



1
00:00:11,110 --> 00:00:08,390
for the past 30 years nasa's voyager

2
00:00:13,509 --> 00:00:11,120
twins have phoned home every day sending

3
00:00:17,029 --> 00:00:13,519
snapshots and stories that shape our

4
00:00:20,230 --> 00:00:17,039
view of the solar system pictures from

5
00:00:21,510 --> 00:00:20,240
voyager bring us into contact with

6
00:00:24,230 --> 00:00:21,520
worlds and

7
00:00:25,670 --> 00:00:24,240
and visions that are

8
00:00:27,750 --> 00:00:25,680
otherwise can only exist in our

9
00:00:29,349 --> 00:00:27,760
imagination but when you you can almost

10
00:00:31,990 --> 00:00:29,359
imagine looking out the cockpit of the

11
00:00:33,670 --> 00:00:32,000
spacecraft as you fly by a moon like io

12
00:00:38,790 --> 00:00:33,680
and say wow that's something new we've

13
00:00:43,270 --> 00:00:41,190

i think the main legacy of voyager is to

14

00:00:44,389 --> 00:00:43,280

in fact have opened up our solar system

15

00:00:46,389 --> 00:00:44,399

in a way

16

00:00:48,150 --> 00:00:46,399

which was not possible for before the

17

00:00:51,350 --> 00:00:48,160

space age it revealed all of our

18

00:00:53,350 --> 00:00:51,360

neighbors in the solar system

19

00:00:55,510 --> 00:00:53,360

i did not realize how much impact it

20

00:00:57,590 --> 00:00:55,520

would have when we flew by neptune

21

00:01:00,150 --> 00:00:57,600

people were standing in line at night at

22

00:01:01,590 --> 00:01:00,160

planetariums in order to be able to see

23

00:01:02,869 --> 00:01:01,600

the images coming in from voyager

24

00:01:04,469 --> 00:01:02,879

because they weren't on the web in those

25

00:01:06,950 --> 00:01:04,479

days there was no way

26

00:01:09,030 --> 00:01:06,960

looks like circle verger was an

27

00:01:11,910 --> 00:01:09,040

attention grabber that influenced two

28

00:01:13,910 --> 00:01:11,920

generations of popular culture the first

29

00:01:16,070 --> 00:01:13,920

thing that comes up is that star trek

30

00:01:18,230 --> 00:01:16,080

movie with a bald lady wandering around

31

00:01:21,109 --> 00:01:18,240

going vegeta

32

00:01:23,190 --> 00:01:21,119

when voyager launched in 1977 mars

33

00:01:25,830 --> 00:01:23,200

reconnaissance orbiter systems engineer

34

00:01:27,990 --> 00:01:25,840

tracy drain was just two years old the

35

00:01:29,910 --> 00:01:28,000

pictures that came back from voyager the

36

00:01:31,190 --> 00:01:29,920

pictures of saturn and jupiter and

37

00:01:32,630 --> 00:01:31,200

uranus

38

00:01:34,630 --> 00:01:32,640

that's the way i got to know the planets

39

00:01:36,310 --> 00:01:34,640

when i was a kid you know those were the

40

00:01:38,789 --> 00:01:36,320

photos that were there for me you know

41

00:01:40,469 --> 00:01:38,799

the instant i could even look around to

42

00:01:42,230 --> 00:01:40,479

see what space is all about

43

00:01:44,550 --> 00:01:42,240

the first thing i really remember

44

00:01:45,990 --> 00:01:44,560

uh was watching carl sagan's cosmos

45

00:01:48,069 --> 00:01:46,000

television series when i was a kid on

46

00:01:50,789 --> 00:01:48,079

our little black and white tv

47

00:01:52,310 --> 00:01:50,799

a few years ago i was training to

48

00:01:55,030 --> 00:01:52,320

operate deep space network radio

49

00:01:58,310 --> 00:01:55,040

telescopes and got to set up a

50

00:01:59,990 --> 00:01:58,320

communication pass for voyager

51
00:02:01,990 --> 00:02:00,000
i got to grow up and become a part of

52
00:02:03,590 --> 00:02:02,000
the mission that had inspired me to go

53
00:02:04,550 --> 00:02:03,600
into space exploration in the first

54
00:02:08,389 --> 00:02:04,560
place

55
00:02:11,910 --> 00:02:08,399
in 1990 engineers commanded voyager 1 to

56
00:02:14,150 --> 00:02:11,920
turn around and take a picture of home

57
00:02:15,270 --> 00:02:14,160
and we see the picture that voyager took

58
00:02:16,869 --> 00:02:15,280
from the edge of the solar system

59
00:02:19,510 --> 00:02:16,879
looking back at earth when earth is just

60
00:02:21,270 --> 00:02:19,520
a pale blue dot as carl sagan called it

61
00:02:22,630 --> 00:02:21,280
if that doesn't give you perspective on

62
00:02:24,869 --> 00:02:22,640
us and what goes on in our world i don't

63
00:02:27,589 --> 00:02:24,879

think anything will voyager 1 is now

64

00:02:30,550 --> 00:02:27,599

more than 9 billion miles from the sun

65

00:02:32,869 --> 00:02:30,560

the most distant spacecraft ever voyager

66

00:02:35,110 --> 00:02:32,879

2 is not far behind

67

00:02:37,110 --> 00:02:35,120

both are on the outer edge of the region

68

00:02:39,430 --> 00:02:37,120

influenced by our sun

69

00:02:42,390 --> 00:02:39,440

one day they will take the first steps

70

00:02:44,229 --> 00:02:42,400

into interstellar space

71

00:02:46,630 --> 00:02:44,239

the most important thing vorage has done

72

00:02:48,790 --> 00:02:46,640

is show how much there is the new

73

00:02:50,470 --> 00:02:48,800

frontiers of space how large that

74

00:02:53,030 --> 00:02:50,480

frontier is and how much there is to be

75

00:02:54,309 --> 00:02:53,040

done so that the the students who who

76

00:02:56,470 --> 00:02:54,319

come along

77

00:02:58,229 --> 00:02:56,480

and become scientists will still have

78

00:02:59,670 --> 00:02:58,239

many things to learn many things to

79

00:03:02,309 --> 00:02:59,680

discover

80

00:03:04,949 --> 00:03:02,319

each spacecraft carries a record

81

00:03:10,550 --> 00:03:04,959

with greetings from earth hello from the