find a place for a few weeks. While simultaneously following her other hobbies like biking, learning karate, extensive reading, nature walks, flower arrangements, writing for the college magazine, participating in college debates, stamp collection, stone collection etc, she let her academic performance argue her case to one and all.

She did not let my refusal to sign as guardian authorizing her to learn flying when she was still in India, stop her from secretly harboring the desire and started learning flying planes as soon as she could when she reached the United States.

Along with her academic pursuit of her Masters and Doctorate, she was also learning flying various kinds of small planes. At only five-feet three inches tall, my daughter had the challenge of her feet reaching the pedals of the plane while keeping good visual of the runway. As a result, extra cushions were a permanent feature in her car.

She paid for her flying lessons out of the scholarship money that she got for her Masters at Arlington university, Texas and later for her Doctorate at Colorado University at Boulder. She eventually became a certified flying instructor. As she said, this way you could afford to fly different kinds of small planes into different kinds of small airports all over US, while teaching flying.

My daughter Kalpana lived an absolutely simple life-style with no frills whatsoever despite various kinds of peer pressure, expectations of her

family from India and her friends and colleagues in US. She believed in taking only the absolutely essential from mother earth for her needs. She remained vegetarian all her life not because of any religious or cultural beliefs but because she believed that it was more eco-friendly to be a vegetarian.

In an interview when she was asked: 'You hold Certificated Flight Instructor's license and Commercial Pilot's licenses for single- and multi-engine land airplanes and single-engine seaplanes, instrument rating and Private Glider. How do you maintain all of these licenses?' she responded by saying, "It's very expensive. I have a very cheap lifestyle in everything else. I hope NASA doesn't find out about the car I drive".

Kalpana my daughter supported short hair and wore jeans even when she lived in India, before she set abroad as a part of her general, no nonsense attitude. In her life she translated that, as being focused on what matters most and disregard the inconsequential.

You see, my daughter just gently refused to be 'mainstreamed' whether it was in the life style (fancy gadgets, dishwashers, household accessories, flashy cars) or the individual thinking (following the ever changing current fads or any gurus present or past).

She drew lot of support from a very small group of close friends and her college professors. While continuously widening her circle of friends and associates over next 20 years of her hectic and adventurous life in the United states pursuing higher education, career and eventually her dream job as an astronaut, she continued to remain in close touch with them.

She felt indebted for the contribution of her teachers and therefore, when she was assigned to her first space flight in 1997 as Mission specialist in-charge of Micro gravity experiments, she contacted

Tagore school, P.E.C and the administration of Chandigarh requesting for mementos to be carried onboard the shuttle as a mark of her respect and gratitude.

Before her second flight when National science centre, Delhi asked her about what kind of memento she would prefer, she suggested something that would honour the profession of teachers the world over, in order to draw the attention of the world on the very important and transformative influence the teachers played in the intellectual growth of the students.

She arranged for students from her old school in India to come and visit NASA and even hosted them at her home.

She loved nature with all its manifestations, the earth, the stars, the sky, the forests, the rivers, the birds the wild life, the insects and the butterflies. She felt completely at ease in a forest by herself, or on the mountains or high in the sky while flying small planes.

In the high school, as a part of science project, she made huge, colourful charts and models depicting the sky and stars. **A globe, a World map and a sky Globe were the most cherished possessions in her home or in her office.**

My daughter was very modest about her accomplishments. When attention was drawn to her about her being the first Indian woman Astronaut, she replied, " There are hundreds of scientists and engineers who work for years and months on some of the experiments and on the shuttle systems. We are lucky that we get to fly them." And " God has given all of us two hands and two legs and a brain and I do the best that I can"

She knew well that Indians, whether in India or America, had a special place in their hearts for her. She gave that place her respect, but never used it to further any agenda. When some blamed her for a

botched experiment on her first flight, she didn't cry racism, call Indian-American dailies or hold a press conference. She just went on doing her job.

My daughter simply revelled in multi ethnic environments. She lived her multiculturalism with grace and dignity. During the first mission STS 97, she had two white Americans, one black American, one Japanese and one Ukranian as crew members. All of them had to do 80 hours of Russian language course besides their usual rigorous training for the mission so that they could speak a little bit of Russian to be able to communicate during the training and the mission.

In a published interview she has explained why she went to US and her Philosophy of life: "In the back of my mind I knew that the US would have more airplanes than we would at home. It was very simple. It was so simple that I had my own definition of what a flight engineer would be. This person flew and fixed problems in the airplane while flying."

"When I got to engineering school I realized that a flight engineer doesn't fly, he just sits and navigates. [Deciding to come to the US] was more of a concept sort of thing: this is what I really want to do. **In the meantime, I had fun [studying aerospace engineering]; it wasn't boring. I like to tell people that now because I know people who want to be astronauts who sort of suffer through their course work. I say that enjoying what you are doing now is the most important thing.** It is important to me to work hard and have fun doing it. When I came to Colorado for my Ph.D, I was first directed to work in combustion, but I really didn't enjoy it. I talked with Dr. Chow [her thesis advisor] if I could work with him, so I switched back into aerospace."

On being asked about her experience of the Space flight, she said:

"The only thing I feel is my thoughts. There is nothing else touching me, telling me I have limbs.

It's so natural, it's not anything special.

On the tenth or eleventh day, I wanted to do one full pass and sit by the door and watch the earth. Doing that was mind boggling. It really instilled this huge sense of how small earth is. An hour and a half and I could go around it. I could do all of the math and logic for why this was, but in the big picture the thing that stayed with me is this place is very small. I felt that every person needs to experience this because maybe we would take better care of this place. This planet below you is our campsite and you know of no other campground. I didn't think this view would be something so philosophical-I thought I would just go around and see the continents and the oceans, but it was much more than that."

In another interview she said "We are all campers together on this earth--just not in the same tent at the same time". When asked about a message for young children by a correspondent from India Today on the eve of her second mission, she said, "take care of our fragile planet".

When asked how did she get inspired in life, her reply was: "I am in general inspired by explorers. Different times during my life I've read books. More recently, say about Shackleton, the four or five books written by people in more recent times, and then during the expedition. And then some of the incredible feats these people carried out; like making [it] to the Pole almost, but making the wise decision to stop a hundred miles short and return. Lewis and Clark's incredible journey across America to find a route to water, if one existed. And, the perseverance and incredible courage with which they carried it out. Patty Wagstaff. You know, she started out kind of late flying aerobatic airplanes. And then had the where-with-all to say that she was going to take part in the championships. And then, became an unlimited U.S. champion three times in a row. And, that's not men's or women's; that's The



Champion. There are so many people out there that just how they have done some incredible things. And how they inspire. You know, in explorers, Peter Matthiessen and how he has explored the whole world and chronicled life, animals and birds as they exist. And, he's done it by simply walking on his feet. You know, across [the] Himalayas. Across Africa. When I read about these people, I think the one thing that just stands out is their perseverance in how they carried out what they wished to carry out."

My dear friends, Kalpana through her life has proved that there aren't any shortcuts to stars (literally and figuratively) without perseverance. She has demonstrated what youth can achieve, what women are capable of, what each and every

one of us can attain with determination and dedication.

Her example will inspire the young to believe in themselves and set up such high goals and strive hard to attain them. It will act as a reminder to the parents to encourage and support their children in achieving seemingly impossible goals, irrespective of whether the child is a boy or a girl.

Next generation must carry Kalpana Chawla's torch, the torch for the quest of knowledge handed over to them. ■

IMPORTANT QUOTES

BY KALPANA CHAWLA



"Do something because you really want to do it. If you're doing it just for the goal and don't enjoy the path, then I think you're cheating yourself."

"I never thought while pursuing my studies or doing anything else about being a woman, I am a person from a small city, or a different country. I pretty much had my dreams, like anybody else and I followed them. People around me fortunately always encouraged and said "if that's what you want to do, carry on"."



"It was starting to get dim outside, so you got to see your own reflection. And there is the Earth and you can still see the Earth's surface and the dark sky overhead. And I could then see my reflection in the window and in the retina of my eye the whole earth and the sky could be seen reflected. So I called all the crew members one by one and they saw it, and they said, "Oh, wow."



"Just looking at Earth, looking at the stars during the night part of Earth; just looking at our planet roll by and the speed at which it goes by and the awe that it inspires; just so many such good thoughts come to your mind when you see all that... Doing it again is like living a dream a good dream once again."



"When you look at the stars and the galaxy, you feel that you are not just from any particular piece of land, but from the solar system."

KALPANA CHAWLA AS A POETESS

ON OCTOBER 27, 1980 KALPANA CHAWLA WROTE A POEM TO HER FRIEND, WHICH SHE TITLED 'TOWARD THE GOAL'. REDIFF.COM REPRODUCES THE POEM AS A TRIBUTE TO THE BRAVE ASTRONAUT.

Dive deep down
An aim awaits
Pearls peep
For your hands to reach
Just yours
For years, decades and ages
A door lies locked
A pearl in the shell
A secret in the brain

Open it
Break it
Reveal it

