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**Jim Bridenstine**

Administrator, NASA

1  
00:00:04,003 --> 00:00:04,938  
MORNING. I'M CHRIS MOONEY.

2  
00:00:05,004 --> 00:00:07,574  
I'M A CLIMATE ENERGY ENERGY AND

3  
00:00:07,640 --> 00:00:08,408  
ENVIRONMENTAL REPORTER AT THE

4  
00:00:08,475 --> 00:00:10,310  
POST AND I'M EXCITED TO KICK OFF

5  
00:00:10,377 --> 00:00:11,745  
TODAY'S PANEL.

6  
00:00:11,811 --> 00:00:15,515  
WE HAVE DR. HEIDI HAMMEL

7  
00:00:15,582 --> 00:00:16,983  
PLANETARY SCIENTIST AND

8  
00:00:17,050 --> 00:00:18,518  
EXECUTIVE VICE PRESIDENT OF THE

9  
00:00:18,585 --> 00:00:22,455  
RESEARCH AND ASTRONOMY AND BILL

10  
00:00:22,522 --> 00:00:24,557  
NYE CEO OF THE PLANETARY SOCIETY

11  
00:00:24,624 --> 00:00:27,761  
AND DELIVERED THE "WASHINGTON

12  
00:00:27,827 --> 00:00:28,528  
POST" HE INFORMS ME.

13  
00:00:28,595 --> 00:00:29,662

FROM THERE TO THE STARS.

14

00:00:29,729 --> 00:00:34,801

>> IT WAS SOME TIME AGO.

15

00:00:34,868 --> 00:00:39,239

AND LAST BUT NOT LEAST JIM

16

00:00:39,305 --> 00:00:42,041

BRIDENSTEIN.

17

00:00:42,108 --> 00:00:46,980

I WANT TO LET THE AUDIENCE KNOW

18

00:00:47,046 --> 00:00:50,450

YOU CAN TWEET US AT

19

00:00:50,517 --> 00:00:50,884

#TRANSFORMERS.

20

00:00:50,950 --> 00:00:52,886

THEY'LL TRAVEL THROUGH SPACE AND

21

00:00:52,952 --> 00:00:56,356

I'LL RECEIVE THEM ON THIS IPAD.

22

00:00:56,423 --> 00:00:58,291

I'LL WORK THEM THROUGH THE

23

00:00:58,358 --> 00:00:58,691

DISCUSSION.

24

00:00:58,758 --> 00:00:59,959

INTERRUPT EACH OTHER.

25

00:01:00,026 --> 00:01:01,961

LET HAVE A CONVERSATION.

26  
00:01:02,028 --> 00:01:04,631  
I'D LIKE TO ASK YOU A QUESTION

27  
00:01:04,697 --> 00:01:04,964  
FIRST.

28  
00:01:05,031 --> 00:01:06,533  
UNITED STATES WAS INTENSELY

29  
00:01:06,599 --> 00:01:08,268  
FOCUSED ON SPACE IN THE '60S

30  
00:01:08,334 --> 00:01:12,939  
DURING THE APOLLO ERA.

31  
00:01:13,006 --> 00:01:13,706  
IT WAS SOMETHING THAT PRESENTED

32  
00:01:13,773 --> 00:01:16,009  
THIS AOUPB TERRI SHARED VISION.

33  
00:01:16,075 --> 00:01:17,343  
WHAT DO YOU THINK IT WOULD TAKE

34  
00:01:17,410 --> 00:01:19,245  
FOR US TO ESoot GOLDEN AGE IN

35  
00:01:19,312 --> 00:01:19,679  
SPACE.

36  
00:01:19,746 --> 00:01:25,919  
WHAT WOULD IT LOOK LIKE?

37  
00:01:25,985 --> 00:01:27,487  
HOW WOULD HE KNOW IF WE'RE IN

38  
00:01:27,554 --> 00:01:27,754

IT?

39

00:01:27,821 --> 00:01:28,988

>> THAT'S WONDERFUL QUESTION.

40

00:01:29,055 --> 00:01:30,323

SOMETHING THIS ADMINISTRATION IS

41

00:01:30,390 --> 00:01:32,559

VERY INTERESTED IN AND AT NASA.

42

00:01:32,625 --> 00:01:34,994

THE PRESIDENT RECREATED THE

43

00:01:35,061 --> 00:01:36,563

NATIONAL SPACE COUNCIL FOR THE

44

00:01:36,629 --> 00:01:38,665

FIRST TIME IN 25 YEARS WHEN HE

45

00:01:38,731 --> 00:01:40,533

BECAME PRESIDENT AND HE PUT THE

46

00:01:40,600 --> 00:01:41,568

VICE PRESIDENT AS CHAIRMAN OF

47

00:01:41,634 --> 00:01:42,969

THE NATIONAL SPACE COUNCIL.

48

00:01:43,036 --> 00:01:45,438

IN FACT WHEN I LEAVE HERE I'M

49

00:01:45,505 --> 00:01:47,173

GOING TO A NATIONAL SPACE

50

00:01:47,240 --> 00:01:48,041

COUNCIL MEETING.

51  
00:01:48,107 --> 00:01:49,609  
THIS ADMINISTRATION IS VERY

52  
00:01:49,676 --> 00:01:51,244  
FOCUSED ON SPACE ON A WHOLE LOT

53  
00:01:51,311 --> 00:01:53,513  
OF LEVELS.

54  
00:01:53,580 --> 00:01:55,815  
BUT CERTAINLY ONE OF THE VERY

55  
00:01:55,882 --> 00:01:57,717  
FIRST SPACE POLICY DIRECTIVE

56  
00:01:57,784 --> 00:01:58,785  
THAT CAME WAS WE'RE GOING TO GO

57  
00:01:58,852 --> 00:02:00,186  
TO THE MOON.

58  
00:02:00,253 --> 00:02:01,955  
WHAT HE DID IS HE WANTS TO DO IT

59  
00:02:02,021 --> 00:02:03,122  
VERY DIFFERENTLY THAN WE'VE EVER

60  
00:02:03,189 --> 00:02:04,324  
DONE IT BEFORE.

61  
00:02:04,390 --> 00:02:06,893  
THIS IS NOT A RECREATION OF THE

62  
00:02:06,960 --> 00:02:08,695  
APOLLO ERA WE ALL THINK SO

63  
00:02:08,761 --> 00:02:10,263

FONDLY OF.

64

00:02:10,330 --> 00:02:13,867

THIS IS IN ESSENCE A CREATING A

65

00:02:13,933 --> 00:02:15,101

SUSTAINABLE ARCHITECTURE BETWEEN

66

00:02:15,168 --> 00:02:16,402

THE EARTH AND MOON WHERE WE CAN

67

00:02:16,469 --> 00:02:18,671

GO BACK AND FORTH OVER AND OVER

68

00:02:18,738 --> 00:02:20,240

AGAIN OVER A LONG PERIOD OF TIME

69

00:02:20,306 --> 00:02:23,376

WITH LANDERS AND ROBOTS AND

70

00:02:23,443 --> 00:02:27,647

HUMANS AND DO IT WITH COMMERCIAL

71

00:02:27,714 --> 00:02:28,948

PARTNERS AND INTERNATIONAL

72

00:02:29,015 --> 00:02:29,482

PARTNERS.

73

00:02:29,549 --> 00:02:30,817

UTILIZING THE RESOURCES OF THE

74

00:02:30,884 --> 00:02:32,652

MOON TO KEEP THE SUSTAINABLE

75

00:02:32,719 --> 00:02:33,386

ARCHITECTURE IN PLACE.

76

00:02:33,453 --> 00:02:34,988

>> LET ME FOLLOW-UP ON THAT.

77

00:02:35,054 --> 00:02:36,956

ONE THING THAT I LEARNED FROM

78

00:02:37,023 --> 00:02:38,525

NASA ACTUALLY DOING MY RESEARCH

79

00:02:38,591 --> 00:02:41,861

IS THAT ITS BUDGET DURING THE

80

00:02:41,928 --> 00:02:44,931

APOLLO ERA PEAK THE AT 5% OF THE

81

00:02:44,998 --> 00:02:46,833

ENTIRE FEDERAL BUDGET.

82

00:02:46,900 --> 00:02:48,268

THE ADMINISTRATION WANTS TO GET

83

00:02:48,334 --> 00:02:50,904

TO THE MOON AND BEYOND, BUT HOW

84

00:02:50,970 --> 00:02:53,540

DO YOU DO IT AND AFFORD THE

85

00:02:53,606 --> 00:02:56,943

MISSIONS WITH SO MUCH LESS MONEY

86

00:02:57,010 --> 00:02:58,077

PROPORTION NATALEE.

87

00:02:58,144 --> 00:03:00,380

.IGHT NOW IT'S

88

00:03:00,446 --> 00:03:02,515

RIGHT NOW IT'S ABOUT .4%.

89

00:03:02,582 --> 00:03:05,251  
LESS THAN A 10TH OF WHAT IT WAS.

90

00:03:05,318 --> 00:03:07,453  
>> FIRST THING THE PRESIDENT

91

00:03:07,520 --> 00:03:09,522  
DID, HE PUT OUT HIS BUDGET

92

00:03:09,589 --> 00:03:11,157  
REQUEST ASK THE TOOK THE BUDGET

93

00:03:11,224 --> 00:03:13,059  
UP BY \$1 BILLION.

94

00:03:13,126 --> 00:03:15,361  
WHEN YOU HAVE A \$19 BILLION

95

00:03:15,428 --> 00:03:16,930  
BUDGET AND YOU GO UP A BILLION

96

00:03:16,996 --> 00:03:18,398  
DOLLARS THAT'S A SIGNIFICANT

97

00:03:18,464 --> 00:03:18,765  
INCREASE.

98

00:03:18,831 --> 00:03:21,834  
EVEN BEFORE I GOT CONFIRMED, WE

99

00:03:21,901 --> 00:03:27,740  
HAD AN OMNIBUS APPROPRIATION

100

00:03:27,807 --> 00:03:30,376  
BUDGET IN THE HOUSE THAT

101  
00:03:30,443 --> 00:03:30,777  
INCREASED.

102  
00:03:30,843 --> 00:03:32,045  
WE'RE SEEING BIPARTISAN SUPPORT

103  
00:03:32,111 --> 00:03:33,479  
FOR A BUDGET INCREASE.

104  
00:03:33,546 --> 00:03:34,347  
I THINK IT'S IMPORTANT TO

105  
00:03:34,414 --> 00:03:36,482  
RECOGNIZE THAT WHEN YOU TALK

106  
00:03:36,549 --> 00:03:39,953  
ABOUT THE BUDGET AS A NASA'S

107  
00:03:40,019 --> 00:03:41,955  
BUDGET AS A PERCENTAGE OF THE

108  
00:03:42,021 --> 00:03:43,122  
FEDERAL BUDGET WE HAVE TO

109  
00:03:43,189 --> 00:03:45,124  
REMEMBER THAT A LOT OF THE

110  
00:03:45,191 --> 00:03:48,027  
FEDERAL BUDGET HAS GROWN

111  
00:03:48,094 --> 00:03:49,629  
SIGNIFICANTLY AND SO, WHILE IT

112  
00:03:49,696 --> 00:03:51,864  
MAY BE A SMALLER PERCENTAGE IT'S

113  
00:03:51,931 --> 00:03:53,633

NOT NECESSARILY BECAUSE NASA IS

114

00:03:53,700 --> 00:03:54,601

STRONG BUT BECAUSE THE REST OF

115

00:03:54,667 --> 00:03:55,702

THE GOVERNMENT GREW.

116

00:03:55,768 --> 00:03:56,636

IF THAT MAKES SENSE.

117

00:03:56,703 --> 00:03:59,639

>> CAN I TALK ABOUT THE GOLDEN

118

00:03:59,706 --> 00:04:01,341

ERA AND WHAT THAT MEANT AS A

119

00:04:01,407 --> 00:04:02,809

SCIENTIST, A SPACE SCIENTIST?

120

00:04:02,875 --> 00:04:04,611

THAT ERA -- I WAS JUST A KID

121

00:04:04,677 --> 00:04:06,279

WHEN WE LANDED ON THE MOON AND I

122

00:04:06,346 --> 00:04:08,047

WAS ONE OF THOSE KIDS WATCHING

123

00:04:08,114 --> 00:04:09,916

THAT BLACK AND WHITE THING AND

124

00:04:09,983 --> 00:04:13,019

NOT UNDERSTANDING WHAT WAS

125

00:04:13,086 --> 00:04:13,386

HAPPENING.

126

00:04:13,453 --> 00:04:14,887

I WENT ON TO BE PART OF THE

127

00:04:14,954 --> 00:04:17,991

SPACE PROGRAM TO WORK ON THE

128

00:04:18,057 --> 00:04:24,097

VOYAGEER MISSION TO FLY BY

129

00:04:24,163 --> 00:04:25,365

URNANUS AND NEPTUNE.

130

00:04:25,431 --> 00:04:30,503

IT HAS BEEN A GOLDEN ERA OF

131

00:04:30,570 --> 00:04:31,504

PLANETARY EXPLORATION.

132

00:04:31,571 --> 00:04:34,073

WE HAVE REVEALED OUR SOLAR

133

00:04:34,140 --> 00:04:36,309

SYSTEM TO NOT BE POINTS OF LIGHT

134

00:04:36,376 --> 00:04:37,877

BUT WORLDS.

135

00:04:37,944 --> 00:04:40,079

WE'RE NOT THE BRINK OF A NEW

136

00:04:40,146 --> 00:04:40,446

ERA.

137

00:04:40,513 --> 00:04:44,884

WE NOW KNOW BECAUSE OF THE

138

00:04:47,387 --> 00:04:46,019

## TELESCOPES

139

00:04:47,453 --> 00:04:48,888

STAR YOU SEE IN THE SKY HAS A

140

00:04:48,955 --> 00:04:50,023

PLANETARY SYSTEM AROUND IT.

141

00:04:50,089 --> 00:04:52,458

WE HAVE GONE FROM JUST A FEW

142

00:04:52,525 --> 00:04:54,627

PLANETS TO THOUSANDS OF PLANETS.

143

00:04:54,694 --> 00:04:57,130

THIS IS AN AMAZING MOMENT IN

144

00:04:57,196 --> 00:05:00,099

SCIENCE TO BE ON THE EDGE OF

145

00:05:00,166 --> 00:05:01,968

EXPLORING ALL THESE WORLDS.

146

00:05:02,035 --> 00:05:03,636

>> ISN'T IT DIFFERENT -- BILL,

147

00:05:03,703 --> 00:05:05,605

YOU GREW UP IN THE APOLLO AREA

148

00:05:05,672 --> 00:05:07,273

AND YOU'RE A COMMUNICATEER.

149

00:05:07,340 --> 00:05:09,208

SO IT SEEMS TO ME -- I WANT TO

150

00:05:09,275 --> 00:05:11,878

BOUNCE THIS OFF OF YOU.

151  
00:05:11,944 --> 00:05:13,846  
HAVEN'T WE BECOME KIND OF SPACE

152  
00:05:13,913 --> 00:05:14,247  
DISTRACTED?

153  
00:05:14,313 --> 00:05:16,683  
THERE WAS ONE STORY, IT WAS

154  
00:05:16,749 --> 00:05:18,685  
GETTING TO THE MOON.

155  
00:05:18,751 --> 00:05:20,319  
THERE WAS ONE SHOW --

156  
00:05:20,386 --> 00:05:21,454  
>> KEEP IN MIND EVERYBODY -- WE

157  
00:05:21,521 --> 00:05:25,324  
WENT TO THE MOON ON ACCOUNT ON

158  
00:05:25,391 --> 00:05:25,858  
THE COLD WAR.

159  
00:05:25,925 --> 00:05:27,326  
IT WAS THE COLD WAR EFFORT AND

160  
00:05:27,393 --> 00:05:28,795  
YOU COULD ARGUE THAT IT WAS

161  
00:05:28,861 --> 00:05:29,195  
SUCCESSFUL.

162  
00:05:29,262 --> 00:05:31,030  
BUT THEN THE AMAZING SCIENCE

163  
00:05:31,097 --> 00:05:34,500

THAT SPUN OFF OF THAT HAS LEAD

164

00:05:34,567 --> 00:05:36,402

TO THE INTERNET AND MOBILE

165

00:05:36,469 --> 00:05:37,670

PHONES AND GLOBAL POSITIONING

166

00:05:37,737 --> 00:05:40,206

AND ALL THESE OTHER THINGS.

167

00:05:40,273 --> 00:05:42,508

BECAUSE SPACE EXPLORATION HAS

168

00:05:42,575 --> 00:05:44,711

BECOME ROUTINE OR IN SOME

169

00:05:44,777 --> 00:05:45,111

ASPECTS.

170

00:05:45,178 --> 00:05:46,646

THAT'S NOTHING BUT GREAT.

171

00:05:46,713 --> 00:05:50,616

AND TO HEIDI'S COMMENT WHEN I

172

00:05:50,683 --> 00:05:52,318

SAW EVERYBODY, WHAT HAPPENED

173

00:05:52,385 --> 00:05:55,488

WAS, I TOOK ONE CLASS FROM CARL

174

00:05:55,555 --> 00:05:56,889

SAGAN WHEN I WAS IN ENGINEERING

175

00:05:56,956 --> 00:06:00,126

SCHOOL AND NOW I'M THE CEO.

176  
00:06:00,193 --> 00:06:01,627  
I LEFT THE ROOM AND THERE WAS A

177  
00:06:01,694 --> 00:06:06,766  
VOTE AND NOW I'M.

178  
00:06:06,833 --> 00:06:07,033  
CEO.

179  
00:06:07,100 --> 00:06:11,304  
THERE WERE ESTIMATED MAYBE A

180  
00:06:11,370 --> 00:06:12,505  
PLANET EVERYONE HUNDRED STAR.

181  
00:06:12,572 --> 00:06:15,041  
NOW WE KNOW THERE IS 10 PLANET

182  
00:06:15,108 --> 00:06:15,875  
AROUND EVERY STAR.

183  
00:06:15,942 --> 00:06:17,276  
THIS GETS INTO THE EXPRESSION OF

184  
00:06:17,343 --> 00:06:18,111  
BILLIONS AND BILLIONS.

185  
00:06:18,177 --> 00:06:20,413  
IT IS AMAZING HOW MANY PLANETS

186  
00:06:20,480 --> 00:06:21,814  
THERE MUST BE OUT THERE AND SO

187  
00:06:21,881 --> 00:06:24,250  
AS I ALWAYS SAY, THERE'S TWO

188  
00:06:24,317 --> 00:06:26,619

QUESTIONS WE ALWAYS ASK.

189

00:06:26,686 --> 00:06:29,021

IF YOU MEET SOMEBODY WHO HASN'T

190

00:06:29,088 --> 00:06:29,756

ASKED THESE QUESTIONS THEY'RE

191

00:06:29,822 --> 00:06:31,157

LYING TO YOU.

192

00:06:31,224 --> 00:06:32,325

WHERE DID WE COME FROM AND ARE

193

00:06:32,391 --> 00:06:34,160

WE ALONE IN THE UNIVERSE?

194

00:06:34,227 --> 00:06:36,429

AND THESE ARE JUST DEEP

195

00:06:36,496 --> 00:06:37,096

FUNDAMENTAL QUESTIONS.

196

00:06:37,163 --> 00:06:38,030

AND THEY'RE WITHIN US AND IF YOU

197

00:06:38,097 --> 00:06:39,098

WANT TO KNOW THE ANSWERS YOU

198

00:06:39,165 --> 00:06:41,267

HAVE TO EXPLORE SPACE.

199

00:06:41,334 --> 00:06:44,337

EVERYBODY -- TO HEIDI'S POINT,

200

00:06:44,403 --> 00:06:47,073

IT IS VERY REASONABLE THAT WE

201  
00:06:47,140 --> 00:06:49,642  
WILL FIND EVIDENCE OF LIFE ON

202  
00:06:49,709 --> 00:06:50,943  
ANOTHER WORLD WHILE WE'RE ALL

203  
00:06:51,010 --> 00:06:52,879  
STILL ALIVE.

204  
00:06:52,945 --> 00:06:54,714  
WHICH WOULD BE ASTONISHING.

205  
00:06:54,781 --> 00:06:57,984  
IT WOULD TELL YOU -- FIRST OF

206  
00:06:58,050 --> 00:06:59,252  
ALL, WHAT IF THERE IS NO

207  
00:06:59,318 --> 00:07:00,586  
EVIDENCE AT ALL OF LIFE.

208  
00:07:00,653 --> 00:07:02,255  
THAT WOULD MEAN, WOW, WE'RE

209  
00:07:02,321 --> 00:07:05,158  
UNIQUE IN A WAY THAT'S LITERALLY

210  
00:07:05,224 --> 00:07:05,725  
HARD TO IMAGINE.

211  
00:07:05,792 --> 00:07:07,960  
BUT THE OTHER THING, IT'S VERY

212  
00:07:08,027 --> 00:07:09,629  
REASONABLE WE'LL FIND LIFE.

213  
00:07:09,695 --> 00:07:11,230

JUST THINK WHAT IT WOULD MEAN.

214

00:07:11,297 --> 00:07:14,667

IT WOULD BE LIKE GALILEO.

215

00:07:14,734 --> 00:07:17,170

IT WOULD FUNDAMENTAL AND THE WAY

216

00:07:17,236 --> 00:07:18,504

EVERYBODY FEELS ABOUT BEING A

217

00:07:18,571 --> 00:07:19,172

LIVING THING.

218

00:07:19,238 --> 00:07:20,506

>> TO BILL'S POINT BECAUSE I

219

00:07:20,573 --> 00:07:21,174

THINK HE'S RIGHT.

220

00:07:21,240 --> 00:07:23,109

JUST IN THE 6 MONTHS I'VE BEEN

221

00:07:23,176 --> 00:07:25,745

THE NASA ADMINISTRATOR WE NOW

222

00:07:25,812 --> 00:07:28,981

KNOW THAT METHANE CYCLES ON MARS

223

00:07:29,048 --> 00:07:31,184

ARE PERFECTLY IN ORDER WITH THE

224

00:07:31,250 --> 00:07:33,419

SEASONS OF MARS.

225

00:07:33,486 --> 00:07:35,655

WE ALSO KNOW THAT THERE ARE

226

00:07:35,721 --> 00:07:37,423

COMPLEX ORGANIC COMPLEX ON THE

227

00:07:37,490 --> 00:07:38,658

SURFACE OF MARS.

228

00:07:38,724 --> 00:07:39,892

THIS IS JUST WITHIN THE LAST 6

229

00:07:39,959 --> 00:07:40,226

MONTHS.

230

00:07:40,293 --> 00:07:41,627

THAT DOESN'T GUARANTEE LIFE.

231

00:07:41,694 --> 00:07:44,063

BUT IT INCREASES THE PROBABILITY

232

00:07:44,130 --> 00:07:44,997

THAT THERE IS LIFE.

233

00:07:45,064 --> 00:07:47,266

AND IT'S UP TO US TO FIND IT.

234

00:07:47,333 --> 00:07:49,602

ALSO SINCE I'VE BEEN THE NASA

235

00:07:49,669 --> 00:07:50,636

ADMINISTRATOR WE KNOW THAT UNDER

236

00:07:50,703 --> 00:08:00,179

THE SURFACE OF MARS ABOUT 1.5

237

00:08:00,246 --> 00:08:01,747

KILOMETERS WE FOUND LIQUID

238

00:08:01,814 --> 00:08:02,048

WATER.

239

00:08:02,114 --> 00:08:04,250

>> EVERYWHERE THERE IS WATER OR

240

00:08:04,317 --> 00:08:05,952

DAMPNESS THERE IS SOMETHING

241

00:08:06,018 --> 00:08:06,519

ALIVE.

242

00:08:06,586 --> 00:08:10,456

JUST THINK IF THERE'S MARTIAN

243

00:08:10,523 --> 00:08:11,991

MICROBES IT WOULD BE IS ASTON

244

00:08:12,058 --> 00:08:13,893

INNERING.

245

00:08:13,960 --> 00:08:14,994

WE DO THAT --

246

00:08:15,061 --> 00:08:16,929

>> THAT'S NOT THE ONLY PLACE.

247

00:08:16,996 --> 00:08:20,266

>> LET'S TALK ABOUT EUROPA, FOR

248

00:08:20,333 --> 00:08:26,839

EXAMPLE JUPITER'S MOON.

249

00:08:29,675 --> 00:08:27,206

I

250

00:08:29,742 --> 00:08:30,009

OCEAN.

251  
00:08:30,076 --> 00:08:31,911  
ONE WAY WE'VE BEEN ABLE TO TRACK

252  
00:08:31,978 --> 00:08:33,913  
THE PLUMES OF WATER WE THINK

253  
00:08:33,980 --> 00:08:38,117  
EXIST ON EUROPA IS USING THE

254  
00:08:38,184 --> 00:08:39,518  
HUBBLE SPACE TELESCOPE.

255  
00:08:39,585 --> 00:08:43,389  
ONE REASON IT'S BEEN THE MOST

256  
00:08:43,456 --> 00:08:44,991  
REVOLUTIONARY TOOL FOR 28 YEARS

257  
00:08:45,057 --> 00:08:48,895  
IS BECAUSE IT WAS SURFACED BIAS

258  
00:08:48,961 --> 00:08:49,662  
THROW ASTRONAUTS.

259  
00:08:49,729 --> 00:08:52,098  
THEY WENT UP THERE AND THEY TOOK

260  
00:08:52,164 --> 00:08:53,766  
OUT OLD INSTRUMENTS AND PUT IN

261  
00:08:53,833 --> 00:09:00,172  
NEW ONES AND TOOK OUT OLD

262  
00:09:00,239 --> 00:09:01,107  
GYROSCOPES AND PUT IN NEW ONES

263  
00:09:01,173 --> 00:09:02,108

WHICH ARE OPENING AGAIN AND WE

264

00:09:02,174 --> 00:09:04,277

HOPE TO BE BACK ON SKY WITH

265

00:09:04,343 --> 00:09:08,114

HUBBLE VERY SOON.

266

00:09:08,180 --> 00:09:10,249

ASTRONAUTS, THE HUMAN

267

00:09:10,316 --> 00:09:11,350

SPACEFLIGHT WORKS HAND IN GLOVE

268

00:09:11,417 --> 00:09:12,785

WITH THE SCIENCE SIDE.

269

00:09:12,852 --> 00:09:14,487

WE NEED THEM BOTH.

270

00:09:14,553 --> 00:09:16,122

>> THAT BRINGS UP SOMETHING THAT

271

00:09:16,188 --> 00:09:18,891

I WANT TO ASK ABOUT WHICH IS THE

272

00:09:18,958 --> 00:09:19,592

INTERNATIONAL SPACE STATION.

273

00:09:19,659 --> 00:09:22,328

YOU HAILED THIS NEW ERA OF

274

00:09:22,395 --> 00:09:23,763

SPACEFLIGHT AND THIS INVOLVES

275

00:09:23,829 --> 00:09:26,365

SHUTTILING ON BOARD

276

00:09:26,432 --> 00:09:27,166

COMMERCIALY-DESIGNED CRAFT TO

277

00:09:27,233 --> 00:09:29,201

THE STATION BUT PHASING OUT

278

00:09:29,268 --> 00:09:30,636

FUNDING FOR THIS RESEARCH HUB

279

00:09:30,703 --> 00:09:33,706

AND HAVING THE COMMERCIAL SECTER

280

00:09:33,773 --> 00:09:34,373

EVENTUALLY TAKE OVER.

281

00:09:34,440 --> 00:09:36,275

SO MY QUESTION IS, WHAT HAPPENS

282

00:09:36,342 --> 00:09:38,477

IF MARKETS DON'T EVOLVE IN THE

283

00:09:38,544 --> 00:09:40,313

WAY THAT WE THINK OR HOPE AND

284

00:09:40,379 --> 00:09:42,515

COMMERCIAL ENTITIES DON'T FIND

285

00:09:42,581 --> 00:09:44,450

IT WORTH WHILE TO DO THE KINDS

286

00:09:44,517 --> 00:09:45,785

OF THINGS THAT ARE HAPPENING

287

00:09:45,851 --> 00:09:46,285

THERE NOW?

288

00:09:46,352 --> 00:09:48,454

>> THAT'S A WONDERFUL QUESTION.

289

00:09:48,521 --> 00:09:50,823

IT'S AN IMPORTANT QUESTION THAT

290

00:09:50,890 --> 00:09:53,059

WE'RE GOING TO STRUGGLE WITH

291

00:09:53,125 --> 00:09:54,093

UNTIL WE GET THE SOLUTION.

292

00:09:54,160 --> 00:09:56,062

THE ANSWER IS THIS: WE WANT TO

293

00:09:56,128 --> 00:09:58,998

MAKE SURE WE HAVE ZERO GAP IN

294

00:09:59,065 --> 00:10:00,333

HUMAN PRESENCE IN LOWER EARTH

295

00:10:00,399 --> 00:10:02,034

ORBIT AND BEYOND.

296

00:10:02,101 --> 00:10:04,370

WE HAVE HAD HUMANS LIVING AND

297

00:10:04,437 --> 00:10:07,273

WORKING IN SPACE FOR 18 YEARS

298

00:10:07,340 --> 00:10:07,640

STRAIGHT.

299

00:10:07,707 --> 00:10:09,542

AND WE WANT TO MAKE SURE THAT

300

00:10:09,608 --> 00:10:10,042

NEVER STOPS.

301  
00:10:10,109 --> 00:10:11,844  
IN ORDER TO DO THAT WE NEED TO

302  
00:10:11,911 --> 00:10:14,146  
SEE A VERY ROBUST COMMERCIAL

303  
00:10:14,213 --> 00:10:15,414  
MARKETPLACE DEVELOP IN LOWER

304  
00:10:15,481 --> 00:10:16,649  
EARTH ORBIT.

305  
00:10:16,716 --> 00:10:19,318  
WE BELIEVE THAT THAT'S

306  
00:10:19,385 --> 00:10:20,119  
IMMINENTLY POSSIBLE.

307  
00:10:20,186 --> 00:10:22,655  
AND WHAT THE PRESIDENT'S BUDGET

308  
00:10:22,722 --> 00:10:24,156  
REQUEST DID, IT SAID HEY, LOOK,

309  
00:10:24,223 --> 00:10:26,459  
WE NEED TO START NOW, SERIOUSLY

310  
00:10:26,525 --> 00:10:28,094  
CONSIDERING HOW DO WE GET TO A

311  
00:10:28,160 --> 00:10:29,395  
DAY WHERE COMMERCIALIZATION

312  
00:10:29,462 --> 00:10:30,429  
HAPPENS IN LOWER EARTH ORBIT.

313  
00:10:30,496 --> 00:10:32,698

IF YOU GO BACK IN TIME TO THE

314

00:10:32,765 --> 00:10:34,667

COLD WAR, WE CAME TO THE END OF

315

00:10:34,734 --> 00:10:37,436

THE APOLLO PROGRAM RIGHT INTO

316

00:10:37,503 --> 00:10:39,505

APOLLO SOYUZ WHICH WAS AN

317

00:10:39,572 --> 00:10:40,239

INTERNATIONAL COOPERATION

318

00:10:40,306 --> 00:10:42,174

BETWEEN THE UNITED STATES AND

319

00:10:42,241 --> 00:10:44,210

THE SOVIET UNION AT THE TIME.

320

00:10:44,276 --> 00:10:45,811

THAT DEMONSTRATED THE SUCCESS OF

321

00:10:45,878 --> 00:10:47,446

THE APOLLO PROGRAM, THE FACT

322

00:10:47,513 --> 00:10:49,281

THAT THESE TWO SUPER POWERS HAVE

323

00:10:49,348 --> 00:10:50,416

DECIDED WE'RE GOING TO

324

00:10:50,483 --> 00:10:53,119

COLLABORATE AND WORK TOGETHER ON

325

00:10:53,185 --> 00:10:53,419

SPACE.

326

00:10:53,486 --> 00:10:58,457

THAT WENT FORWARD WITH THE

327

00:10:58,524 --> 00:10:59,625

MIRROR PROGRAM AND THE SHUTTLE

328

00:10:59,692 --> 00:11:01,460

PROGRAM AND THE INTERNATIONAL

329

00:11:01,527 --> 00:11:03,796

SPACE STATION.

330

00:11:03,863 --> 00:11:06,866

>> IT'S IN NASA CHARTER.

331

00:11:06,932 --> 00:11:08,868

WHEN INTERNATIONAL PARTNERS

332

00:11:08,934 --> 00:11:10,669

COLLABORATE IN SPACE, THE

333

00:11:10,736 --> 00:11:11,537

OVERALL COST OF WHATEVER YOU'RE

334

00:11:11,604 --> 00:11:15,174

GOING TO DO MIGHT GO UP,

335

00:11:15,241 --> 00:11:17,410

EXPLORING EUROPA, FOR EXAMPLE.

336

00:11:17,476 --> 00:11:19,278

BUT THE COST PER AGENCY GOES WAY

337

00:11:19,345 --> 00:11:21,914

DOWN SIGNIFICANTLY DOWN.

338

00:11:21,981 --> 00:11:24,116

AND WHATEVER ELSE THE SPACE

339

00:11:24,183 --> 00:11:27,453

STATION HAS DONE, IT HAS BEEN

340

00:11:27,520 --> 00:11:29,488

FANTASTIC FOR DIPLOMACY.

341

00:11:29,555 --> 00:11:31,390

>> DO YOU AGREE DOES THE

342

00:11:31,457 --> 00:11:34,827

PLANETARY SOCIETY AGREE THAT A

343

00:11:34,894 --> 00:11:35,494

COMMERCIALIZATION STATE IS

344

00:11:35,561 --> 00:11:38,664

INEVITABLE IN THE LONG RUN?

345

00:11:38,731 --> 00:11:38,931

NO?

346

00:11:38,998 --> 00:11:43,936

>> SOME DISCLOSURE.

347

00:11:44,003 --> 00:11:48,841

I APPLIED TO BE AN ASTRONAUT 4

348

00:11:48,908 --> 00:11:49,875

TIMES.

349

00:11:49,942 --> 00:11:51,644

BUT IT IS NOT CLEAR -- LET'S GO

350

00:11:51,710 --> 00:11:52,711

WITH THAT --

351  
00:11:52,778 --> 00:11:54,980  
>> HAD I BEEN THE ADMINISTRATOR

352  
00:11:55,047 --> 00:11:55,981  
YOU WOULD HAVE BEEN SELECTED.

353  
00:11:56,048 --> 00:11:58,150  
>> CAREFUL WHAT YOU WISH FOR.

354  
00:11:58,217 --> 00:12:00,886  
IT'S NOT CLEAR THAT WE CAN GO TO

355  
00:12:00,953 --> 00:12:03,089  
THE MOON AND TO MARS AND OPERATE

356  
00:12:03,155 --> 00:12:06,759  
THE INTERNATIONAL SPACE STATION

357  
00:12:06,826 --> 00:12:08,127  
IN THE CURRENT BUDGET, EVEN WITH

358  
00:12:08,194 --> 00:12:10,963  
THE INCREASE IN NASA'S BUDGET.

359  
00:12:11,030 --> 00:12:13,032  
THOSE THREE THINGS ALL GOING AT

360  
00:12:13,099 --> 00:12:14,033  
ONCE ARE TRICKY.

361  
00:12:14,100 --> 00:12:15,468  
AND THE INTERNATIONAL SPACE

362  
00:12:15,534 --> 00:12:19,071  
STATION IS A NATIONAL LAB, SO

363  
00:12:19,138 --> 00:12:20,539

COME ON DOWN EVERYBODY AND FLY

364

00:12:20,606 --> 00:12:22,641

UP THERE AND CONDUCT THINGS THE

365

00:12:22,708 --> 00:12:25,811

WAY WE CONDUCT SCIENCE IN OTHER

366

00:12:25,878 --> 00:12:27,113

NATIONAL LABS.

367

00:12:27,179 --> 00:12:29,582

BUT THIS IS THE PROBLEM TO BE

368

00:12:29,648 --> 00:12:30,049

FIGURED OUT.

369

00:12:30,116 --> 00:12:32,084

NO MATTER WHAT WE DO, NO MATTER

370

00:12:32,151 --> 00:12:33,919

WHAT THE FUTURE IS, I THINK WE

371

00:12:33,986 --> 00:12:37,590

ALL AGREE WE WANT TO GET BEYOND

372

00:12:37,656 --> 00:12:38,624

LOW EARTH ORBIT.

373

00:12:38,691 --> 00:12:41,460

THE OLD SAYING, IF YOU HAVE A

374

00:12:41,527 --> 00:12:43,963

CLASSROOM GLOBE WHICH IN ENGLISH

375

00:12:44,029 --> 00:12:45,464

UNITS WOULD BE 12 INCHES.

376

00:12:45,531 --> 00:12:50,202

LOW EARTH ORBIT IS JUST 3/8 OF

377

00:12:50,269 --> 00:12:52,505

AN INCH ABOVE THE GLOBE.

378

00:12:52,571 --> 00:12:54,507

IT'S COOL AND I WOULD LOVE TO GO

379

00:12:54,573 --> 00:12:56,275

THERE AND WE OF SOME ASTRONAUTS

380

00:12:56,342 --> 00:12:58,244

COMING UP IN A FEW MINUTES.

381

00:12:58,310 --> 00:13:02,281

BUT WE WANT TO GO FARTHER AND

382

00:13:02,348 --> 00:13:02,615

DEEPER.

383

00:13:02,681 --> 00:13:05,384

I LOVE SCIENCE.

384

00:13:05,451 --> 00:13:06,619

I'M COOKY FOR SCIENCE.

385

00:13:06,685 --> 00:13:07,753

>> YOU ARE A SCIENCE GUY.

386

00:13:07,820 --> 00:13:09,788

>> I AM A SCIENCE GUY.

387

00:13:09,855 --> 00:13:11,690

KEEP IN MIND WHEN HUMANS GO TO A

388

00:13:11,757 --> 00:13:15,194

PLACE TWO THINGS ARE GOING TO

389

00:13:15,261 --> 00:13:17,963

HAPPEN WHEN YOU EXPLORE.

390

00:13:18,030 --> 00:13:19,632

TWO MORE THINGS ARE GOING TO

391

00:13:19,698 --> 00:13:19,965

HAPPEN.

392

00:13:20,032 --> 00:13:21,133

YOU'RE GOING TO MAKE DISCOVERIES

393

00:13:21,200 --> 00:13:23,536

WHETHER IT'S YOUR BACK DOOR OR

394

00:13:23,602 --> 00:13:23,936

MARS.

395

00:13:24,003 --> 00:13:25,404

BUT THE OTHER THING IS YOU'RE

396

00:13:25,471 --> 00:13:27,873

GOING TO HAVE AN ADVENTURE AND

397

00:13:27,940 --> 00:13:29,742

THAT IS WHAT ENGAGES US IN A WAY

398

00:13:29,808 --> 00:13:30,809

THAT IS PRICELESS.

399

00:13:30,876 --> 00:13:33,445

NOW EVERYBODY -- YOU CAN SAY --

400

00:13:33,512 --> 00:13:36,649

YOU CAN ASK THE OLD QUESTION,

401  
00:13:36,715 --> 00:13:38,150  
SHOULD WE PAY TEACHER SALARIES,

402  
00:13:38,217 --> 00:13:41,187  
BUILD A NEW BASEBALL STADIUM OR

403  
00:13:41,253 --> 00:13:42,288  
EXPLORE SPACE?

404  
00:13:42,354 --> 00:13:45,357  
I HOPE IF IT WAS JUST A ZERO SUM

405  
00:13:45,424 --> 00:13:46,926  
THING WE'D PAY TEACHERS FOR

406  
00:13:46,992 --> 00:13:47,826  
CRYING OUT OF LOUD.

407  
00:13:47,893 --> 00:13:49,428  
BUT IT'S NOT ONE ARE THE OTHER.

408  
00:13:49,495 --> 00:13:52,264  
YOU GOT TO DO EVERYTHING.

409  
00:13:52,331 --> 00:13:54,500  
THE NASA BUDGET IS AN

410  
00:13:54,567 --> 00:13:55,334  
EXTRAORDINARY VALUE.

411  
00:13:55,401 --> 00:13:57,069  
IF YOU ASK PEOPLE AROUND THE

412  
00:13:57,136 --> 00:13:59,672  
WORLD WHAT THEY THINK OF NASA,

413  
00:13:59,738 --> 00:14:02,041

NASA IS THE BEST BRAND THE

414

00:14:02,107 --> 00:14:02,608

UNITED STATES HAS.

415

00:14:02,675 --> 00:14:07,580

>> I WANT TO INTERRUPT.

416

00:14:07,646 --> 00:14:09,148

LET ME SHARE WITH YOU A VISION

417

00:14:09,215 --> 00:14:11,717

WHY I THINK WE OUGHT TO MOVE

418

00:14:11,784 --> 00:14:12,885

BEYOND LOW EARTH ARE ORBIT AND

419

00:14:12,952 --> 00:14:16,055

GET AWAY OUT THERE, NOT JUST AN

420

00:14:16,121 --> 00:14:18,224

INCH BUT MAYBE TO THE MOON OR

421

00:14:18,290 --> 00:14:20,926

HALFWAY OR BEYOND THE MOON.

422

00:14:20,993 --> 00:14:22,995

THE REASON I WOULD LIKE TO DO

423

00:14:23,062 --> 00:14:26,398

THAT IS BECAUSE I'M IMAGING

424

00:14:26,465 --> 00:14:28,334

BUILDING WITH ASTRONAUTS AN

425

00:14:28,400 --> 00:14:34,974

AMAZINGLY LARGE SPACE TELESCOPE,

426

00:14:35,040 --> 00:14:36,041  
LARGER THAN JAMES WEBB.

427

00:14:36,108 --> 00:14:37,509  
SOMETHING WE MAY HAVE TO

428

00:14:37,576 --> 00:14:38,911  
ASSEMBLE IN ORBIT.

429

00:14:38,978 --> 00:14:41,013  
>> OR ASSEMBLE ON THE SURFACE OF

430

00:14:41,080 --> 00:14:41,480  
THE MOON.

431

00:14:41,547 --> 00:14:44,083  
>> WELL, I DON'T KNOW IF I WOULD

432

00:14:44,149 --> 00:14:46,218  
AGREE WITH THAT.

433

00:14:46,285 --> 00:14:48,120  
>> ON THE MOON.

434

00:14:48,187 --> 00:14:48,821  
NO.

435

00:14:48,887 --> 00:14:52,992  
MARS, IT'S LIKE I'VE BEEN IN

436

00:14:53,058 --> 00:14:54,159  
THIS WORLD FOR 21 YEARS --

437

00:14:54,226 --> 00:14:55,628  
>> WE'RE STRUGGLING WITH THE

438

00:14:55,694 --> 00:14:57,129

JAMES WEBB TELESCOPE RIGHT NOW.

439

00:14:57,196 --> 00:14:58,764

>> IT'S A HARD PROBLEM.

440

00:14:58,831 --> 00:15:02,868

NO ONE'S EVER TRIED TO BUILD ONE

441

00:15:02,935 --> 00:15:03,202

BEFORE.

442

00:15:03,269 --> 00:15:06,805

>> YOU CAN'T BUY A KIT.

443

00:15:06,872 --> 00:15:08,307

>> AND OF COURSE I'VE BEEN ON

444

00:15:08,374 --> 00:15:10,476

THE HILL OF COURSE MAKING SURE

445

00:15:10,542 --> 00:15:12,144

THAT WE ARE IN COMPLIANCE WITH

446

00:15:12,211 --> 00:15:13,579

THE LAW AND WE HAVE GREAT

447

00:15:13,646 --> 00:15:14,613

SUPPORT FROM MEMBERS OF CONGRESS

448

00:15:14,680 --> 00:15:16,115

ON BOTH SIDES OF THE AISLE FOR

449

00:15:16,181 --> 00:15:16,715

THE JAMES WEBB.

450

00:15:16,782 --> 00:15:19,184

LET ME JUST SAY THIS, WITH THE

451  
00:15:19,251 --> 00:15:20,286  
JAMES WEBB SPACE TELESCOPE WE

452  
00:15:20,352 --> 00:15:22,254  
ARE INVENTING NEW THINGS IN

453  
00:15:22,321 --> 00:15:23,989  
ORDER TO PUT SOMETHING ON ORBIT

454  
00:15:24,056 --> 00:15:26,458  
THAT IS GOING TO NOT ONLY SEE

455  
00:15:26,525 --> 00:15:27,960  
DISTANCES BUT GOING TO SEE BACK

456  
00:15:28,027 --> 00:15:29,561  
IN TIME TO THE VERY DAWN OF

457  
00:15:29,628 --> 00:15:31,797  
LIGHT IN THE UNIVERSE, THE VERY

458  
00:15:31,864 --> 00:15:33,766  
BEGINNING OF SPACE AND TIME.

459  
00:15:33,832 --> 00:15:35,334  
WE'LL BE ABLE TO SEE THAT.

460  
00:15:35,401 --> 00:15:36,969  
THE VERY FIRST LIGHT IN THE

461  
00:15:37,036 --> 00:15:37,336  
UNIVERSE.

462  
00:15:37,403 --> 00:15:41,240  
WE HAVE MODELS OVER WHAT THAT

463  
00:15:41,307 --> 00:15:42,675

MIGHT LOOK LIKE.

464

00:15:42,741 --> 00:15:43,776

BILL NYE KNOWS EXACTLY WHAT IT

465

00:15:43,842 --> 00:15:44,209

LOOKS LIKE.

466

00:15:44,276 --> 00:15:44,843

>> SURE I DO.

467

00:15:44,910 --> 00:15:46,812

>> WHAT WHEN HE KNOW IS THAT OUR

468

00:15:46,879 --> 00:15:49,915

MODELS ARE NOT RIGHT.

469

00:15:49,982 --> 00:15:51,917

WE'LL BE ABLE TO SEE UT 0 TO THE

470

00:15:51,984 --> 00:15:54,219

VERY EDGE OF THE UNIVERSE AND

471

00:15:54,286 --> 00:15:55,721

PLANET THAT WE NOW KNOW ALL

472

00:15:55,788 --> 00:15:57,823

THESE STARS HAVE MANY PLANETS

473

00:15:57,890 --> 00:15:59,591

AROUND EACH STAR, WE'LL BE ABLE

474

00:15:59,658 --> 00:16:04,797

TO NOT NOT SEE THOSE PLANETS BUT

475

00:16:04,863 --> 00:16:06,965

CHARACTERIZE THE ATMOSPHERE TO

476  
00:16:07,032 --> 00:16:08,934  
DETERMINE IF THOSE PLANETS COULD

477  
00:16:09,001 --> 00:16:11,170  
BE INHABITABLE OR NOT.

478  
00:16:11,236 --> 00:16:13,505  
THIS IS GOING TO BE

479  
00:16:13,572 --> 00:16:14,673  
TRANSFORMATIVE AND REWRITE

480  
00:16:14,740 --> 00:16:15,140  
SCIENCE BOOKS.

481  
00:16:15,207 --> 00:16:16,508  
BILL NYE WILL HAVE A LOT OF WORK

482  
00:16:16,575 --> 00:16:17,076  
TO DO.

483  
00:16:17,142 --> 00:16:19,078  
>> BRING IT ON.

484  
00:16:19,144 --> 00:16:19,978  
>> WORTH MORE YEARS --

485  
00:16:20,045 --> 00:16:22,648  
>> JUST TO BE CLEAR, IT WILL BE

486  
00:16:22,715 --> 00:16:24,650  
ABLE TO DO THAT WORK IF WE ARE

487  
00:16:24,717 --> 00:16:27,386  
LUCKY AND WIN THE LOTTERY TWICE

488  
00:16:27,453 --> 00:16:29,355

OVER AND FIND SYSTEMS THAT ARE

489

00:16:29,421 --> 00:16:31,957

CLOSE ENOUGH TO US THAT WILL BE

490

00:16:32,024 --> 00:16:33,325

WITHIN THE REACH OF JAMES WEBB

491

00:16:33,392 --> 00:16:34,326

SPACE TELESCOPE.

492

00:16:34,393 --> 00:16:35,594

WE HAVE THE REST SATELLITE WHICH

493

00:16:35,661 --> 00:16:37,596

IS LOOKING RIGHT NOW HOPEFULLY

494

00:16:37,663 --> 00:16:39,732

IT WILL FIND THEM AND MAYBE -- I

495

00:16:39,798 --> 00:16:40,833

DON'T KNOW IF YOU ALL BOUGHT

496

00:16:40,899 --> 00:16:42,935

YOUR LOTTERY TICKETS RIGHT

497

00:16:43,001 --> 00:16:44,603

NOW -- MAYBE WE CAN DO THAT.

498

00:16:44,670 --> 00:16:46,538

BUT THE REASON I WAS TALKING

499

00:16:46,605 --> 00:16:47,706

ABOUT A FUTURE SPACE TELESCOPE.

500

00:16:47,773 --> 00:16:50,509

WE WANT TO BE ABLE TO ANSWER

501  
00:16:50,576 --> 00:16:52,578  
THIS QUESTION YES OR NO DO

502  
00:16:52,644 --> 00:16:54,313  
EARTH-LIKE PLANETS AROUND

503  
00:16:54,380 --> 00:16:56,482  
SUN-LIKE STARS TRULY HAVE THE

504  
00:16:56,548 --> 00:16:58,283  
ABILITY TO BE HABITABLE?

505  
00:16:58,350 --> 00:17:00,619  
AND WE MAY NOT BE ABLE TO ANSWER

506  
00:17:00,686 --> 00:17:01,954  
THAT QUESTION WITH WEBB, THAT'S

507  
00:17:02,020 --> 00:17:04,523  
WHY WE NEED TO MOVE FORWARD.

508  
00:17:04,590 --> 00:17:05,624  
YOU AND I TALKED A LITTLE BIT

509  
00:17:05,691 --> 00:17:06,992  
ABOUT THIS AND YOU SAID, DON'T

510  
00:17:07,059 --> 00:17:10,696  
SAY THAT, HEIDI BECAUSE I'M

511  
00:17:10,763 --> 00:17:12,431  
GOING TO SAY IT ANYWAY.

512  
00:17:12,498 --> 00:17:14,867  
BUILDING A FACILITY LIKE HUBBLE

513  
00:17:14,933 --> 00:17:17,136

OR JAMES WEBB OR SOME FUTURE

514

00:17:17,202 --> 00:17:19,571

SPACE TELESCOPE TAKES TIME.

515

00:17:19,638 --> 00:17:27,780

YOU CAN'T DO IT IN A YEAR OR 2

516

00:17:27,846 --> 00:17:28,947

OR 5 OR 10.

517

00:17:29,014 --> 00:17:30,516

SOMETIMES IT TAKES 20 YEARS TO

518

00:17:30,582 --> 00:17:32,284

BUILD A CUTTING EDGE FACILITY.

519

00:17:32,351 --> 00:17:35,587

THAT'S TRUE FOR MANY OF NASA'S

520

00:17:35,654 --> 00:17:36,155

GREAT MISSIONS.

521

00:17:36,221 --> 00:17:37,322

WE HAVE TO UNDERSTAND THAT AND

522

00:17:37,389 --> 00:17:38,891

TAKE IT AS PART OF THE REALITY

523

00:17:38,957 --> 00:17:40,325

THAT WE WORK IN.

524

00:17:40,392 --> 00:17:42,661

>> FOR THE POLITICIANS OUT

525

00:17:42,728 --> 00:17:45,697

THERE, WHEN THE NASA BUDGET IS

526

00:17:45,764 --> 00:17:46,999

UNCERTAIN, WHEN THERE'S A

527

00:17:47,065 --> 00:17:52,304

PROPOSAL TO CUT 5%, IT'S VERY

528

00:17:52,371 --> 00:17:54,373

DIFFICULT FOR PROGRAMS TO COUNT

529

00:17:54,440 --> 00:17:56,442

ON THE FUNDING AND MAKE ADEQUATE

530

00:17:56,508 --> 00:17:56,742

PLANS.

531

00:17:56,809 --> 00:17:59,011

THIS LEADS TO COST OVERRUNS.

532

00:17:59,077 --> 00:18:02,948

>> LET ME GO TO TWITTER.

533

00:18:03,015 --> 00:18:04,650

I THINK THIS IS DIRECTED AT YOU.

534

00:18:04,716 --> 00:18:07,186

HOW CAN NASA REACH ITS GOALS

535

00:18:07,252 --> 00:18:08,787

WHEN THE DESTINATION, THE MOON

536

00:18:08,854 --> 00:18:10,289

AND MARS CHANGES WITH EVERY

537

00:18:10,355 --> 00:18:10,756

ADMINISTRATION?

538

00:18:10,823 --> 00:18:12,758

>> THAT'S A CRITICALLY IMPORTANT

539

00:18:12,825 --> 00:18:13,125

QUESTION.

540

00:18:13,192 --> 00:18:15,327

>> YOU'VE BEEN HERE 6 MONTHS.

541

00:18:15,394 --> 00:18:23,001

>> HERE'S THE THING, AND I THINK

542

00:18:23,068 --> 00:18:25,103

THIS IS AN IMPORTANT TO MAKE.

543

00:18:25,170 --> 00:18:27,139

WE WANT TO IMPROVE TEBLG

544

00:18:27,206 --> 00:18:28,140

TECHNOLOGY AND CAPABILITY.

545

00:18:28,207 --> 00:18:29,842

WE WANT EVERYTHING TO BE

546

00:18:29,908 --> 00:18:30,209

REUSABLE.

547

00:18:30,275 --> 00:18:32,044

WE TALK ABOUT REUSABLE ROCKETS.

548

00:18:32,110 --> 00:18:33,145

WE'VE SEEN WHAT HAPPENS.

549

00:18:33,212 --> 00:18:34,346

THE COST GOES DOWN AND ACCESS

550

00:18:34,413 --> 00:18:35,547

GOES UP.

551  
00:18:35,614 --> 00:18:37,916  
WE WANT THE ENTIRE ARCHITECTURE

552  
00:18:37,983 --> 00:18:42,087  
BETWEEN THE EARTH AND MOON TO BE

553  
00:18:42,154 --> 00:18:42,454  
REUSABLE.

554  
00:18:42,521 --> 00:18:44,289  
WE WANT A REUSABLE COMMAND

555  
00:18:44,356 --> 00:18:46,058  
MODULE IN ORBIT AROUND THE MOON.

556  
00:18:46,125 --> 00:18:48,627  
WE CALL IT GATEWAY.

557  
00:18:48,694 --> 00:18:51,463  
THINK ABOUT IT AS A REUSABLE

558  
00:18:51,530 --> 00:18:52,097  
COMMAND MODULE.

559  
00:18:52,164 --> 00:18:54,233  
CAN BE THERE 15 YEARS AND

560  
00:18:54,299 --> 00:18:55,534  
REUSABLE LANDERS THAT CAN GO

561  
00:18:55,601 --> 00:18:58,136  
BACK AND FORTH WITH ROBOTS AND

562  
00:18:58,203 --> 00:18:59,838  
HUMANS AND IN BUILDING THIS

563  
00:18:59,905 --> 00:19:00,973

## ARCHITECTURE WITH REUSABILITY

564

00:19:01,039 --> 00:19:02,574

THAT'S HOW WE GET SUSTAINABILITY

565

00:19:02,641 --> 00:19:04,276

FOR THE LONG TERM.

566

00:19:04,343 --> 00:19:09,248

AND IT'S ULTIMATELY THIS

567

00:19:09,314 --> 00:19:11,416

ARCHITECTURE CAN HAVE AMERICAN

568

00:19:11,483 --> 00:19:14,219

COMPONENTS BUT IT ALSO IS OPEN

569

00:19:14,286 --> 00:19:14,653

ARCHITECTURE.

570

00:19:14,720 --> 00:19:17,389

THE WAY WE DO AVIONICS, THE WAY

571

00:19:17,456 --> 00:19:19,525

WE DO DATA AND POWER AND DOCKING

572

00:19:19,591 --> 00:19:21,226

AND ALL THE PIECES THAT GO INTO

573

00:19:21,293 --> 00:19:22,394

THIS OVERALL ARCHITECTURE IS

574

00:19:22,461 --> 00:19:24,463

GOING TO BE PUBLISHED ON THE

575

00:19:24,530 --> 00:19:24,830

INTERNET.

576  
00:19:24,897 --> 00:19:25,864  
IF YOU'RE A COUNTRY OUT THERE

577  
00:19:25,931 --> 00:19:27,266  
AND YOU WANT TO BUILD A TUG OR

578  
00:19:27,332 --> 00:19:29,034  
YOU WANT TO BUILD A LANDER YOU

579  
00:19:29,101 --> 00:19:30,435  
CAN PLUG INTO THE ARCHITECTURE.

580  
00:19:30,502 --> 00:19:32,404  
IF YOU'RE A PRIVATE COMPANY OUT

581  
00:19:32,471 --> 00:19:34,239  
THERE AND YOU WANT TO INVEST IN

582  
00:19:34,306 --> 00:19:35,374  
BUILDING YOUR OWN LANDER, YOU

583  
00:19:35,440 --> 00:19:36,074  
CAN DO THAT.

584  
00:19:36,141 --> 00:19:38,777  
AND THE GATEWAY IS GOING TO BE

585  
00:19:38,844 --> 00:19:39,244  
AVAILABLE.

586  
00:19:39,311 --> 00:19:40,479  
THIS REUSABLE COMMAND MODULE

587  
00:19:40,546 --> 00:19:41,780  
WILL BE AVAILABLE FOR YOUR

588  
00:19:41,847 --> 00:19:43,148

ACTIVITY AS WELL.

589

00:19:43,215 --> 00:19:45,017

WE WANT INTERNATIONAL PARTNERS

590

00:19:45,083 --> 00:19:46,318

AND COMMERCIAL PARTNERS AND

591

00:19:46,385 --> 00:19:48,954

HERE'S THE KEY TO THE WHOLE

592

00:19:49,021 --> 00:19:49,254

THING.

593

00:19:49,321 --> 00:19:50,489

WE WANT TO PROVE EVERYTHING IS

594

00:19:50,556 --> 00:19:51,557

POSSIBLE AT THE MOON.

595

00:19:51,623 --> 00:19:54,059

WHERE IT'S A 3 DAY JOURNEY HOME.

596

00:19:54,126 --> 00:19:55,327

WE KNOW WHAT HAPPENS IF YOU LOOK

597

00:19:55,394 --> 00:19:57,763

AT APOLLO 13.

598

00:19:57,829 --> 00:19:58,530

IF SOMETHING WRONG HAPPENS ON

599

00:19:58,597 --> 00:19:59,798

THE WAY TO THE MOON, YOU CAN

600

00:19:59,865 --> 00:20:00,465

MAKE IT HOME.

601  
00:20:00,532 --> 00:20:01,633  
IF SOMETHING LIKE THAT WERE TO

602  
00:20:01,700 --> 00:20:03,535  
HAPPEN ON THE WAY TO MARS,

603  
00:20:03,602 --> 00:20:09,308  
YOU'RE NOT GOING TO MAKE IT.

604  
00:20:09,374 --> 00:20:11,777  
WE WANT TO PROVE TECHNOLOGY AND

605  
00:20:11,843 --> 00:20:13,679  
RETIRE RISK AND REASONABLE

606  
00:20:13,745 --> 00:20:17,316  
COMMAND MODULE AT THE MOON THAT

607  
00:20:17,382 --> 00:20:19,718  
HAS MANEUVERABILITY AND STAY IN

608  
00:20:19,785 --> 00:20:23,655  
THAT LEANIER ORBIT AS WELL.

609  
00:20:23,722 --> 00:20:25,991  
BUT ULTIMATELY THE SECOND

610  
00:20:26,058 --> 00:20:27,659  
GATEWAY WILL BE A DEEP SPACE

611  
00:20:27,726 --> 00:20:28,060  
TRANSPORT.

612  
00:20:28,126 --> 00:20:31,196  
THAT'S OUR PATH TO MARS.

613  
00:20:31,263 --> 00:20:32,764

WHAT WE ARE DOING IS BOTH.

614

00:20:32,831 --> 00:20:34,800

WE'RE DOING IT AT THE SAME TIME.

615

00:20:34,866 --> 00:20:42,374

BUT, NO, WE'RE NOT WE'VE HAD

616

00:20:42,441 --> 00:20:43,175

THESE PROGRAMS BEFORE WHERE WE

617

00:20:43,241 --> 00:20:46,778

GO TO THE MOON AND STOP.

618

00:20:46,845 --> 00:20:47,479

I KNOW EVERYBODY SAYS THIS.

619

00:20:47,546 --> 00:20:49,581

HE WE HAVE COMMERCIAL PARTNERS.

620

00:20:49,648 --> 00:20:51,483

SO FAR I'VE BEEN MET WITH 24

621

00:20:51,550 --> 00:20:53,251

HEADS OF SPACE AGENCIES ALL OF

622

00:20:53,318 --> 00:20:54,686

WHICH ARE EXCITED ABOUT OUR

623

00:20:54,753 --> 00:20:56,288

RETURN TO THE MOON AND

624

00:20:56,355 --> 00:20:57,923

EVENTUALLY GOING TO MARS.

625

00:20:57,990 --> 00:21:00,392

>> NASA IS 3 TIMES BIGGER THAN

626  
00:21:00,459 --> 00:21:02,160  
ANY OTHER SPACE AGENCY.

627  
00:21:02,227 --> 00:21:06,465  
IT'S STILL THE WORLD'S LEADER IN

628  
00:21:06,531 --> 00:21:07,399  
SPACE.

629  
00:21:07,466 --> 00:21:08,567  
BUT THE OTHER SPACE AGENCIES IN

630  
00:21:08,634 --> 00:21:09,935  
THE COMMERCIAL COMPANIES AROUND

631  
00:21:10,002 --> 00:21:14,473  
THE WORLD DO AMAZING THINGS

632  
00:21:14,539 --> 00:21:14,773  
ALSO.

633  
00:21:14,840 --> 00:21:16,675  
>> COLLABORATION IS KEY HERE.

634  
00:21:16,742 --> 00:21:18,443  
>> ONE OF THE LONG STANDING AND

635  
00:21:18,510 --> 00:21:21,413  
SORT OF POTENTIALLY SAD IDEAS

636  
00:21:21,480 --> 00:21:25,617  
ABOUT THE SEARCH FOR LIFE IN

637  
00:21:25,684 --> 00:21:27,819  
SPACE IS THE IDEA THAT WE MIGHT

638  
00:21:27,886 --> 00:21:29,121

NOT FIND LIFE BECAUSE IT HAS A

639

00:21:29,187 --> 00:21:31,657

WAY OF URN ABOUTING UP ITS OWN

640

00:21:31,723 --> 00:21:33,291

RESOURCES OR WRECKING ITS

641

00:21:33,358 --> 00:21:34,793

ENVIRONMENT OR GETTING SO

642

00:21:34,860 --> 00:21:36,194

LOGICALLY ADVANCED --

643

00:21:36,261 --> 00:21:39,364

>> THIS WAS CLEAR IN THE GOOD

644

00:21:39,431 --> 00:21:40,332

OLD DAYS.

645

00:21:40,399 --> 00:21:42,968

>> OR MAYBE IT'S CLIMATE CHANGE.

646

00:21:43,035 --> 00:21:45,937

THAT'S ONE SENSE IN WHICH IT'S

647

00:21:46,004 --> 00:21:47,205

TIED, SPACE AND WHAT'S HAPPENING

648

00:21:47,272 --> 00:21:47,973

ON EARTH.

649

00:21:48,040 --> 00:21:50,042

I WANT TO JUST ASK ON THIS

650

00:21:50,108 --> 00:21:51,243

TOPIC, ADMINISTRATOR.

651  
00:21:51,309 --> 00:21:52,711  
YOU CHANGE YOUR MIND ON CLIMATE

652  
00:21:52,778 --> 00:21:53,045  
CHANGE.

653  
00:21:53,111 --> 00:21:54,946  
YOU SAY IT'S HUMAN CAUSED.

654  
00:21:55,013 --> 00:21:58,450  
WHAT DO YOU WANT TO DO AT NASA

655  
00:21:58,517 --> 00:22:00,185  
TO BETTER UNDERSTAND THIS?

656  
00:22:00,252 --> 00:22:01,420  
I GUESS YOU GUYS HAVE TALKED

657  
00:22:01,486 --> 00:22:03,221  
ABOUT THIS TOPIC A LOT TOGETHER.

658  
00:22:03,288 --> 00:22:04,790  
I'D LIKE TO HEAR ABOUT THAT.

659  
00:22:04,856 --> 00:22:06,425  
>> HERE'S WHAT WE KNOW.

660  
00:22:06,491 --> 00:22:10,762  
WE KNOW THAT CARBON DIOXIDE IS A

661  
00:22:10,829 --> 00:22:12,464  
GREENHOUSE GAS AND WE PUT IT

662  
00:22:12,531 --> 00:22:14,599  
MORE IN THE ATMOSPHERE THAN EVER

663  
00:22:14,666 --> 00:22:16,668

BEFORE SO WE'RE RESPONSIBLE FOR

664

00:22:16,735 --> 00:22:18,470

THE WARMING OF THE PLANET.

665

00:22:18,537 --> 00:22:21,006

WHAT NASA DOES -- WE DO NOT WANT

666

00:22:21,073 --> 00:22:23,175

BE NASA TO GET INVOLVED IN

667

00:22:23,241 --> 00:22:24,376

TELLING POLITICS WHAT THE

668

00:22:24,443 --> 00:22:25,677

SOLUTIONS TO THE PROBLEMS ARE.

669

00:22:25,744 --> 00:22:27,779

BECAUSE IF WE DO THAT WE BECOME

670

00:22:27,846 --> 00:22:32,451

VERY PARTISAN AND VERY

671

00:22:32,517 --> 00:22:32,818

POLITICAL.

672

00:22:32,884 --> 00:22:34,386

WE WANT TO DO DISPASSIONATE

673

00:22:34,453 --> 00:22:34,853

SCIENCE.

674

00:22:34,920 --> 00:22:36,855

WE WANT TO BUILD THE SENSORS

675

00:22:36,922 --> 00:22:37,889

THAT ARE BUILD THE EARTH AND

676  
00:22:37,956 --> 00:22:39,157  
MAKE ALL OF THAT DATA AND

677  
00:22:39,224 --> 00:22:40,892  
INFORMATION AVAILABLE TO THE

678  
00:22:40,959 --> 00:22:41,226  
PUBLIC.

679  
00:22:41,293 --> 00:22:42,394  
WE WANT PEOPLE TO DO THEIR OWN

680  
00:22:42,461 --> 00:22:44,096  
RESEARCH ON THE DATA.

681  
00:22:44,162 --> 00:22:48,433  
WE WANT RESEARCHERS TO TEST EACH

682  
00:22:48,500 --> 00:22:50,368  
OTHER'S HYPOTHESES AND SO NASA

683  
00:22:50,435 --> 00:22:52,704  
IS COMMITTED TO DISPASSIONATELY

684  
00:22:52,771 --> 00:22:54,473  
PROVIDING THE DATA AND THE

685  
00:22:54,539 --> 00:22:56,374  
SCIENCE AND LETTING POLICYMAKERS

686  
00:22:56,441 --> 00:22:57,442  
DETERMINE WHAT TO DO ABOUT WHAT

687  
00:22:57,509 --> 00:22:58,043  
WE LEARN.

688  
00:22:58,110 --> 00:22:59,344

>> INCLUDING IF THEY FIND

689

00:22:59,411 --> 00:23:01,379

SOMETHING REALLY BAD LIKE IT'S

690

00:23:01,446 --> 00:23:03,281

GOING A LOT FASTER THAN WE

691

00:23:03,348 --> 00:23:04,783

THOUGHT THERE'S ANOTHER

692

00:23:04,850 --> 00:23:06,384

FEEDBACK, THEY JUST LET THE

693

00:23:06,451 --> 00:23:07,719

CHIPS FALL WHERE THEY MAY?

694

00:23:07,786 --> 00:23:09,387

>> IT'S UP TO THE POLICYMAKERS.

695

00:23:09,454 --> 00:23:12,023

>> I MEAN THE RESEARCHERS,

696

00:23:12,090 --> 00:23:13,725

NASA'S RESEARCHERS.

697

00:23:13,792 --> 00:23:16,461

I MEAN IMAGINE THEY FIND ANOTHER

698

00:23:16,528 --> 00:23:19,464

METHANE FEEDBACK IN THE ARCTIC.

699

00:23:19,531 --> 00:23:20,499

>> RESEARCHERS ARE GOING TO

700

00:23:20,565 --> 00:23:20,966

RESEARCH.

701  
00:23:21,032 --> 00:23:22,601  
THAT'S WHAT THEY DO.

702  
00:23:22,667 --> 00:23:24,336  
PEOPLE WHO ARE KEENLY INTERESTED

703  
00:23:24,402 --> 00:23:25,670  
IN THOSE KINDS OF QUESTIONS WILL

704  
00:23:25,737 --> 00:23:28,106  
PURSUE THEM WITH ALL THE PASSION

705  
00:23:28,173 --> 00:23:29,207  
THAT THEY HAVE.

706  
00:23:29,274 --> 00:23:32,110  
NOT ONLY ON EARTH BUT ALSO IN

707  
00:23:32,177 --> 00:23:33,478  
TRYING TO UNDERSTAND HOW MARS

708  
00:23:33,545 --> 00:23:37,282  
TURNED OUT THE WAY MARS DID AND

709  
00:23:37,349 --> 00:23:39,050  
VENUS TURNED OUT THE WAY VENUS

710  
00:23:39,117 --> 00:23:42,187  
DID AND THEY'RE ALL IN OUR SOLAR

711  
00:23:42,254 --> 00:23:42,721  
SYSTEM.

712  
00:23:42,788 --> 00:23:44,823  
YOU'RE NOT GOING TO STOP THE

713  
00:23:44,890 --> 00:23:46,091

RESEARCHERS, THEY'RE GOING TO

714

00:23:46,158 --> 00:23:47,726

PURSUE THESE QUESTIONS TO

715

00:23:47,793 --> 00:23:49,194

UNDERSTAND HOW OUR EARTH ISSIC

716

00:23:49,261 --> 00:23:51,496

CHANGING AND WHY IS IT CHANGING

717

00:23:51,563 --> 00:23:55,801

AND LOOKING TOWARDS PLANETS OUT

718

00:23:55,867 --> 00:23:57,936

BEYOND OURS PERHAPS TO GET AN

719

00:23:58,003 --> 00:23:59,237

UNDERSTANDING OF MAYBE HOW DID

720

00:23:59,304 --> 00:24:00,305

WE GET HERE?

721

00:24:00,372 --> 00:24:02,340

WHERE ARE WE GOING?

722

00:24:02,407 --> 00:24:03,642

>> WHAT HAPPENED ON THESE OTHER

723

00:24:03,708 --> 00:24:04,009

PLANETS.

724

00:24:04,075 --> 00:24:07,779

FOR ME OF A CERTAIN AGE IT WAS A

725

00:24:07,846 --> 00:24:09,881

CONVERGENCE OF LET's SAY CARL

726  
00:24:09,948 --> 00:24:12,651  
SAGAN AND JAMES POLLOCK WRITING

727  
00:24:12,717 --> 00:24:13,718  
COMPUTEER PROGRAM SAYING WHAT

728  
00:24:13,785 --> 00:24:16,488  
HAPPENED IF ALL THESE NUCLEAR

729  
00:24:16,555 --> 00:24:17,255  
WEAPONS WENT OFF AT THE SAME

730  
00:24:17,322 --> 00:24:19,224  
TIME, YOU'D HAVE A BIG CLOUD OF

731  
00:24:19,291 --> 00:24:19,591  
DARKNESS.

732  
00:24:19,658 --> 00:24:21,159  
PEOPLE LOOKING FOR OIL OFF THE

733  
00:24:21,226 --> 00:24:23,995  
COAST OF MEXICO FOUND THIS HUGE

734  
00:24:24,062 --> 00:24:25,363  
CRATEER AND THEN PRINCIPALLY

735  
00:24:25,430 --> 00:24:27,165  
JAMES HANSON WAS LOOKING AT

736  
00:24:27,232 --> 00:24:30,368  
VENUS AND REASONABLEIZED THE

737  
00:24:30,435 --> 00:24:31,670  
STRENGTH OF GREEN HOUSE EFFECT

738  
00:24:31,736 --> 00:24:33,772

ON VENUS AND THESE THINGS CAME

739

00:24:33,839 --> 00:24:38,210

TOGETHER IN MY LIFETIME.

740

00:24:38,276 --> 00:24:42,614

BUT IT TOOK A DECADE THAT

741

00:24:42,681 --> 00:24:44,983

REALIZE THAT CLIMATE CHANGE IS

742

00:24:45,050 --> 00:24:45,383

HAPPENING.

743

00:24:45,450 --> 00:24:50,355

AND NASA HAS A ROLE IN SHOWING

744

00:24:50,422 --> 00:24:53,625

US WHAT IS HAPPENING AS THE SLOW

745

00:24:53,692 --> 00:24:55,861

MOTION SPEEDS UP.

746

00:24:55,927 --> 00:24:59,464

THANK YOU FOR LEADING ON THIS

747

00:24:59,531 --> 00:24:59,764

ISSUE.

748

00:24:59,831 --> 00:25:01,233

BECAUSE THE DATA -- YOU JUST

749

00:25:01,299 --> 00:25:03,535

HAVE TO RESPECT THE FACTS.

750

00:25:03,602 --> 00:25:06,037

IT'S JUST VERY IMPORTANT.

751

00:25:06,104 --> 00:25:08,173

HERE'S WHAT I WAS SAYING,

752

00:25:08,240 --> 00:25:11,243

STUDYING OTHER PLANETS IS HOW WE

753

00:25:11,309 --> 00:25:13,178

FOUND I WAS GOING -- THE COST OF

754

00:25:13,245 --> 00:25:15,013

EXPLORING THOSE PLANETS IS SO

755

00:25:15,080 --> 00:25:18,617

LOW COMPARED TO WHAT WE LEARNED.

756

00:25:18,683 --> 00:25:20,785

COMPARING THE CLIMATE OF MARS TO

757

00:25:20,852 --> 00:25:22,120

VENUS TO EARTH.

758

00:25:22,187 --> 00:25:22,454

AMAZING.

759

00:25:22,520 --> 00:25:23,488

>> WE ALSO KNOW BECAUSE OF WORK

760

00:25:23,555 --> 00:25:26,191

THAT NASA HAS DONE, WE KNOW THAT

761

00:25:26,258 --> 00:25:33,131

MARS USED TO HAVE A STRONG

762

00:25:33,198 --> 00:25:35,567

MAGNETIC SPHERE AND 2/3 WAS

763

00:25:35,634 --> 00:25:38,370

COVERED IN AN OCEAN.

764

00:25:38,436 --> 00:25:39,437

THE QUESTION IS WHAT HAPPENED?

765

00:25:39,504 --> 00:25:43,408

WAS IT A BILLION YEARS AGO OR

766

00:25:43,475 --> 00:25:47,279

TWO BILLION YEARS AGO?

767

00:25:47,345 --> 00:25:48,680

HOW DID THAT?

768

00:25:48,747 --> 00:25:50,148

STUDYING OTHER PLANETS HELPS US

769

00:25:50,215 --> 00:25:51,750

UNDERSTAND OUR OWN.

770

00:25:51,816 --> 00:25:54,319

>> NOW WE'RE CALLING MARS AN

771

00:25:54,386 --> 00:25:56,588

EX-OCEAN, A FORMER OCEAN PLANET

772

00:25:56,655 --> 00:25:58,490

BECAUSE THERE IS SO MUCH

773

00:25:58,556 --> 00:26:00,825

EVIDENCE OF WATER.

774

00:26:00,892 --> 00:26:04,396

>> SPACE HAS LONG BEEN

775

00:26:04,462 --> 00:26:05,864

TRADITIONALLY BIPARTISAN.

776  
00:26:05,931 --> 00:26:06,998  
>> PEOPLE DON'T GET ALONG WITH

777  
00:26:07,065 --> 00:26:07,499  
ANYTHING ELSE.

778  
00:26:07,565 --> 00:26:09,501  
THEY GET ALONG WITH SPACE.

779  
00:26:09,567 --> 00:26:11,803  
>> THE TWO OF YOU I GUESS HAVE

780  
00:26:11,870 --> 00:26:16,207  
NOT ALWAYS SEEN EYE TO EYE.

781  
00:26:16,274 --> 00:26:18,510  
>> THERE ARE ISSUES WE MIGHT NOT

782  
00:26:18,576 --> 00:26:19,711  
AGREE ON.

783  
00:26:19,778 --> 00:26:22,647  
>> BILL YOU GOT CRITICIZED BY

784  
00:26:22,714 --> 00:26:24,649  
SOME IN THE COMMUNITY FOR

785  
00:26:24,716 --> 00:26:25,483  
SHOWING UP AT THE STATE OF THE

786  
00:26:25,550 --> 00:26:26,184  
UNION ADDRESS.

787  
00:26:26,251 --> 00:26:28,687  
>> IT'S BIGGER THAN I AM.

788  
00:26:28,753 --> 00:26:30,322

THEED A --

789

00:26:30,388 --> 00:26:32,891

>> SHAME ON YOU FOR HAVING A

790

00:26:32,958 --> 00:26:33,258

DIALOGUE.

791

00:26:33,325 --> 00:26:34,059

>> I WENT TO HIS OFFICE.

792

00:26:34,125 --> 00:26:36,594

WE HUNG OUT AND TALKED ABOUT

793

00:26:36,661 --> 00:26:37,829

FIGHTER PLANES AMONG OTHER

794

00:26:37,896 --> 00:26:38,163

THINGS.

795

00:26:38,229 --> 00:26:40,131

WE TALKED ABOUT HIS FAMILY AND

796

00:26:40,198 --> 00:26:41,866

WE JUST -- EVERYBODY, THIS IS

797

00:26:41,933 --> 00:26:43,268

SOMETHING ELSE YOU LEARN IN

798

00:26:43,335 --> 00:26:46,171

SPACE EXPLORATION WHEN YOU GO

799

00:26:46,237 --> 00:26:47,605

AROUND THE WORLD AND MEET

800

00:26:47,672 --> 00:26:48,440

INVOLVED IN IT.

801  
00:26:48,506 --> 00:26:49,708  
PEOPLE ARE MORE ALIKE THAN

802  
00:26:49,774 --> 00:26:50,108  
DIFFERENT.

803  
00:26:50,175 --> 00:26:56,448  
>> I WILL TELL YOU, I WAS

804  
00:26:56,514 --> 00:26:59,184  
SADDENED BY THE GRIEF HE TOOK --

805  
00:26:59,250 --> 00:27:02,220  
>> OH, BRING IT ON.

806  
00:27:02,287 --> 00:27:03,788  
>> THE STATE OF THE UNION IS AN

807  
00:27:03,855 --> 00:27:04,923  
IMPORTANT THING.

808  
00:27:04,990 --> 00:27:05,991  
IT'S IN THE CONSTITUTION.

809  
00:27:06,057 --> 00:27:08,293  
AS IS THE PROGRESS OF SCIENCE

810  
00:27:08,360 --> 00:27:09,561  
AND USEFUL ARTS.

811  
00:27:09,627 --> 00:27:12,530  
THAT'S IN THE CONSTITUTION,

812  
00:27:12,597 --> 00:27:13,898  
ARTICLE ONE SECTION 8.

813  
00:27:13,965 --> 00:27:18,236

SO SCIENCE IS A REAL WORD

814

00:27:18,303 --> 00:27:18,603

EVERYBODY.

815

00:27:18,670 --> 00:27:19,637

>> WE ALL UNDER ONE SKY.

816

00:27:19,704 --> 00:27:23,675

>> I APOLOGIZE FOR INVITING HIM

817

00:27:23,742 --> 00:27:25,243

TO THE STATE OF THE UNION.

818

00:27:25,310 --> 00:27:26,945

HE TOOK A LOT OF HEAT FOR IT.

819

00:27:27,012 --> 00:27:29,714

>> IT'S FINE AND PROGRESS.

820

00:27:29,781 --> 00:27:32,117

PEOPLE THAT EPBT DO GET ALONG ON

821

00:27:32,183 --> 00:27:33,518

ANYTHING ELSE GET ALONG WHEN IT

822

00:27:33,585 --> 00:27:35,086

COMES TO SPACE EXPLORATION.

823

00:27:35,153 --> 00:27:38,923

AND PART OF THAT IS THAT

824

00:27:38,990 --> 00:27:41,226

DISTRIBUTION OF NASA CENTERS

825

00:27:41,292 --> 00:27:42,560

AROUND THE COUNTRY AND EVERYBODY

826  
00:27:42,627 --> 00:27:43,695  
WHERE YOU GO -- EVERYWHERE

827  
00:27:43,762 --> 00:27:45,563  
YOU -- NO, NO, REALLY,

828  
00:27:45,630 --> 00:27:47,198  
EVERYWHERE YOU GO NASA IS

829  
00:27:47,265 --> 00:27:48,333  
INVOLVED.

830  
00:27:48,400 --> 00:27:58,076  
NASA PERMEATES OUR CULTURE IN

831  
00:27:58,143 --> 00:27:59,077  
VIRTUALLY EVERYWHERE.

832  
00:27:59,144 --> 00:28:01,246  
SPACE BRINGS OUT THE BEST IN US.

833  
00:28:01,312 --> 00:28:02,647  
WE SOLVE PROBLEMS THAT WE NEVER

834  
00:28:02,714 --> 00:28:03,715  
SOLVED BEFORE.

835  
00:28:03,782 --> 00:28:06,284  
I'M NOT JUST WAXING POETIC FOR

836  
00:28:06,351 --> 00:28:11,790  
THE SAKE OF ORATORRY.

837  
00:28:11,856 --> 00:28:13,224  
SPACE IS UNIQUE.

838  
00:28:13,291 --> 00:28:14,492

IT PWREULGZ OUT THE BEST BEFORE

839

00:28:14,559 --> 00:28:18,063

THE AND WE ACCOMPLISH THINGS IN

840

00:28:18,129 --> 00:28:20,331

MY GRANDPARENTS TIME WERE

841

00:28:20,398 --> 00:28:20,865

THOUGHT UNTHINKABLE.

842

00:28:20,932 --> 00:28:22,400

>> WE'RE RUNNING OUT OF TIME.

843

00:28:22,467 --> 00:28:24,769

I DON'T KNOW IF YOU HAVE ANY

844

00:28:24,836 --> 00:28:25,670

OTHER FINAL THOUGHTS BECAUSE

845

00:28:25,737 --> 00:28:26,471

WE'VE GOT 30 SECONDS.

846

00:28:26,538 --> 00:28:28,039

BUT IT'S BEEN A GOOD

847

00:28:28,106 --> 00:28:28,473

CONVERSATION.

848

00:28:28,540 --> 00:28:29,908

OTHERWISE I THINK IT'S A REALLY

849

00:28:29,974 --> 00:28:32,077

NICE NOTE TO END ON.

850

00:28:32,143 --> 00:28:33,344

>> GOOD.

851  
00:28:33,411 --> 00:28:35,180  
SO, EVERYBODY JUST WHILE YOU'RE

852  
00:28:35,246 --> 00:28:38,650  
HERE, CHECK OUT THE PLANETARY

853  
00:28:38,716 --> 00:28:38,983  
SOCIETY.

854  
00:28:39,050 --> 00:28:41,386  
THE WORLD'S INDEPENDENT SPACE

855  
00:28:41,453 --> 00:28:42,787  
ORGANIZATION AND WE ARE HERE,

856  
00:28:42,854 --> 00:28:45,623  
MR. ADMINISTRATOR, TO GIVE YOU

857  
00:28:45,690 --> 00:28:47,525  
CORRECT ADVICE ALL THE TIME.

858  
00:28:47,592 --> 00:28:49,661  
>> THAT'S GOOD.

859  
00:28:49,727 --> 00:28:51,096  
>> I LIKE CORRECT ADVICE.

860  
00:28:51,162 --> 00:28:52,330  
[APPLAUSE]

861  
00:28:52,397 --> 00:28:52,764  
>> THANK YOU.

862  
00:28:52,831 --> 00:28:55,400  
>> WELL, THANKS TO THE PAN HE

863  
00:28:55,467 --> 00:28:55,700

WILL.