

Probable technologies behind the Vimanas described in Ramayana

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ABSTRACT

In Sanskrit literature there is a prominent place for Maharshi Valmiki's Ramayana. This is one of the very few popular epics which are translated to multiple languages across the world. It has seven kaandas (books), five hundred sargas (chapters) and twenty four thousand slokas (verses) in it. The vimanas are described in various kaandas of Ramayana. It is said that Ravana had the vimana which could appear and disappear, travel long distances with high speed based on the thought power of the master. A few years ago in the year 2013 researchers from the University of Minnesota have designed a model quadcopter which can be flown by the human thought power. As per Prof Bin He from the University of Minnesota, for the first time humans are able to control the flight of flying robots using just their thought sensed from non-invasive brain waves. German scientists from the Technical University of Munich under the leadership of Professor Tim Fricke have simulated the flight of aircraft using thought power of the pilots. This makes us think if such an aircraft with an advanced technology like this existed once upon a time during the era of Ramayana. Carvings of Ravana's vimana in Ellora cave temples help us in comparing it with that of modern Jetpack. Descriptions on seating capacity of Pushpaka vimana help us in comparing the same with Airbus 380-800 which can accommodate 853 passengers. Concepts of invisibility of aircrafts make us think of camouflaging techniques and stealth technology used in modern military aircrafts. All these features help us in analyzing the probable technologies behind vimanas described in Ramayana.

Keywords - Ramayana, Pushpaka Vimana, ancient aircrafts, thought power, flight simulator, non-invasive brain waves, invisibility of aircrafts.

I. INTRODUCTION

Aerial mode of transportation is known to our ancestors since ancient times. We can find the description of vimanas in our vedas like Rigveda & Yajurveda, our great epics like Ramayana & Mahabharatha and puranas like Vishnu Purana & Markandeya Purana. Vimanas are described in various kaandas of Ramayana such as Aranya kaanda, Sundara kaanda, Yuddha kaanda and even Uttara kaanda. We can find description of Pushpaka vimana in detail in Sundara kaanda and Yuddha kaanda of Ramayana. It is described as a vimana which appears and disappears, travels based on the thought power of the master.

II. CONCEPT OF INVISIBILITY OF VIMANAS DESCRIBED IN ARANYA KAANDA

An aerial chariot is described in Ramayana for the first time in Aranya Kaanda when Ravana abducts Seetha.

Sa cha maaya mayo divyah|
Khara yuktah kharasvanah||
Pratyadrushyat hemango|
Ravanasya maharathah||3-49-19

It is described as "The miraculous air chariot of Ravana which is designed to appear and disappear at the wish of its master, yoked with miraculous mules, and built with its golden wheels and parts, appeared afore Ravana braying noisily."¹

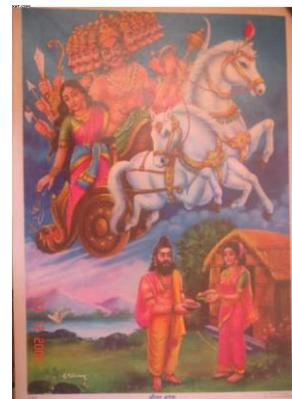


Figure 1: Representation of miraculous air chariot of Ravana ²

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http://www.valmikiramayana.net/utf8/aranya/sarga49/aranya_49_frame.htm

Here the important aspect which the author has stressed upon is, “the aircraft is designed in such a way that, it could appear and disappear based on the wish of its master.” We need to think of technology behind this feature. As per many ancient texts on Vymanika Shastra, vimanas in Threta Yuga were of ‘Mantrika’ category. Vimanas used to be produced by means of mantric knowledge.

As per ancient texts on Vimanas, Shounaka Sootra says that, there were 25 types of vimanas in Threta yuga such as Pushpaka, Ajamukha, Bhraajavat, Jyotirmukha, Kowshika, Bheeshma, Sessa, Vajraanga, Dyvatha, Ujvala, Kolaahala, Archisha, Bhooshnu, Somaanka, Panchavarna, Shanmukha, Panchabaana, Mayoora, Shankara, Tripura, Vasuhaara, Panchaanana, Ambareesha, Trinetra and Bherunda. (Josyer 1973:87)

Here our ancestors might have chanted the mantras for making the aircrafts invisible to human eye. Probable technology behind this could be on reciting those mantras a super natural power might coat the aircraft with camouflaging materials which makes the aircraft invisible.

Ancient texts on vimanas describe Maantrika vimanas as follows.

“As prescribed in “Mantraadhikaara”, by invoking the mantras of Chinnamasta, Bhairavee, Veginee, Siddhaamba, acquire the power of ghutikaa, paaduka, visible and invisible and other mantras with potent herbs and efficacious oils, and Bhuvanewaree Mantra which confers spiritual and mesmeric powers to construct aeroplanes, which don’t break, cannot be cut, cannot be burnt and cannot be destroyed.”(Josyer 1973:3)

These texts describe two secrets to make the vimanas invisible. They are as follows.

“Goodha: As explained in ‘Vaayutatva-Prakarana’, by harnessing the powers, Yaasa, Viyaasaa, Prayaasa in the 8th atmospheric layer covering the earth, to attract the dark content of the solar ray, and use it to hide the vimana from enemy.” (Josyer 1973:3)

“Adrishya: According to “Shaktitantra”, by means of the Vynarathya Vikarana and other powers in the heart center of the solar mass, attract the force of the ethereal flow in the sky, and mingle it with the balaahaa vikarana shakti in the aerial globe, producing thereby a white cover, which will make the vimana invisible.”(Josyer 1973:4)

A research article on invisibility of aircrafts (Hemant 2015:37-44) states that by studying sunlight and types of sun rays, we can extract the power from the sun to make the aircrafts invisible like the ancient vimanas. It also states that by the

² Religious print of the scene, by S. S. Brijbasi, Delhi, 1960's. Source: ebay, Jan. 2006

discovery of energy extraction from the dark matter in solar rays aircrafts can be made invisible.

Now many military aircrafts use new stealth technology which makes airplanes invisible not only to radar, but it renders them partially hidden to the human eye as well – just like an invisibility cloak in a Hollywood science fiction movies. They use nano enabled coatings which makes the aircraft invisible. Some Military aircrafts are painted to match the sky when viewed from below and to either match the ground or break up the aircraft's outline when viewed from above.³ Aircraft designers decrease the flight vulnerability to missile attack by using many camouflage and suppression techniques. These include reducing the aircraft's radar reflectivity by using nonreflecting materials and radar-absorbing paint, when practical. (Shaw 1985:55) The best example for military camouflage is Canadian CF-18 as shown below.⁴



Figure 2a: Canadian CF-18 with False Canopy painted on underside (all CF-18's are painted this way)



Figure 2b: Hyper Stealth Simulation on same photo with improved Lightning Disruption Pattern, note how the pattern reduces the visual aspect on the air intakes thus increasing the effect of the false cockpit to confuse an adversary

³ <http://www.hyperstealth.com/ADP/>

⁴ Lightning and Thunder Disruption Camouflage Patterns. (March 24, 2006, Vancouver, B.C.) HyperStealth Biotechnology Corp. <http://www.hyperstealth.com/ADP/>

III. CONCEPT OF FLIGHT OF THE PUSHPAKA VIMANA BASED ON 'HUMAN THOUGHT POWER' AS DESCRIBED IN SUNDARA KAANDA

Pushpaka vimana is described as the best of the best aerial cars which is capable of travelling long distances. It is described as decorated with precious diamonds, gems and corals with carvings of animals, birds and flowers in gold and silver. It is said that Hanuman the son of Lord Vayu was surprised by looking into the great aerial plane. Vishwakarma, who has manufactured this, has praised this Vimana as the one without comparison in beauty. Every small part in this vimana is made with great effort, with best diamonds and everything is of great significance.

“Tapah samaadhaana paraakramarjitam|
Manah samaadhaana vichaara chaarinam||
Aneka samsthaana vishesha nirmitaam|
Tatasta tastulya vishesha darshanam||”⁵-8-4

Pushpaka vimana is obtained by rigors and expertise, it is the one which moves about by thoughts of concentrated mind, and it is made from various significant parts with an appearance of parts of equal significance, collected from here and there from all over the world.⁵

The specialty of Pushpaka vimana is that “it moves about by the thought power of its master.” Even though we don’t have data regarding the exact technology behind this aircraft, recent research gives us an idea regarding probable technologies behind the construction of such aircrafts. A few years ago in the year 2013, researches from the University of Minnesota have designed a quadcopter which takes off using a noninvasive motor imagery-based brain-computer interface. This is the first time where researchers have attempted to control a flying device through human thought. They have used a technique called electro encephalography to record the brain waves. These recordings are then transmitted to quadcopter via WiFi to control it. (Lafleur 2013) Our ancestors might have used similar techniques in their own way for the flight of pushpaka vimana.

IV. RAVANA’S VIMANA SIMILAR TO MODERN JETPACK

In the cave temples of Ellora we can see the carvings of Ravana with a flying machine tied to his back. It represents a 1200 years old flying machine which Ravana had used in the era of Ramayana. Figure 3 below

represents the same. It is comparable with our most advanced and fascinating flying devices of modern times called Jetpacks.



Figure 3: A 1200 Year Old Vimana - Alien Flying Machine (Ellora Caves)⁶

Six straps around his waist represent the safety harness through which he has fastened the flying device to his back. Even in modern Jetpack we have six straps through which we can tie the Jetpack to our back. The bird at the bottom represents the bird Jataayu which fought with Ravana while he was travelling to Lanka after abducting Seetha. The circular wheel in the image represents a propeller which is similar that used in modern Jetpack.

Modern Jetpack has two propellers, image shown in the Figure 3 represents a side view of the flying device, assuming that there is a similar circular wheel on the other side of the flying device this is also very similar to our modern Jetpack. We can see a horse in the opposite direction of that of Ravana. Looking at the size of horse, in comparison with that of Ravana it doesn’t seem to be real horse, it is comparable with the horse shaped nozzle through which exhaust gases are thrown out of the flying device in the opposite direction of flight which helps in upward movement of the device. Even in modern Jetpacks we see the two nozzle valves through which exhaust gases are thrown out of the device. The rectangular device above the wheels represents safety roll device which are similar to the ones which are used in modern Jetpacks.

In the Figure 3, we can see Ravana wearing a crown and holding a device in his right hand near his ear. This is similar to the safety helmet which pilots wear and transmission device through which pilots interact with air stations to receive the signals

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http://www.valmikiramayana.net/utf8/sundara/sarga8/sundara_8_frame.htm

⁶

<https://www.youtube.com/watch?v=rvm865DWWrI>

for takeoff or landing. It is described that Ravana had multiple flying machines which he regularly used for traveling to various places and had six airports in Lanka where he used to park these aircrafts. Ravana might have been interacting with these airport base stations using the transmission device which he is holding in his right hand. Device which he is using in the left hand is something which is comparable with the GPS device which the pilots use even today. This makes us think if such a flying device with technology similar to that of our modern times existed during the era of Ramayana.

April 2014 news article on “Will we soon be riding JETPACKS to work? Breakthrough technology could see the creation of 'highways in the sky'” written by Laura Mears published in “Mail Online Science & Tech” describes in detail about the history of Jetpack and the technology evolution of the same till date. Martin Jetpack is heralded as the world’s first commercial Jetpack. It utilizes twin ducted fans to create lift. The two carbon Kevlar fans which are situated on either side of the pilot are driven by a bespoke V4 engine. The ducts are more extensive at the inlet than at the outlet, channeling air through at high speed, and creating enough thrust not just to lift the jetpack and its pilot into the air, additionally leaving an additional 50 kilograms (110 pounds) of thrust extra for quick changes in altitude. The Martin Jetpack can move at about 800 ft (250metres) per minute. The ducted fan configuration and petrol-powered engine empower this jetpack to achieve top paces of 46 miles (74km) every hour, with a respectable flight time of thirty minutes, permitting the pilot to travel distances of up to 19 miles (30km) without expecting to refuel.

Figure 4 shown below describes the components in modern Jetpack which are in many ways comparable with that of carving of Ravana’s vimana in Ellora caves. This shows that we definitely have similarity between the Ravana’s vimana and modern Jet Pack.

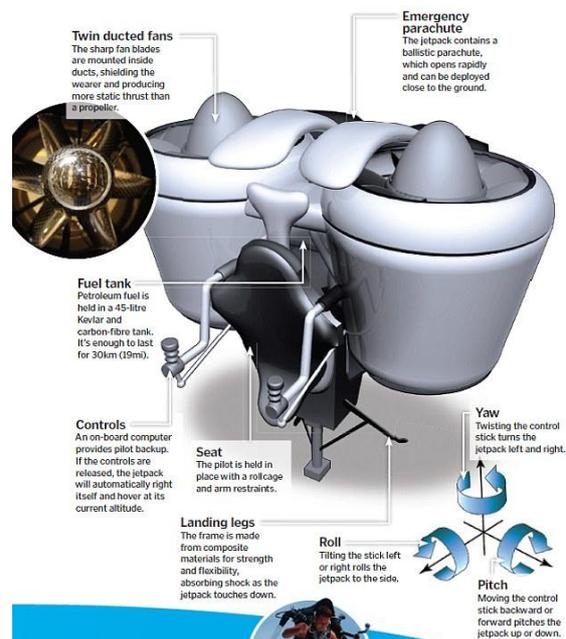


Figure 4: The Martin Jetpack, illustrated here, is being heralded as the world's first commercial jetpack⁷

V. THOUGHT POWERED AIRCRAFT SIMULATION AND SPEED OF PUSHPAKA VIMANA AS DESCRIBED IN YUDDHA KAANDA

We can find the description of Pushpaka Vimana once again in Yuddha Kandha when Rama kills Ravana and further decides to return back to Ayodhya. Rama asks Vibhishana to see how they can quickly reach Ayodhya as travelling back in the same path would be very difficult. Then Vibhishana suggest that he can drop all of them to the city within a day and describes pushpaka vimana to him.

“Avam uktastu Kaakustam|
Pratyuvaacha Vibhishanah||
Ahnaa tvaam praapayishyaami|
Taam puriim parthivaatmaja ||” 6-121-8
“Hearing the words of Rama, Vibhishana replied: "O prince! I will get you to that City in a day."

The main point which we need to consider here is, the pushpaka vimana described in Ramayana could cover a distance of Lanka to

⁷ <http://www.dailymail.co.uk/sciencetech/article-2606751/Will-soon-riding-JETPACKS-work-Breakthrough-technology-creation-highways-sky.html>

Ayodhya within a day. Aerial distance between Lanka and Ayodhya is approximately around 2110 km i.e. 1311 miles. That means pushpaka vimana in those days could cover this aerial distance of 2110 kms within a day. There is no description of vimana travelling during night in Ramayana hence we can probably guess that pushpaka vimana might have taken maximum 6 to 8 hours of time during day time to travel from Lanka to Ayodhya.

Both Rama and Lakshmana were amazed seeing this vimana. Sloka below describes the same.

“Tat pushpakam kaama gamam vimaanam|
Upastitam bhoothara sannikaasham||
Drushtvaa tadaa vismayamaajagaama|
Raamah sowmitrirudaarastvah||” 6-121-30

“The generous minded Rama along with Lakshmana felt amazed to see the aforesaid aerial car, Pushpaka, which resembled a mountain and which could travel everywhere at will, arrived on that occasion.”

The important point for us here is “kaama gamam vimaanam” i.e. this pushpaka vimana could “travel everywhere at will”. Here once again we can compare this with thought powered aircraft. After the research by Prof. Bin He’s team from University of Minnesota in the year 2013, Tim Fricke along with his team of German scientists from Technical University of Munich researched on flight simulator in the year May 2014 using which aviators could use nothing but their brains to fly the air crafts. In this project just using their thought power a team of seven pilots, some with no previous experience of flying were able to control the flight simulator. Electrical signals from their brain were being read by their helmet which had dozens of electro encephalography electrodes. They used an algorithm which would convert the brain signals into computer commands. The pilots who underwent this experiment were able to control the plane well enough to satisfy all the criteria for gaining pilot license. Tim Fricke, aerospace engineer who heads the project at Technical University of Munich said that, his long term vision is to make flying accessible to more people. (Ellie 2014)



Figure 5: Mind control has reached new heights after a group of pilots were able to successfully fly a plane using nothing but their thoughts. German scientists showed how seven pilots, some with no previous experience of flying used mind control to fly with ‘astonishing accuracy’.⁸

VI. ANALYSIS AND CONCLUSION

When we analyze the descriptions of vimanas in various kaandas of Ramayana there are four important technical aspects which can be compared with the modern aircrafts. They are:

a. Invisibility of Aircrafts

It is described that Ravana’s vimana was designed in such a way that it could appear and disappear at the wish of its master. Maharshi Bharadwaja’s Vymanika shastra also describes the concept of ‘Goodha’ and ‘Adrishya’ which can be compared with the concept of invisibility. Even our modern military aircrafts use stealth technology and camouflaging techniques to achieve the same.

b. Flight based on thought power of the pilot.

This is a very fascinating concept which was like fantasy till recent years. But there is an extensive research going on in this subject across the world. Researches done by University of Minnesota and Technical University of Munich in recent years makes us think of probable technology behind this concept in vimanas described in Ramayana.

c. Comparison between Ravana’s vimana with modern Jetpack.

Carvings of Ravana’s vimana in Ellora caves are in many ways comparable with that of modern Jetpacks. This makes us think of advancements of technology in that era. Even though we don’t know the exact technology behind Ravana’s Jetpack but definitely there is some

⁸ <http://www.dailymail.co.uk/sciencetech/article-2641530/Now-thats-autopilot-Aviators-use-MINDS-fly-plane-astonishing-accuracy.html>

similarity between technology behind Ravana's vimana and modern Jetpack.

d. Seating capacity of Pushpaka Vimana.

Another important aspect of Pushpaka vimana was its size, it could spaciouly accommodate Rama, Seetha, Lakshmana, Vibhishana, Sugreeva, Vanara chiefs and their wives, bears and demons.(Valmiki 1970) The count of which easily might be around 200 to 400. This aspect of pushpaka vimana can be compared with our Airbus 380-800 which can accommodate 853 passengers. This is definitely our modern day pushpaka vimana.

By analysis of descriptions of vimanas in Ramayana we understand the fact that advanced technology prevailed during the era of Ramayana. Even though we really don't know the exact technology behind ancient vimanas, we can definitely compare them with technology which is prevalent today. But the question which is even now unanswered is, we really don't know how the ancient technology got died out as the eras passed by.

REFERENCES

Journal Papers:

- [1]. Hemant 2015:37-44 Yadav, A.Hemant Kumar. et al "A Study and Brief Investigation on Invisibility Of Aircrafts (Vimanas)." *Int. Journal of Engineering Research and Applications* (Part 4) 5.1 (Jan 2015): 37-44. Web.
- [2]. Lafleur 2013 Lafleur, Karl, Kaitlin Cassady, Alexander Doud, Kaleb Shades, Eitan Rogin, and Bin He. "Quadcopter Control in Three-dimensional Space Using a Noninvasive Motor Imagery-based Brain-computer Interface." *J. Neural Eng. Journal of Neural Engineering* 10.4 (2013): 046003. Web.

Books:

- [3]. Josyer 1973: 3-4, 87 Josyer, G. R. *Vyamaanika-Shastra AERONAUTICS* by Maharshi Bharadwaja. Propounded by Venerable Subbaraya Shastry Mysore: Coronation, 1973. Print.
- [4]. Shaw 1985:55 Shaw, Robert L. (1985). *Fighter Combat : Tactics and Maneuvering*. Annapolis, Md.: Naval Institute Press. ISBN 0-87021-059-9.
- [5]. Valmiki 1970 Srimad Valmiki Ramayanam- Yuddhakandaha Uttarardhaha (With Kannada Translation). Narasimharaja Colony, Bangalore.: Ramayana Prakashana Samithi, 1970. Print.

News Article:

- [6]. Ellie 2014 Ellie Zolfagharifard. "Now That's Autopilot! Aviators Use Nothing but

Their BRAINS to Fly a Plane - and They Do It with 'Astonishing Accuracy'." <http://www.dailymail.co.uk/>. 28 May 2014.Web.<<http://www.dailymail.co.uk/sciencetech/article-2641530/Now-thats-autopilot-Aviators-use-MINDS-fly-plane-astonishing-accuracy.html>>. Accessed on 28 May 2016.

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