



1  
00:00:25,590 --> 00:00:11,650

[Music]

2  
00:00:34,790 --> 00:00:29,100

[Laughter]

3  
00:00:40,310 --> 00:00:37,850

what's up everybody happy Wednesday at 1

4  
00:00:43,549 --> 00:00:40,320

30. Jay and I are your hosts today for a

5  
00:00:47,110 --> 00:00:43,559

spectacular afternoon Extravaganza with

6  
00:00:50,270 --> 00:00:47,120

Dr avilo from Project gillwell

7  
00:00:51,770 --> 00:00:50,280

I'm doing great I am extraordinarily

8  
00:00:54,229 --> 00:00:51,780

excited about our day today it's gonna

9  
00:00:56,990 --> 00:00:54,239

be awesome we've got a fantastic double

10  
00:00:58,849 --> 00:00:57,000

header got Dr Avi Loeb and then later

11  
00:01:02,330 --> 00:00:58,859

this evening we're gonna come back with

12  
00:01:04,850 --> 00:01:02,340

uh Dr Michael Masters yeah it's quite a

13  
00:01:07,070 --> 00:01:04,860

day we have two doctors here today so

14

00:01:10,070 --> 00:01:07,080

and I didn't even make an appointment so

15

00:01:11,810 --> 00:01:10,080

that's right yeah and the answer to Is

16

00:01:13,789 --> 00:01:11,820

there a doctor in the house today is

17

00:01:15,710 --> 00:01:13,799

absolutely yes

18

00:01:18,469 --> 00:01:15,720

um thanks to everybody in the chat we

19

00:01:21,770 --> 00:01:18,479

got some great people here by the way uh

20

00:01:23,149 --> 00:01:21,780

disclosures team Robert Andres Jose

21

00:01:25,850 --> 00:01:23,159

um Lara

22

00:01:27,890 --> 00:01:25,860

water lily everybody if I left you out I

23

00:01:30,469 --> 00:01:27,900

do appreciate you being here please give

24

00:01:32,510 --> 00:01:30,479

some comments hit the like button

25

00:01:33,830 --> 00:01:32,520

subscribe if you haven't that's always

26

00:01:36,530 --> 00:01:33,840

helpful

27

00:01:41,210 --> 00:01:38,810

can I write into it yeah but you have a

28

00:01:42,710 --> 00:01:41,220

pretty good introduction don't you

29

00:01:44,690 --> 00:01:42,720

had a pretty I've got a pretty good

30

00:01:45,590 --> 00:01:44,700

introduction here all right let's share

31

00:01:48,289 --> 00:01:45,600

it

32

00:01:50,270 --> 00:01:48,299

all right Dr Avi Loeb is the Frank B

33

00:01:52,190 --> 00:01:50,280

Bear Junior professor of science at

34

00:01:54,530 --> 00:01:52,200

Harvard University and a best-selling

35

00:01:56,389 --> 00:01:54,540

author who received a PhD in physics

36

00:01:59,330 --> 00:01:56,399

from the Hebrew University of Jerusalem

37

00:02:01,370 --> 00:01:59,340

in Israel at age 24 led the first

38

00:02:03,770 --> 00:02:01,380

International project supported by the

39

00:02:06,050 --> 00:02:03,780

Strategic Defense Initiative and was

40

00:02:08,089 --> 00:02:06,060

subsequently a long-term member of The

41

00:02:12,650 --> 00:02:08,099

Institute for advanced study at

42

00:02:14,330 --> 00:02:12,660

Princeton from 1988 to 1993. Dr Loeb has

43

00:02:18,110 --> 00:02:14,340

written eight books including most

44

00:02:20,449 --> 00:02:18,120

recently extraterrestrial and nearly a

45

00:02:22,309 --> 00:02:20,459

thousand papers on a wide range of

46

00:02:24,530 --> 00:02:22,319

topics including black holes the first

47

00:02:27,470 --> 00:02:24,540

Stars the search for extraterrestrial

48

00:02:29,809 --> 00:02:27,480

life and the future of the universe Dr

49

00:02:32,509 --> 00:02:29,819

Loeb is the director of The Institute

50

00:02:34,130 --> 00:02:32,519

for Theory and computation within the

51  
00:02:36,830 --> 00:02:34,140  
Harvard Smithsonian Center for

52  
00:02:39,050 --> 00:02:36,840  
astrophysics and also serves as the head

53  
00:02:41,390 --> 00:02:39,060  
of the Galileo project

54  
00:02:43,790 --> 00:02:41,400  
he had been

55  
00:02:46,190 --> 00:02:43,800  
the longest serving chair of Harvard's

56  
00:02:48,170 --> 00:02:46,200  
Department of astronomy from 2011 to

57  
00:02:50,509 --> 00:02:48,180  
2020 and the founding director of

58  
00:02:52,250 --> 00:02:50,519  
Harvard's black hole initiative he's an

59  
00:02:54,530 --> 00:02:52,260  
elected fellow of the American Academy

60  
00:02:56,390 --> 00:02:54,540  
of Arts and Sciences the American

61  
00:03:00,830 --> 00:02:56,400  
physical society and the International

62  
00:03:02,630 --> 00:03:00,840  
Academy of astronautics Dr Logue it's

63  
00:03:04,550 --> 00:03:02,640

great to have you here

64

00:03:06,649 --> 00:03:04,560

on the show today

65

00:03:08,089 --> 00:03:06,659

it's a great pleasure to join you and we

66

00:03:12,610 --> 00:03:08,099

could have saved a lot of time if you

67

00:03:18,830 --> 00:03:16,309

and so I mean I I really appreciate

68

00:03:20,750 --> 00:03:18,840

reading um an extraterrestrial about

69

00:03:22,250 --> 00:03:20,760

your life on the farm growing up it was

70

00:03:24,229 --> 00:03:22,260

absolutely fantastic however I think

71

00:03:26,990 --> 00:03:24,239

that would be just a little bit over

72

00:03:28,670 --> 00:03:27,000

simplistic with regard to the work that

73

00:03:31,369 --> 00:03:28,680

you've done since leaving the farm as a

74

00:03:33,649 --> 00:03:31,379

child I don't see it that way I learned

75

00:03:36,490 --> 00:03:33,659

two things from my days in the farm one

76  
00:03:39,110 --> 00:03:36,500  
is nature is more important than people

77  
00:03:41,270 --> 00:03:39,120  
we just need to pay attention to Nature

78  
00:03:43,670 --> 00:03:41,280  
and the evidence that it gives us and

79  
00:03:45,949 --> 00:03:43,680  
sort of like being a student learning

80  
00:03:48,890 --> 00:03:45,959  
from nature and the second thing that I

81  
00:03:51,229 --> 00:03:48,900  
learned on the farm is that you know you

82  
00:03:53,990 --> 00:03:51,239  
should think independently and not

83  
00:03:56,690 --> 00:03:54,000  
necessarily listen to what is being said

84  
00:03:58,610 --> 00:03:56,700  
on social media I don't care uh how many

85  
00:04:01,309 --> 00:03:58,620  
likes I get on social media I don't have

86  
00:04:02,990 --> 00:04:01,319  
any footprint on social media I just

87  
00:04:04,670 --> 00:04:03,000  
want to figure out the reality that we

88  
00:04:07,070 --> 00:04:04,680

live in and if you pay too much

89

00:04:10,190 --> 00:04:07,080

attention to people you know what I tell

90

00:04:13,009 --> 00:04:10,200

the my students is that it's the

91

00:04:15,050 --> 00:04:13,019

situation is similar to seashells on the

92

00:04:17,810 --> 00:04:15,060

beach you know each of them is born with

93

00:04:19,909 --> 00:04:17,820

a unique color but then after a while

94

00:04:23,390 --> 00:04:19,919

they rub against each other as a result

95

00:04:25,969 --> 00:04:23,400

of waves sweeping them and the seashells

96

00:04:29,090 --> 00:04:25,979

break up lose their color and become

97

00:04:30,170 --> 00:04:29,100

indistinguishable grains of sand and you

98

00:04:32,629 --> 00:04:30,180

don't want to become an

99

00:04:34,189 --> 00:04:32,639

indistinguishable grain of sand and of

100

00:04:36,370 --> 00:04:34,199

course social media provides a lot of

101  
00:04:38,689 --> 00:04:36,380  
rubbing of people against each other and

102  
00:04:41,950 --> 00:04:38,699  
that's not necessarily good for you if

103  
00:04:44,990 --> 00:04:41,960  
you want to maintain your unique color

104  
00:04:46,730 --> 00:04:45,000  
well put I mean we just started this and

105  
00:04:53,270 --> 00:04:46,740  
already you've tackled social media and

106  
00:04:57,590 --> 00:04:54,950  
Let's Do It um you know I wanted to

107  
00:05:00,590 --> 00:04:57,600  
bring you on your your year into project

108  
00:05:01,909 --> 00:05:00,600  
Galileo and boy has it been quite a feat

109  
00:05:04,070 --> 00:05:01,919  
you know everything that you've been

110  
00:05:06,170 --> 00:05:04,080  
doing in the in you know to prepare and

111  
00:05:08,090 --> 00:05:06,180  
get things proper

112  
00:05:09,650 --> 00:05:08,100  
um bringing people in getting all the

113  
00:05:11,330 --> 00:05:09,660

recommendations talking to the best

114

00:05:13,730 --> 00:05:11,340

people that you could

115

00:05:15,890 --> 00:05:13,740

um so where are you at a year into the

116

00:05:18,110 --> 00:05:15,900

project uh what are you know some

117

00:05:19,909 --> 00:05:18,120

accomplishments that that you have under

118

00:05:22,129 --> 00:05:19,919

your belt now and what do you look to

119

00:05:25,249 --> 00:05:22,139

accomplish going forward so in fact two

120

00:05:27,650 --> 00:05:25,259

weeks ago we had the the conference of

121

00:05:29,150 --> 00:05:27,660

the Galileo project that that summarizes

122

00:05:32,090 --> 00:05:29,160

the accomplishments of the first year

123

00:05:33,529 --> 00:05:32,100

and started planning ahead for the next

124

00:05:37,249 --> 00:05:33,539

year and

125

00:05:39,710 --> 00:05:37,259

um so the Galileo project is funded by

126

00:05:41,510 --> 00:05:39,720

private donations these were very

127

00:05:43,909 --> 00:05:41,520

wealthy individuals that came to the

128

00:05:45,830 --> 00:05:43,919

porch of my home they were inspired by

129

00:05:47,390 --> 00:05:45,840

my book extraterrestrial and decided to

130

00:05:49,730 --> 00:05:47,400

give me a few million dollars to my

131

00:05:52,189 --> 00:05:49,740

research fund and that's how we

132

00:05:55,490 --> 00:05:52,199

established the project and it's a

133

00:05:57,529 --> 00:05:55,500

collaboration of many institutions many

134

00:06:00,909 --> 00:05:57,539

people from different disciplines and

135

00:06:03,710 --> 00:06:00,919

different places around the world and

136

00:06:05,050 --> 00:06:03,720

we have three tracks of the Galileo

137

00:06:08,809 --> 00:06:05,060

project by now

138

00:06:11,469 --> 00:06:08,819

initially it was inspired by the

139

00:06:14,029 --> 00:06:11,479

discovery of omuamua this

140

00:06:17,510 --> 00:06:14,039

Interstellar object that was found in

141

00:06:19,930 --> 00:06:17,520

2017 by telescope in Hawaii and the name

142

00:06:23,990 --> 00:06:19,940

means a scout in the Hawaiian language

143

00:06:26,570 --> 00:06:24,000

and it didn't show the features of a

144

00:06:28,969 --> 00:06:26,580

rock from the solar system didn't look

145

00:06:31,070 --> 00:06:28,979

like an asteroid or a comet and I talked

146

00:06:34,249 --> 00:06:31,080

about it in my book The anomalies that

147

00:06:36,230 --> 00:06:34,259

this object exhibited that raised the

148

00:06:38,629 --> 00:06:36,240

possibility that might be artificial in

149

00:06:39,969 --> 00:06:38,639

origin and we would like within the

150

00:06:43,909 --> 00:06:39,979

Galileo project

151  
00:06:46,210 --> 00:06:43,919  
to find the next of and rendezvous with

152  
00:06:50,089 --> 00:06:46,220  
it it's sort of like dating

153  
00:06:52,249 --> 00:06:50,099  
and we have a dating app which is the

154  
00:06:55,070 --> 00:06:52,259  
Vera Rubin Observatory it will start

155  
00:06:58,070 --> 00:06:55,080  
operation in a year most of the time we

156  
00:07:02,990 --> 00:07:00,469  
because the date costs more than a

157  
00:07:05,150 --> 00:07:03,000  
billion dollars in space so we have to

158  
00:07:08,150 --> 00:07:05,160  
be very selective it's not like going to

159  
00:07:09,770 --> 00:07:08,160  
dinner it's an expensive date it's a

160  
00:07:13,010 --> 00:07:09,780  
very expensive day and you have to be

161  
00:07:15,589 --> 00:07:13,020  
careful about who you choose uh and so

162  
00:07:18,770 --> 00:07:15,599  
but we are designing a space mission

163  
00:07:19,870 --> 00:07:18,780

that will bring a camera close to the

164

00:07:24,290 --> 00:07:19,880

next

165

00:07:25,969 --> 00:07:24,300

and get more data on it so because they

166

00:07:28,730 --> 00:07:25,979

say a picture is worth a thousand words

167

00:07:30,309 --> 00:07:28,740

in my case it's worth 66 000 words the

168

00:07:34,370 --> 00:07:30,319

number of words in my book

169

00:07:38,450 --> 00:07:34,380

extraterrestrial and the second track of

170

00:07:41,270 --> 00:07:38,460

the Galileo project is indeed related to

171

00:07:44,529 --> 00:07:41,280

another Interstellar object it was

172

00:07:48,409 --> 00:07:44,539

discovered almost four years before

173

00:07:51,230 --> 00:07:48,419

and by the US government it was put in a

174

00:07:53,450 --> 00:07:51,240

catalog of meteors that's an object that

175

00:07:56,390 --> 00:07:53,460

the Earth collided with much smaller

176  
00:07:59,890 --> 00:07:56,400  
than um was the size of a football field

177  
00:08:02,570 --> 00:07:59,900  
this one is is the size of a watermelon

178  
00:08:05,150 --> 00:08:02,580  
the many more of this but the Earth is

179  
00:08:07,990 --> 00:08:05,160  
like a fishing net it as it moves around

180  
00:08:12,290 --> 00:08:08,000  
the Sun it collided with this object and

181  
00:08:15,850 --> 00:08:12,300  
we discovered it in a catalog compiled

182  
00:08:19,070 --> 00:08:15,860  
by the US government with my student and

183  
00:08:21,650 --> 00:08:19,080  
we found it to be moving so fast that it

184  
00:08:23,629 --> 00:08:21,660  
must be Unbound to the sun it it came

185  
00:08:26,529 --> 00:08:23,639  
from outside the solar system and when

186  
00:08:31,249 --> 00:08:26,539  
we submitted a paper about it in March

187  
00:08:32,990 --> 00:08:31,259  
2019 more than three years ago uh it the

188  
00:08:35,630 --> 00:08:33,000

paper was declined from publication

189

00:08:37,190 --> 00:08:35,640

because the reviewer said this is U.S

190

00:08:39,050 --> 00:08:37,200

government data we don't know the

191

00:08:40,969 --> 00:08:39,060

uncertainties we don't have access to

192

00:08:42,649 --> 00:08:40,979

this data therefore we don't trust the

193

00:08:45,769 --> 00:08:42,659

US government and the paper should not

194

00:08:47,509 --> 00:08:45,779

be published uh so I tried to reach out

195

00:08:49,430 --> 00:08:47,519

to people behind the National Security

196

00:08:52,250 --> 00:08:49,440

Fence and

197

00:08:54,110 --> 00:08:52,260

um just a few months ago there was a

198

00:08:57,430 --> 00:08:54,120

letter released by the Department of

199

00:09:01,009 --> 00:08:57,440

Defense the U.S space command to NASA

200

00:09:05,509 --> 00:09:01,019

confirming that indeed that this object

201  
00:09:07,550 --> 00:09:05,519  
at the 99.99 confidence came from

202  
00:09:10,970 --> 00:09:07,560  
outside the solar system as argued in

203  
00:09:13,610 --> 00:09:10,980  
our paper with my student Amir siraj and

204  
00:09:16,250 --> 00:09:13,620  
so now our paper is being reviewed for

205  
00:09:20,269 --> 00:09:16,260  
publication and moreover we are

206  
00:09:22,670 --> 00:09:20,279  
designing an expedition to the location

207  
00:09:25,370 --> 00:09:22,680  
of the meteor impact which was a hundred

208  
00:09:29,470 --> 00:09:25,380  
miles off the coast of Papua New Guinea

209  
00:09:33,190 --> 00:09:29,480  
and then the meteor exploded about the

210  
00:09:35,930 --> 00:09:33,200  
18.7 kilometers above the ocean surface

211  
00:09:37,490 --> 00:09:35,940  
and then the government together with

212  
00:09:40,070 --> 00:09:37,500  
the letter that I mentioned they also

213  
00:09:43,009 --> 00:09:40,080

released the light curve from the

214

00:09:46,370 --> 00:09:43,019

fireball that the the explosion

215

00:09:48,769 --> 00:09:46,380

generated and uh from that we inferred

216

00:09:52,009 --> 00:09:48,779

that it was made of a very tough

217

00:09:55,610 --> 00:09:52,019

material tougher than iron in fact it

218

00:09:58,250 --> 00:09:55,620

was tougher than 273 all the objects in

219

00:10:00,350 --> 00:09:58,260

the government catalog were of material

220

00:10:02,990 --> 00:10:00,360

strength that is at least a factor of

221

00:10:05,269 --> 00:10:03,000

two smaller than this object so it's

222

00:10:07,970 --> 00:10:05,279

clearly an outlier in terms of its

223

00:10:10,310 --> 00:10:07,980

material strength and also it was moving

224

00:10:13,790 --> 00:10:10,320

so fast outside the solar system faster

225

00:10:16,910 --> 00:10:13,800

than 95 percent of all the stars in the

226  
00:10:19,030 --> 00:10:16,920  
vicinity of the sun wow so here you have

227  
00:10:23,090 --> 00:10:19,040  
an object the first in the cellar meteor

228  
00:10:26,690 --> 00:10:23,100  
before romuamua uh was discovered by

229  
00:10:29,090 --> 00:10:26,700  
almost four years and it's an outlier it

230  
00:10:32,090 --> 00:10:29,100  
moved there much faster than almost all

231  
00:10:34,910 --> 00:10:32,100  
stars near the sun and it was tougher

232  
00:10:37,670 --> 00:10:34,920  
than all the objects in the meteor

233  
00:10:38,990 --> 00:10:37,680  
catalog uh so what was it that raises

234  
00:10:41,269 --> 00:10:39,000  
the possibility that maybe it's a

235  
00:10:44,690 --> 00:10:41,279  
spacecraft that was propelled to a high

236  
00:10:46,910 --> 00:10:44,700  
speed and had the very tough composition

237  
00:10:48,889 --> 00:10:46,920  
because it was artificial in origin and

238  
00:10:51,110 --> 00:10:48,899

we are planning an expedition that will

239

00:10:54,410 --> 00:10:51,120

scoop the ocean floor for the fragments

240

00:10:56,930 --> 00:10:54,420

from this explosion and uh we can then

241

00:10:59,870 --> 00:10:56,940

analyze their composition and in Fair

242

00:11:01,990 --> 00:10:59,880

whether the object was an iron meteorite

243

00:11:04,670 --> 00:11:02,000

a natural rock or

244

00:11:07,490 --> 00:11:04,680

some piece of equipment then of course

245

00:11:11,269 --> 00:11:07,500

my wish is that there will be a chunk of

246

00:11:14,150 --> 00:11:11,279

material with some buttons on it so that

247

00:11:15,350 --> 00:11:14,160

I can press button I know you've been

248

00:11:17,870 --> 00:11:15,360

seeing you've been wanting to press

249

00:11:20,389 --> 00:11:17,880

buttons for a while well I love to press

250

00:11:23,449 --> 00:11:20,399

buttons since I was a child but that is

251

00:11:24,949 --> 00:11:23,459

the second track and finally a a very

252

00:11:28,250 --> 00:11:24,959

important track of the Galileo project

253

00:11:30,170 --> 00:11:28,260

has just do with the objects that were

254

00:11:31,790 --> 00:11:30,180

discussed by the report from the

255

00:11:34,130 --> 00:11:31,800

Director of National Intelligence to the

256

00:11:36,290 --> 00:11:34,140

U.S Congress a year ago that actually

257

00:11:39,470 --> 00:11:36,300

triggered the Galileo project a month

258

00:11:42,410 --> 00:11:39,480

later we announced it and I approached

259

00:11:43,810 --> 00:11:42,420

NASA at the time because Bill Nelson

260

00:11:46,430 --> 00:11:43,820

said that

261

00:11:49,370 --> 00:11:46,440

this is a subject that scientists should

262

00:11:53,509 --> 00:11:49,380

get engaged with so I approached NASA

263

00:11:56,210 --> 00:11:53,519

submitted a white paper to Thomas who is

264

00:11:58,670 --> 00:11:56,220

responsible for all signs at Nasa I

265

00:12:00,470 --> 00:11:58,680

never heard back and a month later I

266

00:12:02,509 --> 00:12:00,480

decided since I'm not hearing back to

267

00:12:03,430 --> 00:12:02,519

establish the Galileo project and we're

268

00:12:06,530 --> 00:12:03,440

actually

269

00:12:10,970 --> 00:12:06,540

doing what I proposed in this white

270

00:12:14,110 --> 00:12:10,980

letter we are putting together a suite

271

00:12:17,569 --> 00:12:14,120

of instruments that monitor the sky 24 7

272

00:12:22,250 --> 00:12:17,579

the entire sky in the infrared visible

273

00:12:24,190 --> 00:12:22,260

light audio radio and then analyzing the

274

00:12:28,129 --> 00:12:24,200

data with artificial intelligence

275

00:12:29,870 --> 00:12:28,139

software floor and the suite of

276

00:12:31,030 --> 00:12:29,880

instruments is already

277

00:12:35,509 --> 00:12:31,040

available

278

00:12:37,790 --> 00:12:35,519

we looked at it celebrated it at the

279

00:12:39,530 --> 00:12:37,800

conference we had two weeks ago and the

280

00:12:42,230 --> 00:12:39,540

next step in the coming months would be

281

00:12:46,069 --> 00:12:42,240

to test it to make sure that it works

282

00:12:48,410 --> 00:12:46,079

and then hopefully in 2023 deployed in a

283

00:12:49,629 --> 00:12:48,420

desirable location and start collecting

284

00:12:53,629 --> 00:12:49,639

data

285

00:12:56,350 --> 00:12:53,639

that will be unique high quality better

286

00:13:01,310 --> 00:12:56,360

than the government released obviously

287

00:13:03,889 --> 00:13:01,320

and will allow us to share it openly and

288

00:13:05,569 --> 00:13:03,899

publish papers in scientific journals

289

00:13:08,449 --> 00:13:05,579

that are peer-reviewed on this subject

290

00:13:10,190 --> 00:13:08,459

so hopefully within a year that would be

291

00:13:12,889 --> 00:13:10,200

the case

292

00:13:15,650 --> 00:13:12,899

you know that that's so wonderful you

293

00:13:18,230 --> 00:13:15,660

know and in a short informational video

294

00:13:20,930 --> 00:13:18,240

about the conference that was posted on

295

00:13:23,030 --> 00:13:20,940

uh the Galileo project website we saw

296

00:13:25,730 --> 00:13:23,040

folks gathering on the roof of the

297

00:13:27,230 --> 00:13:25,740

Harvard College Observatory with lots of

298

00:13:29,750 --> 00:13:27,240

that detection gear that you're talking

299

00:13:32,930 --> 00:13:29,760

about freshly installed

300

00:13:35,090 --> 00:13:32,940

um looking for Sky anomalies and kind of

301

00:13:37,670 --> 00:13:35,100

uh you know for people to kind of

302

00:13:39,949 --> 00:13:37,680

examine now this seems like both a very

303

00:13:42,829 --> 00:13:39,959

practical development to see happening

304

00:13:44,629 --> 00:13:42,839

at Harvard uh and looking at methods and

305

00:13:48,290 --> 00:13:44,639

strategies that can be deployed

306

00:13:51,050 --> 00:13:48,300

elsewhere and it also has deep symbolic

307

00:13:53,509 --> 00:13:51,060

resonance uh seeing the roof of such a

308

00:13:56,509 --> 00:13:53,519

prominent Observatory being used to look

309

00:13:58,790 --> 00:13:56,519

for Aerospace phenomena that may be much

310

00:14:00,949 --> 00:13:58,800

closer than astronomers like yourself

311

00:14:03,889 --> 00:14:00,959

were trained to look for decades ago

312

00:14:05,990 --> 00:14:03,899

right how did how did it feel for you

313

00:14:08,930 --> 00:14:06,000

seeing this new development on top of

314

00:14:11,650 --> 00:14:08,940

Harvard College Observatory well the

315

00:14:13,670 --> 00:14:11,660

first thing is when I was proposing to

316

00:14:16,069 --> 00:14:13,680

initiate this project

317

00:14:19,310 --> 00:14:16,079

I was asked by the administration at

318

00:14:22,730 --> 00:14:19,320

Harvard is this part of your day job

319

00:14:24,590 --> 00:14:22,740

and as an astronomer and I said I

320

00:14:29,870 --> 00:14:24,600

thought about it and said yes because in

321

00:14:31,090 --> 00:14:29,880

astronomy we look into space and there

322

00:14:34,250 --> 00:14:31,100

is no

323

00:14:35,990 --> 00:14:34,260

minimum distance for the objects of

324

00:14:40,189 --> 00:14:36,000

Interest we look at the sun we look at

325

00:14:41,990 --> 00:14:40,199

asteroids we look at meteors and in this

326

00:14:43,610 --> 00:14:42,000

case we are searching for objects that

327

00:14:46,189 --> 00:14:43,620

came from outside the solar system so

328

00:14:47,930 --> 00:14:46,199

it's definitely astronomy it's just a

329

00:14:50,569 --> 00:14:47,940

different type of astronomy and such

330

00:14:52,550 --> 00:14:50,579

observatories do not exist astronomers

331

00:14:55,189 --> 00:14:52,560

look at the narrow field of view usually

332

00:14:57,290 --> 00:14:55,199

and if a bird flies above the telescope

333

00:15:00,110 --> 00:14:57,300

they ignore it so we are doing something

334

00:15:01,790 --> 00:15:00,120

new and we are collecting data of higher

335

00:15:03,769 --> 00:15:01,800

quality than what was released by the

336

00:15:05,870 --> 00:15:03,779

government but guess what the government

337

00:15:08,170 --> 00:15:05,880

cares about it they discuss it in

338

00:15:11,750 --> 00:15:08,180

Congress they establish the new office

339

00:15:15,290 --> 00:15:11,760

uh in government and NASA started the

340

00:15:17,990 --> 00:15:15,300

study a year after I sent my white paper

341

00:15:20,569 --> 00:15:18,000

so now they're looking into whether they

342

00:15:23,810 --> 00:15:20,579

should fund such research

343

00:15:27,050 --> 00:15:23,820

um and so the Galileo project to in my

344

00:15:28,850 --> 00:15:27,060

um uh view is is just a matter of Common

345

00:15:30,650 --> 00:15:28,860

Sense there is a subject that the

346

00:15:33,350 --> 00:15:30,660

government cares about the public cares

347

00:15:37,009 --> 00:15:33,360

about obviously scientists Can Shed

348

00:15:38,629 --> 00:15:37,019

light and and you know use evidence to

349

00:15:41,090 --> 00:15:38,639

guide us as to the nature of these

350

00:15:45,650 --> 00:15:41,100

objects so uh if you look at the

351  
00:15:49,189 --> 00:15:45,660  
astronomy you know in 1933 uh Fritz Wiki

352  
00:15:51,410 --> 00:15:49,199  
and astronomer from Caltech uh realized

353  
00:15:55,009 --> 00:15:51,420  
that most of the matter in clusters of

354  
00:15:57,650 --> 00:15:55,019  
galaxies or in the universe is of a form

355  
00:16:01,069 --> 00:15:57,660  
that is not luminous that you can't see

356  
00:16:03,650 --> 00:16:01,079  
he called it dark matter and for 40

357  
00:16:07,749 --> 00:16:03,660  
years mainstream astronomers resisted

358  
00:16:10,249 --> 00:16:07,759  
that they said we know the matter that

359  
00:16:13,009 --> 00:16:10,259  
objects in the solar system are made of

360  
00:16:14,749 --> 00:16:13,019  
there is nothing else but guess what

361  
00:16:17,269 --> 00:16:14,759  
eighty percent of the stuff in the

362  
00:16:18,829 --> 00:16:17,279  
universe we now know and if you ask any

363  
00:16:21,290 --> 00:16:18,839

practicing astronomy they will tell you

364

00:16:23,569 --> 00:16:21,300

of course 80 percent is dark matter

365

00:16:27,590 --> 00:16:23,579

although we still don't know what it is

366

00:16:28,730 --> 00:16:27,600

but the lesson the moral of this is we

367

00:16:32,530 --> 00:16:28,740

don't find in the solar system

368

00:16:34,550 --> 00:16:32,540

everything that is out there in fact

369

00:16:36,650 --> 00:16:34,560

four-fifths of the matter in the

370

00:16:38,569 --> 00:16:36,660

universe is of a form that we don't find

371

00:16:41,569 --> 00:16:38,579

in the solar system we don't see it we

372

00:16:43,550 --> 00:16:41,579

don't know what it is and so I say if

373

00:16:45,170 --> 00:16:43,560

now you look at Interstellar objects

374

00:16:47,389 --> 00:16:45,180

that came from outside the solar system

375

00:16:49,629 --> 00:16:47,399

it's just like looking at objects that

376  
00:16:52,970 --> 00:16:49,639  
came from the street into your backyard

377  
00:16:56,150 --> 00:16:52,980  
and if you are used to finding rocks in

378  
00:17:00,470 --> 00:16:56,160  
your backyard and suddenly you see a

379  
00:17:03,650 --> 00:17:00,480  
beach ball or a soccer ball or you know

380  
00:17:06,049 --> 00:17:03,660  
a baseball in your backyard

381  
00:17:08,689 --> 00:17:06,059  
you know that you have neighbors

382  
00:17:10,909 --> 00:17:08,699  
so you can't just assume that everything

383  
00:17:13,909 --> 00:17:10,919  
that you will find in your backyard that

384  
00:17:16,730 --> 00:17:13,919  
came from outside must be a rock

385  
00:17:20,210 --> 00:17:16,740  
and that was the attitude of mainstream

386  
00:17:23,569 --> 00:17:20,220  
astronomers when they realized that has

387  
00:17:25,490 --> 00:17:23,579  
all these anomalies they said yes it's a

388  
00:17:28,189 --> 00:17:25,500

rock but of a type that we've never seen

389

00:17:29,690 --> 00:17:28,199

before just like arguing a beach ball is

390

00:17:32,510 --> 00:17:29,700

a rock of a type that we've never seen

391

00:17:34,970 --> 00:17:32,520

before and then you know that's not a

392

00:17:38,150 --> 00:17:34,980

good approach if you are sufficiently

393

00:17:41,330 --> 00:17:38,160

humbled to learn from evidence for me

394

00:17:43,549 --> 00:17:41,340

the lesson is it's intriguing enough to

395

00:17:46,010 --> 00:17:43,559

initiate a new research program and to

396

00:17:48,049 --> 00:17:46,020

me it sounds like Common Sense we launch

397

00:17:51,110 --> 00:17:48,059

things out of the solar system so why

398

00:17:53,690 --> 00:17:51,120

should we dismiss the possibility the

399

00:17:55,610 --> 00:17:53,700

things entering the solar system are of

400

00:17:57,650 --> 00:17:55,620

artificial origin we should not dismiss

401  
00:17:59,630 --> 00:17:57,660  
it if we see something unusual let's get

402  
00:18:01,970 --> 00:17:59,640  
to the bottom of it rather than say oh

403  
00:18:03,830 --> 00:18:01,980  
we know that it's a rock of a type that

404  
00:18:05,690 --> 00:18:03,840  
we've never seen before like a Dust

405  
00:18:07,430 --> 00:18:05,700  
Bunny which is not actually a rock it's

406  
00:18:11,090 --> 00:18:07,440  
a cloud of daspberry that was the one

407  
00:18:14,029 --> 00:18:11,100  
suggestion or a hydrogenized bird but

408  
00:18:16,370 --> 00:18:14,039  
then when that had issues then they said

409  
00:18:18,650 --> 00:18:16,380  
oh well maybe it's a nitrogen Iceberg

410  
00:18:20,450 --> 00:18:18,660  
and everyone says yes it is a nitrogen

411  
00:18:22,970 --> 00:18:20,460  
Iceberg Case Closed everything else is

412  
00:18:25,010 --> 00:18:22,980  
speckled now we've never seen a nice a

413  
00:18:27,710 --> 00:18:25,020

nitrogen Iceberg nor a hydrogen Iceberg

414

00:18:29,810 --> 00:18:27,720

nor a Dust Bunny yet these are the

415

00:18:32,990 --> 00:18:29,820

mainstream proposals for the nature for

416

00:18:34,789 --> 00:18:33,000

muamua and I say we need more evidence

417

00:18:36,590 --> 00:18:34,799

you can't just invent things that we've

418

00:18:38,210 --> 00:18:36,600

never you know just like in the example

419

00:18:40,789 --> 00:18:38,220

of the beach where you would say here is

420

00:18:42,529 --> 00:18:40,799

a round rock even though it's much

421

00:18:45,289 --> 00:18:42,539

lighter than a rock you know just like

422

00:18:47,210 --> 00:18:45,299

the Dust Bunny idea maybe it's a rock

423

00:18:48,250 --> 00:18:47,220

made of dust particles that is very

424

00:18:53,450 --> 00:18:48,260

Loosely

425

00:18:56,029 --> 00:18:53,460

very rarefied I mean you can come with

426

00:18:57,590 --> 00:18:56,039

all kinds of ideas but it's also

427

00:18:59,390 --> 00:18:57,600

possible that it came from another

428

00:19:02,870 --> 00:18:59,400

civilization because we are launching

429

00:19:08,150 --> 00:19:05,210

that's beautiful and I love your take on

430

00:19:09,590 --> 00:19:08,160

this each and every time

431

00:19:11,210 --> 00:19:09,600

um and you can apply it to so many

432

00:19:13,430 --> 00:19:11,220

different things if you don't recognize

433

00:19:16,130 --> 00:19:13,440

something if you don't know what it is

434

00:19:18,950 --> 00:19:16,140

um that that doesn't mean you know that

435

00:19:20,450 --> 00:19:18,960

you have to come up with a prosaic

436

00:19:23,570 --> 00:19:20,460

answer for instance just so you're

437

00:19:27,289 --> 00:19:23,580

comfortable so your ego can deal with it

438

00:19:29,510 --> 00:19:27,299

um do you continue to run into issues

439

00:19:31,370 --> 00:19:29,520

with with different scientists who tell

440

00:19:33,169 --> 00:19:31,380

you you're wasting your time and all

441

00:19:35,090 --> 00:19:33,179

that and and if so what propels you to

442

00:19:38,870 --> 00:19:35,100

move past that and keep going

443

00:19:42,350 --> 00:19:38,880

well um it's always a mixed bag in the

444

00:19:45,590 --> 00:19:42,360

sense that on the same day I get huge

445

00:19:47,690 --> 00:19:45,600

support from some people and including

446

00:19:50,570 --> 00:19:47,700

the public including very prominent

447

00:19:52,490 --> 00:19:50,580

people and including funders but at the

448

00:19:56,810 --> 00:19:52,500

same time there are people that dismiss

449

00:19:59,990 --> 00:19:56,820

the the notion uh it's less so these

450

00:20:03,289 --> 00:20:00,000

days because I think there was some

451  
00:20:06,590 --> 00:20:03,299  
traction to my arguments and more people

452  
00:20:09,049 --> 00:20:06,600  
are interested in this possibility and

453  
00:20:10,850 --> 00:20:09,059  
that was my intention all along to

454  
00:20:12,730 --> 00:20:10,860  
change the nature of the conversation to

455  
00:20:16,850 --> 00:20:12,740  
make people more open-minded because

456  
00:20:19,549 --> 00:20:16,860  
obviously experts want to preserve their

457  
00:20:21,830 --> 00:20:19,559  
status in in the sense that they can

458  
00:20:23,690 --> 00:20:21,840  
explain everything based on their past

459  
00:20:26,270 --> 00:20:23,700  
knowledge you know that's again related

460  
00:20:28,310 --> 00:20:26,280  
to their ego so in order for they don't

461  
00:20:31,130 --> 00:20:28,320  
want to take any risks they don't want

462  
00:20:33,169 --> 00:20:31,140  
to imagine things that are not based on

463  
00:20:34,789 --> 00:20:33,179

what they already know so they would

464

00:20:36,649 --> 00:20:34,799

argue that everything in the sky must be

465

00:20:39,590 --> 00:20:36,659

natural Israel and rocks you know like

466

00:20:41,390 --> 00:20:39,600

even if it's a rock of a type we've

467

00:20:43,510 --> 00:20:41,400

never seen before so that's a natural

468

00:20:46,549 --> 00:20:43,520

tendency but we should resist it because

469

00:20:49,789 --> 00:20:46,559

curiosity drives discoveries in science

470

00:20:51,649 --> 00:20:49,799

and if you keep always inventing things

471

00:20:54,730 --> 00:20:51,659

that we've never seen before as a

472

00:20:57,110 --> 00:20:54,740

substitute for something that is really

473

00:21:00,289 --> 00:20:57,120

extraordinary like another civilization

474

00:21:02,330 --> 00:21:00,299

then you will never find that evidence

475

00:21:04,070 --> 00:21:02,340

um and you know it's often said

476

00:21:05,930 --> 00:21:04,080

extraordinary claims require

477

00:21:08,409 --> 00:21:05,940

extraordinary evidence that was a

478

00:21:10,850 --> 00:21:08,419

statement made by Carl Sagan in the 70s

479

00:21:13,789 --> 00:21:10,860

my point is extraordinary evidence

480

00:21:15,830 --> 00:21:13,799

requires extraordinary funding if you

481

00:21:17,870 --> 00:21:15,840

don't search you will never find that

482

00:21:19,909 --> 00:21:17,880

evidence and if you look at the Dark

483

00:21:21,409 --> 00:21:19,919

Matter search we invested billions of

484

00:21:23,870 --> 00:21:21,419

dollars most recently in the Large

485

00:21:26,510 --> 00:21:23,880

Hadron Collider we were looking for a

486

00:21:29,810 --> 00:21:26,520

specific popular type of particles

487

00:21:31,430 --> 00:21:29,820

called the weekly interacting massive

488

00:21:33,830 --> 00:21:31,440

particle so super the lightest

489

00:21:36,230 --> 00:21:33,840

supersymmetric particle and we haven't

490

00:21:37,730 --> 00:21:36,240

found them even though we were searching

491

00:21:40,430 --> 00:21:37,740

in the natural parameter space and

492

00:21:42,710 --> 00:21:40,440

people proposed for decades and you know

493

00:21:46,310 --> 00:21:42,720

this this experiment cost 10 billion

494

00:21:48,950 --> 00:21:46,320

dollars and so if we invest billions of

495

00:21:51,950 --> 00:21:48,960

dollars in the search for equipment from

496

00:21:53,630 --> 00:21:51,960

other civilizations in space and within

497

00:21:56,390 --> 00:21:53,640

a few decades from now we don't find

498

00:21:59,210 --> 00:21:56,400

anything then we would be exactly at the

499

00:22:02,649 --> 00:21:59,220

same point as dark matter searches are

500

00:22:05,149 --> 00:22:02,659

right now and frankly uh finding

501  
00:22:07,490 --> 00:22:05,159  
evidence for a smarter kid on the Block

502  
00:22:09,350 --> 00:22:07,500  
would have much bigger implications for

503  
00:22:11,330 --> 00:22:09,360  
Humanity than finding that the dark

504  
00:22:13,789 --> 00:22:11,340  
matter is some weekly interacting

505  
00:22:15,230 --> 00:22:13,799  
massive particle because you know that

506  
00:22:18,289 --> 00:22:15,240  
wouldn't affect the daily lives of

507  
00:22:20,289 --> 00:22:18,299  
people but finding the that there is

508  
00:22:22,250 --> 00:22:20,299  
someone else out there will change our

509  
00:22:25,549 --> 00:22:22,260  
perspective on our place in the

510  
00:22:27,649 --> 00:22:25,559  
Universal so I say you know how can we

511  
00:22:30,710 --> 00:22:27,659  
be uh

512  
00:22:32,450 --> 00:22:30,720  
you know so intolerant to the

513  
00:22:35,930 --> 00:22:32,460

possibility that we might find something

514

00:22:37,730 --> 00:22:35,940

so as not to fund the search that makes

515

00:22:39,830 --> 00:22:37,740

very little sense given what we are

516

00:22:42,830 --> 00:22:39,840

doing in the context of dark matter and

517

00:22:44,510 --> 00:22:42,840

to me it sounds just like common sense

518

00:22:47,110 --> 00:22:44,520

but somehow

519

00:22:49,789 --> 00:22:47,120

only the public and the government

520

00:22:52,070 --> 00:22:49,799

recognizes it at the moment and I just

521

00:22:53,330 --> 00:22:52,080

find it surprising given that the halls

522

00:22:56,870 --> 00:22:53,340

of Academia are supposed to be

523

00:22:58,669 --> 00:22:56,880

open-minded Blue Sky risk taking that's

524

00:23:01,370 --> 00:22:58,679

the whole nature of scientific inquiry

525

00:23:05,450 --> 00:23:01,380

so we're taking risks on things that are

526

00:23:08,029 --> 00:23:05,460

not as uh consequential for our for our

527

00:23:09,289 --> 00:23:08,039

future such as the nature of the of dark

528

00:23:12,710 --> 00:23:09,299

matter we are willing to invest business

529

00:23:14,990 --> 00:23:12,720

but then zero Federal funding to the

530

00:23:17,690 --> 00:23:15,000

search for things that we are sending to

531

00:23:22,070 --> 00:23:17,700

space coming from another civilization

532

00:23:24,710 --> 00:23:22,080

okay yeah thank you so much you know we

533

00:23:25,970 --> 00:23:24,720

it's very on topic that we talk to a lot

534

00:23:28,130 --> 00:23:25,980

of people

535

00:23:29,750 --> 00:23:28,140

um kind of behind the scenes not on on

536

00:23:31,610 --> 00:23:29,760

the podcast talking to a lot of people

537

00:23:33,470 --> 00:23:31,620

who are thoughtful professionals who

538

00:23:35,810 --> 00:23:33,480

have been privately looking at these

539

00:23:38,270 --> 00:23:35,820

issues sometimes for quite a while

540

00:23:40,730 --> 00:23:38,280

and they love talking about it but they

541

00:23:42,649 --> 00:23:40,740

still they're still reluctant they don't

542

00:23:44,870 --> 00:23:42,659

feel comfortable being associated with

543

00:23:47,990 --> 00:23:44,880

the the uip topic because of this

544

00:23:51,169 --> 00:23:48,000

lingering ridicule right I suspect you

545

00:23:53,269 --> 00:23:51,179

know also in in public you know there's

546

00:23:54,710 --> 00:23:53,279

a lot of acceptance for these topics

547

00:23:57,950 --> 00:23:54,720

there's a lot of interest in these

548

00:24:00,049 --> 00:23:57,960

topics and at the same time uh there's

549

00:24:02,390 --> 00:24:00,059

this idea often in the public

550

00:24:04,909 --> 00:24:02,400

imagination that science is this kind of

551

00:24:06,830 --> 00:24:04,919

monolith right that isn't that doesn't

552

00:24:09,830 --> 00:24:06,840

have shifting sand or anything like this

553

00:24:11,510 --> 00:24:09,840

I suspect that in your many years in

554

00:24:13,850 --> 00:24:11,520

science and Academia you've seen

555

00:24:15,769 --> 00:24:13,860

subjects get extraordinary ridicule

556

00:24:17,690 --> 00:24:15,779

people saying it couldn't possibly be

557

00:24:19,310 --> 00:24:17,700

that it couldn't possibly be that and

558

00:24:21,470 --> 00:24:19,320

then that subject turns out to have a

559

00:24:23,510 --> 00:24:21,480

lot of Merit to it right have you seen

560

00:24:26,810 --> 00:24:23,520

that happen yourself and if so oh yeah

561

00:24:28,789 --> 00:24:26,820

many times and and if and if so what

562

00:24:30,710 --> 00:24:28,799

what what can you

563

00:24:33,289 --> 00:24:30,720

um what emboldens you about those kinds

564

00:24:35,750 --> 00:24:33,299

of precedents in terms of what you can

565

00:24:38,090 --> 00:24:35,760

say to the public yeah well first let me

566

00:24:40,850 --> 00:24:38,100

Express the lesson that I've learned

567

00:24:43,250 --> 00:24:40,860

from my experience which is not to pay

568

00:24:45,769 --> 00:24:43,260

attention to how many likes you have

569

00:24:48,169 --> 00:24:45,779

but to pay attention to the evidence be

570

00:24:51,010 --> 00:24:48,179

guided by the evidence now you find a

571

00:24:53,570 --> 00:24:51,020

lot of people in politics that maneuver

572

00:24:55,070 --> 00:24:53,580

politically so that they will maximize

573

00:24:58,310 --> 00:24:55,080

the number of likes

574

00:25:00,350 --> 00:24:58,320

you find a lot of people that just enjoy

575

00:25:02,330 --> 00:25:00,360

the social interaction and just try to

576

00:25:06,789 --> 00:25:02,340

maximize the number of likes but that's

577

00:25:12,230 --> 00:25:09,890

defined it and we are still following

578

00:25:15,830 --> 00:25:12,240

that method should be guided by evidence

579

00:25:18,769 --> 00:25:15,840

by data not by what people say because

580

00:25:20,750 --> 00:25:18,779

in the days of Galileo he was put in

581

00:25:22,909 --> 00:25:20,760

house arrest and today he would have

582

00:25:24,890 --> 00:25:22,919

been canceled on social media for

583

00:25:28,090 --> 00:25:24,900

expressing views that are not popular

584

00:25:31,669 --> 00:25:28,100

okay but it's not a popularity contest

585

00:25:33,890 --> 00:25:31,679

like in politics what we are trying to

586

00:25:35,810 --> 00:25:33,900

figure out is the nature of reality and

587

00:25:37,909 --> 00:25:35,820

you know whether the Earth moves around

588

00:25:40,510 --> 00:25:37,919

the Sun or the sun moves around the

589

00:25:43,970 --> 00:25:40,520

earth is not a popularity

590

00:25:46,669 --> 00:25:43,980

issue it's just a reality that we live

591

00:25:48,649 --> 00:25:46,679

in so if you send off a satellite the

592

00:25:50,930 --> 00:25:48,659

satellite can take an image of the Earth

593

00:25:51,830 --> 00:25:50,940

and the Sun and realize who is moving

594

00:25:55,490 --> 00:25:51,840

around

595

00:25:58,370 --> 00:25:55,500

which object that that is not a

596

00:26:00,529 --> 00:25:58,380

philosophical issue and as much as you

597

00:26:01,970 --> 00:26:00,539

don't like the notion that the Earth is

598

00:26:05,630 --> 00:26:01,980

not at the center of the universe that's

599

00:26:07,730 --> 00:26:05,640

completely irrelevant okay so the the

600

00:26:10,310 --> 00:26:07,740

bottom line is we should be guided by

601  
00:26:13,190 --> 00:26:10,320  
evidence but very often very often

602  
00:26:16,250 --> 00:26:13,200  
humans prefer because of their ego

603  
00:26:18,890 --> 00:26:16,260  
because of other social reasons prefer a

604  
00:26:21,769 --> 00:26:18,900  
notion that is not realistic and how do

605  
00:26:24,830 --> 00:26:21,779  
they protect it by not collecting data

606  
00:26:27,710 --> 00:26:24,840  
by having a stigma on anything that is

607  
00:26:30,169 --> 00:26:27,720  
different okay so the stigma keeps you

608  
00:26:31,850 --> 00:26:30,179  
in a bubble it's just like you know in

609  
00:26:34,490 --> 00:26:31,860  
politics you can be in a bubble that

610  
00:26:36,350 --> 00:26:34,500  
justifies your no your ideas but in

611  
00:26:38,450 --> 00:26:36,360  
science there is a way out of it which

612  
00:26:40,130 --> 00:26:38,460  
is to do experiments to collect data

613  
00:26:41,510 --> 00:26:40,140

because that takes you out of the bubble

614

00:26:43,250 --> 00:26:41,520

if you are wrong

615

00:26:45,110 --> 00:26:43,260

and if you were to ask those

616

00:26:47,690 --> 00:26:45,120

philosophers in the days of Galileo to

617

00:26:49,190 --> 00:26:47,700

design a space mission to Mars they

618

00:26:50,870 --> 00:26:49,200

would never reach the destination

619

00:26:53,090 --> 00:26:50,880

because they thought that Mars moves

620

00:26:54,890 --> 00:26:53,100

around the Earth but Mars doesn't move

621

00:26:57,049 --> 00:26:54,900

around the earth it moves around the Sun

622

00:26:59,330 --> 00:26:57,059

so you would never get there if you have

623

00:27:02,090 --> 00:26:59,340

the wrong ideas that's the beauty of

624

00:27:05,269 --> 00:27:02,100

science you can do an experiment and you

625

00:27:07,610 --> 00:27:05,279

can test which version of the story is

626

00:27:09,710 --> 00:27:07,620

correct and that takes you out of your

627

00:27:11,029 --> 00:27:09,720

bubble there are many instances in the

628

00:27:12,710 --> 00:27:11,039

history of science where people thought

629

00:27:15,890 --> 00:27:12,720

one thing but then did the experiment

630

00:27:18,049 --> 00:27:15,900

realize they were wrong okay so in my

631

00:27:20,330 --> 00:27:18,059

short career there were several cases

632

00:27:22,070 --> 00:27:20,340

where I was proposing something that

633

00:27:25,549 --> 00:27:22,080

ended up being right and people were

634

00:27:28,370 --> 00:27:25,559

just ridiculing it dismissing it but let

635

00:27:31,549 --> 00:27:28,380

me mention first that the big items that

636

00:27:34,250 --> 00:27:31,559

you know for example the existence of

637

00:27:37,490 --> 00:27:34,260

exoplanets around other stars you know

638

00:27:39,230 --> 00:27:37,500

and when I started astrophysics it was

639

00:27:41,930 --> 00:27:39,240

widely believed that maybe the solar

640

00:27:43,909 --> 00:27:41,940

system is unique that you don't have of

641

00:27:45,529 --> 00:27:43,919

an Earth-like planet around the

642

00:27:47,870 --> 00:27:45,539

significant fraction of the sun-like

643

00:27:50,870 --> 00:27:47,880

stars in fact you may not have any

644

00:27:52,669 --> 00:27:50,880

planets around other stars

645

00:27:55,070 --> 00:27:52,679

in retrospect it's hard to believe

646

00:27:57,889 --> 00:27:55,080

that's the case like why would people

647

00:28:00,169 --> 00:27:57,899

think that why would we feel that we are

648

00:28:01,010 --> 00:28:00,179

privileged in any way it turned out to

649

00:28:03,590 --> 00:28:01,020

be wrong

650

00:28:06,289 --> 00:28:03,600

and now we know that a substantial

651  
00:28:08,090 --> 00:28:06,299  
fraction of all the sunlight stars have

652  
00:28:10,310 --> 00:28:08,100  
an earth-sized Planet roughly at the

653  
00:28:13,070 --> 00:28:10,320  
same separation like half of them or a

654  
00:28:16,190 --> 00:28:13,080  
third of them a quarter so a substantial

655  
00:28:20,289 --> 00:28:16,200  
fraction uh so our backyard is not

656  
00:28:24,049 --> 00:28:20,299  
privileged uh another example uh

657  
00:28:26,090 --> 00:28:24,059  
gravitational waves when I uh started

658  
00:28:28,610 --> 00:28:26,100  
astrophysics this subject was ridiculed

659  
00:28:31,789 --> 00:28:28,620  
that we will ever be able to construct

660  
00:28:34,490 --> 00:28:31,799  
uh a detector that will find

661  
00:28:37,850 --> 00:28:34,500  
gravitational waves and uh in fact the

662  
00:28:40,970 --> 00:28:37,860  
people who proposed it led by Ray Wise

663  
00:28:43,730 --> 00:28:40,980

at MIT uh were ridiculed by their

664

00:28:46,669 --> 00:28:43,740

colleagues he told me the story at MIT

665

00:28:48,590 --> 00:28:46,679

he was ridiculed by members of the

666

00:28:50,930 --> 00:28:48,600

physics department saying this is

667

00:28:53,210 --> 00:28:50,940

ridiculous it will never be measured and

668

00:28:55,970 --> 00:28:53,220

he was not funded locally

669

00:28:58,430 --> 00:28:55,980

so it took him decades to bring it to

670

00:29:02,570 --> 00:28:58,440

fruition and then as soon as the

671

00:29:05,570 --> 00:29:02,580

experiment was sensitive enough in 2015

672

00:29:06,889 --> 00:29:05,580

they detected a whopping signal from a

673

00:29:08,810 --> 00:29:06,899

gravitational wave source and then he

674

00:29:11,870 --> 00:29:08,820

got the Nobel Prize a few years later

675

00:29:14,630 --> 00:29:11,880

but he had to go through many decades of

676

00:29:16,669 --> 00:29:14,640

ridicule and dismissal

677

00:29:19,549 --> 00:29:16,679

um another example is the dark matter

678

00:29:22,250 --> 00:29:19,559

that I mentioned the fritz Wiki was

679

00:29:24,470 --> 00:29:22,260

ridiculed on that and in fact 40 years

680

00:29:25,730 --> 00:29:24,480

after he made his proposal that there is

681

00:29:28,450 --> 00:29:25,740

most of the matter in the universe is

682

00:29:31,490 --> 00:29:28,460

dark I know of

683

00:29:33,070 --> 00:29:31,500

another astronomer Jerry ostraker who

684

00:29:35,930 --> 00:29:33,080

became the director

685

00:29:38,630 --> 00:29:35,940

of the Princeton University Observatory

686

00:29:41,210 --> 00:29:38,640

around the same time in the early 70s he

687

00:29:44,690 --> 00:29:41,220

gave a colloquium at Caltech the home of

688

00:29:47,210 --> 00:29:44,700

Fritz Wiki about Dark Matter evidence

689

00:29:50,269 --> 00:29:47,220

based on work that he did with Nobel

690

00:29:52,190 --> 00:29:50,279

Laureate Jim pibbles uh so Jerry osuke

691

00:29:55,549 --> 00:29:52,200

was trying to argue there is dark matter

692

00:29:58,730 --> 00:29:55,559

in galaxies and again the audience

693

00:30:01,310 --> 00:29:58,740

ridiculed him and that notion he I heard

694

00:30:02,930 --> 00:30:01,320

it from him and now of course everyone

695

00:30:05,810 --> 00:30:02,940

believes in Dark Matter between just

696

00:30:08,630 --> 00:30:05,820

don't know what it is and so there are

697

00:30:10,549 --> 00:30:08,640

many examples like that and for my from

698

00:30:12,289 --> 00:30:10,559

my perspective you know just to give you

699

00:30:13,789 --> 00:30:12,299

an example

700

00:30:14,570 --> 00:30:13,799

um so

701

00:30:18,490 --> 00:30:14,580

um

702

00:30:21,110 --> 00:30:18,500

I propose that for example you can probe

703

00:30:23,149 --> 00:30:21,120

the space time around the black hole if

704

00:30:26,389 --> 00:30:23,159

you have a light bulb like a hot spot

705

00:30:28,909 --> 00:30:26,399

moving around it and experts when I said

706

00:30:31,010 --> 00:30:28,919

that to some experts they said oh that

707

00:30:32,389 --> 00:30:31,020

will share this the as it moves around

708

00:30:34,490 --> 00:30:32,399

the black hole you would not see

709

00:30:36,710 --> 00:30:34,500

anything I was at Princeton at the time

710

00:30:38,450 --> 00:30:36,720

for a sabbatical so then I decided to

711

00:30:41,389 --> 00:30:38,460

write a paper about it with my postdoc

712

00:30:45,470 --> 00:30:41,399

Avery Broderick and and then guess what

713

00:30:47,990 --> 00:30:45,480

15 years later it was discovered by a

714

00:30:50,029 --> 00:30:48,000

team in Germany they found it near the

715

00:30:52,490 --> 00:30:50,039

black hole of the Milky Way galaxy they

716

00:30:54,830 --> 00:30:52,500

found a hot spot moving around and they

717

00:30:57,370 --> 00:30:54,840

were able to trace it moving in the sky

718

00:31:00,649 --> 00:30:57,380

just the same way that I

719

00:31:02,690 --> 00:31:00,659

expected another example

720

00:31:05,870 --> 00:31:02,700

um I was at a conference in the

721

00:31:07,970 --> 00:31:05,880

Netherlands in the year 2000 and they

722

00:31:10,370 --> 00:31:07,980

were talking about the fact that the

723

00:31:12,490 --> 00:31:10,380

mass of a black hole is correlated with

724

00:31:16,070 --> 00:31:12,500

the amount of light that the host

725

00:31:17,990 --> 00:31:16,080

spheroid of stars is is a meeting and I

726

00:31:20,029 --> 00:31:18,000

said why don't you try to correlate it

727

00:31:21,769 --> 00:31:20,039

this this doesn't make too much sense

728

00:31:23,750 --> 00:31:21,779

but why don't you try to correlate it

729

00:31:25,970 --> 00:31:23,760

with the depth of the gravitational

730

00:31:28,370 --> 00:31:25,980

potential well that holds the black hole

731

00:31:31,130 --> 00:31:28,380

because you expect the black hole to

732

00:31:34,330 --> 00:31:31,140

grow as a result of a creation of gas

733

00:31:37,070 --> 00:31:34,340

and whether the gas can be retained

734

00:31:38,870 --> 00:31:37,080

despite the feedback from the black or

735

00:31:42,529 --> 00:31:38,880

it depends on how deep the potential oil

736

00:31:44,990 --> 00:31:42,539

of the host spheroid of stars is and I

737

00:31:47,149 --> 00:31:45,000

was told that this makes no sense that

738

00:31:49,909 --> 00:31:47,159

in fact it's very difficult to measure

739

00:31:51,649 --> 00:31:49,919

the velocities of stars and so then I

740

00:31:55,009 --> 00:31:51,659

mentioned it to two observers that

741

00:31:57,230 --> 00:31:55,019

visited the harbor then they LED teams

742

00:31:59,090 --> 00:31:57,240

that within a few months did the

743

00:32:02,990 --> 00:31:59,100

correlation that I proposed

744

00:32:05,450 --> 00:32:03,000

and you know they found an amazing car a

745

00:32:07,850 --> 00:32:05,460

very tight correlation between the black

746

00:32:09,169 --> 00:32:07,860

hole mass and the characteristic depth

747

00:32:11,029 --> 00:32:09,179

of the gravitational potential well

748

00:32:14,149 --> 00:32:11,039

around it and

749

00:32:15,590 --> 00:32:14,159

um then the two teams that I guided in

750

00:32:17,389 --> 00:32:15,600

this direction they started to fight

751

00:32:19,009 --> 00:32:17,399

with each other about credit

752

00:32:21,350 --> 00:32:19,019

but

753

00:32:23,870 --> 00:32:21,360

um it was really strange that a few

754

00:32:25,850 --> 00:32:23,880

months earlier the subject was ridiculed

755

00:32:28,310 --> 00:32:25,860

when I suggested it to other observers

756

00:32:30,710 --> 00:32:28,320

so to me it illustrates that whenever

757

00:32:32,930 --> 00:32:30,720

you suggest something new that goes

758

00:32:36,110 --> 00:32:32,940

beyond the way people think about a

759

00:32:38,990 --> 00:32:36,120

problem they resist it they resisted for

760

00:32:41,149 --> 00:32:39,000

a variety of reasons one reason is they

761

00:32:43,009 --> 00:32:41,159

didn't come up with the idea how dare

762

00:32:45,169 --> 00:32:43,019

you come up with it they want it to be

763

00:32:46,789 --> 00:32:45,179

wrong so that they it would not look as

764

00:32:49,430 --> 00:32:46,799

if they missed something they're jealous

765

00:32:51,049 --> 00:32:49,440

okay that's very common jealousy is very

766

00:32:53,269 --> 00:32:51,059

common so if someone proposes something

767

00:32:55,430 --> 00:32:53,279

that will try to kill it just like a

768

00:32:58,190 --> 00:32:55,440

flower blooming above the grass level

769

00:33:00,409 --> 00:32:58,200

you want to step on it because how dare

770

00:33:02,990 --> 00:33:00,419

this flower rise above the grass level

771

00:33:06,409 --> 00:33:03,000

and so that's a very common tendency in

772

00:33:08,690 --> 00:33:06,419

Academia where ideas are being dismissed

773

00:33:10,310 --> 00:33:08,700

just for the reason that the people who

774

00:33:13,250 --> 00:33:10,320

dismiss them did not come up with them

775

00:33:14,870 --> 00:33:13,260

okay that's very common it's not for the

776

00:33:17,409 --> 00:33:14,880

Merit of the idea because obviously in

777

00:33:21,769 --> 00:33:17,419

those examples there was a lot of Merit

778

00:33:23,810 --> 00:33:21,779

and the second is uh not taking risks

779

00:33:26,690 --> 00:33:23,820

that a lot of people prefer to be on the

780

00:33:29,269 --> 00:33:26,700

safe side and just not do not want to

781

00:33:31,070 --> 00:33:29,279

venture from the beaten path that's a

782

00:33:34,970 --> 00:33:31,080

natural tendency it's the herd mentality

783

00:33:37,190 --> 00:33:34,980

of people feeling uh more secure in

784

00:33:39,289 --> 00:33:37,200

herds and you see it in the animal

785

00:33:42,110 --> 00:33:39,299

kingdom you know if you go to Africa you

786

00:33:44,810 --> 00:33:42,120

see animals in hurts why are they in

787

00:33:47,750 --> 00:33:44,820

hurts because a herd is a more powerful

788

00:33:50,389 --> 00:33:47,760

entity than an individual if you are on

789

00:33:52,549 --> 00:33:50,399

your own you know you are subject to

790

00:33:54,350 --> 00:33:52,559

risks but if you go in a herd it's much

791

00:33:56,870 --> 00:33:54,360

more powerful you feel the confidence

792

00:34:00,289 --> 00:33:56,880

that you can you know go together with a

793

00:34:02,990 --> 00:34:00,299

community of others like you so that's

794

00:34:04,850 --> 00:34:03,000

why animals go in hurts that's why a lot

795

00:34:07,970 --> 00:34:04,860

of people have the herd mentality

796

00:34:10,010 --> 00:34:07,980

because they feel more secure in a herd

797

00:34:11,810 --> 00:34:10,020

and of course you see it in academic

798

00:34:14,629 --> 00:34:11,820

research people don't deviate from the

799

00:34:16,790 --> 00:34:14,639

beaten path this way they don't risk any

800

00:34:19,970 --> 00:34:16,800

anything they don't risk making mistakes

801  
00:34:23,030 --> 00:34:19,980  
and they're also liked by their peers so

802  
00:34:25,909 --> 00:34:23,040  
that if they apply for Grants the grants

803  
00:34:28,369 --> 00:34:25,919  
get funded if they apply for a job they

804  
00:34:30,710 --> 00:34:28,379  
get that job so they are they keep being

805  
00:34:34,069 --> 00:34:30,720  
evaluated by their peers and one way to

806  
00:34:36,829 --> 00:34:34,079  
maintain good relationship is to never

807  
00:34:38,629 --> 00:34:36,839  
suggest something that is completely off

808  
00:34:40,790 --> 00:34:38,639  
what these other people are thinking

809  
00:34:43,069 --> 00:34:40,800  
about because otherwise it offends those

810  
00:34:45,889 --> 00:34:43,079  
other people sure I mean I've seen that

811  
00:34:47,869 --> 00:34:45,899  
my working professional life if if you

812  
00:34:50,389 --> 00:34:47,879  
suggest something that's just and it's

813  
00:34:53,450 --> 00:34:50,399

so it's not just Academia or science

814

00:34:55,250 --> 00:34:53,460

it's just a human a human thing if

815

00:34:57,430 --> 00:34:55,260

somebody goes out on a limb it takes a

816

00:35:01,490 --> 00:34:57,440

risks and and wants to try something

817

00:35:03,230 --> 00:35:01,500

people are going to make fun of you to

818

00:35:05,270 --> 00:35:03,240

stop you from doing it because if you

819

00:35:08,630 --> 00:35:05,280

succeed if you are Jimi Hendrix for

820

00:35:11,750 --> 00:35:08,640

instance you know who was a huge risk

821

00:35:13,970 --> 00:35:11,760

taker in his music career and you become

822

00:35:16,849 --> 00:35:13,980

a legend like they're they're gonna hate

823

00:35:18,470 --> 00:35:16,859

you out of jealousy because they didn't

824

00:35:19,069 --> 00:35:18,480

have

825

00:35:22,130 --> 00:35:19,079

um

826

00:35:23,870 --> 00:35:22,140

the nuts so to speak to try it

827

00:35:26,150 --> 00:35:23,880

themselves you know in the business

828

00:35:28,250 --> 00:35:26,160

world if you you know if you have a good

829

00:35:29,990 --> 00:35:28,260

idea you could make a big profit out of

830

00:35:32,630 --> 00:35:30,000

it and that propels you for the next

831

00:35:35,750 --> 00:35:32,640

risk taking Endeavor and you can see it

832

00:35:38,030 --> 00:35:35,760

quite commonly that people that you know

833

00:35:39,770 --> 00:35:38,040

were successful initially became even

834

00:35:43,490 --> 00:35:39,780

more successful later on because they

835

00:35:47,270 --> 00:35:43,500

had the funds to initiate the new new uh

836

00:35:49,010 --> 00:35:47,280

uh ideas and so forth and uh but in

837

00:35:51,410 --> 00:35:49,020

Academia it's not like that because

838

00:35:52,190 --> 00:35:51,420

you're always dependent on people

839

00:35:55,310 --> 00:35:52,200

um

840

00:35:58,849 --> 00:35:55,320

around you in terms of getting funded in

841

00:36:00,170 --> 00:35:58,859

terms of promotion you see and for me I

842

00:36:04,730 --> 00:36:00,180

was able to

843

00:36:07,670 --> 00:36:04,740

um get myself freed from these uh forces

844

00:36:09,950 --> 00:36:07,680

because for two reasons because I'm well

845

00:36:14,210 --> 00:36:09,960

established so I don't depend on what

846

00:36:16,609 --> 00:36:14,220

other people say and the second is I get

847

00:36:18,230 --> 00:36:16,619

over the past decade I got all of my

848

00:36:20,870 --> 00:36:18,240

research funding

849

00:36:23,089 --> 00:36:20,880

from the private sector that's quite

850

00:36:25,370 --> 00:36:23,099

amazing I mean it started with

851  
00:36:27,950 --> 00:36:25,380  
foundations and individuals that funded

852  
00:36:29,650 --> 00:36:27,960  
it but now with the Galileo project for

853  
00:36:32,390 --> 00:36:29,660  
example it's really

854  
00:36:34,250 --> 00:36:32,400  
individuals and that in itself is

855  
00:36:37,190 --> 00:36:34,260  
revolutionary I mean I could give

856  
00:36:38,930 --> 00:36:37,200  
scientists A a whole new way of doing

857  
00:36:41,089 --> 00:36:38,940  
things if they have a great idea to not

858  
00:36:43,370 --> 00:36:41,099  
be so afraid because maybe if they

859  
00:36:45,109 --> 00:36:43,380  
hustle a little bit they could find uh

860  
00:36:46,910 --> 00:36:45,119  
some some funding from the private

861  
00:36:49,630 --> 00:36:46,920  
sector somewhere yeah what I found and

862  
00:36:51,950 --> 00:36:49,640  
remarkable is I was just talking about

863  
00:36:54,650 --> 00:36:51,960

substance about the things that I care

864

00:36:56,569 --> 00:36:54,660

about in my book and otherwise and then

865

00:36:58,670 --> 00:36:56,579

people came to me and said that they're

866

00:37:00,950 --> 00:36:58,680

willing to donate for my to my towards

867

00:37:04,069 --> 00:37:00,960

my research goals it it was not the

868

00:37:06,470 --> 00:37:04,079

standard practice that I was used to

869

00:37:08,990 --> 00:37:06,480

from decades before where you go

870

00:37:11,810 --> 00:37:09,000

fundraising you have a project and you

871

00:37:14,450 --> 00:37:11,820

say okay now let's make a brochure and

872

00:37:17,630 --> 00:37:14,460

send it to various people that approach

873

00:37:20,450 --> 00:37:17,640

often doesn't work quite well uh and

874

00:37:21,829 --> 00:37:20,460

then you guys instead to uh the standard

875

00:37:25,069 --> 00:37:21,839

foundations the National Science

876

00:37:27,530 --> 00:37:25,079

Foundation maybe NASA and there you

877

00:37:30,109 --> 00:37:27,540

depend on your peers because they serve

878

00:37:32,270 --> 00:37:30,119

on those fund allocation committees so

879

00:37:34,490 --> 00:37:32,280

there is this looped Circle you know

880

00:37:37,130 --> 00:37:34,500

there is this Loop of feedback where

881

00:37:40,130 --> 00:37:37,140

people that are conservative don't take

882

00:37:41,690 --> 00:37:40,140

risks and prefer out of jealousy that

883

00:37:44,510 --> 00:37:41,700

you will not deviate from the beaten

884

00:37:46,490 --> 00:37:44,520

path they dictate the funding through

885

00:37:48,950 --> 00:37:46,500

the normal channels and necessary

886

00:37:51,290 --> 00:37:48,960

without everyone conforms to the same

887

00:37:54,109 --> 00:37:51,300

path and that's bad for Innovation

888

00:37:57,349 --> 00:37:54,119

that's bad for Discovery and the private

889

00:38:00,650 --> 00:37:57,359

sector I think if uh more people would

890

00:38:03,109 --> 00:38:00,660

there and if more funders would come to

891

00:38:06,589 --> 00:38:03,119

the task there is an opportunity to

892

00:38:08,150 --> 00:38:06,599

allow for faster you know progress of

893

00:38:10,490 --> 00:38:08,160

Science in the sense that people will

894

00:38:12,710 --> 00:38:10,500

make more breakthroughs because they're

895

00:38:16,310 --> 00:38:12,720

funded by a different channel that is

896

00:38:18,890 --> 00:38:16,320

not subject to those you know experts

897

00:38:23,510 --> 00:38:18,900

saying there is nothing really new right

898

00:38:25,670 --> 00:38:23,520

yeah now along the lines of kind of

899

00:38:28,849 --> 00:38:25,680

somewhat taboo topics within this field

900

00:38:30,829 --> 00:38:28,859

uh in 2020 in one of the now world

901  
00:38:32,990 --> 00:38:30,839  
famous series of New York Times articles

902  
00:38:35,210 --> 00:38:33,000  
written primarily by Leslie Kane and

903  
00:38:37,970 --> 00:38:35,220  
Ralph Blumenthal there's a fascinating

904  
00:38:40,190 --> 00:38:37,980  
quote deep in an article titled no

905  
00:38:42,829 --> 00:38:40,200  
longer in the shadows pentagon's UFO

906  
00:38:44,870 --> 00:38:42,839  
unit will make some findings public now

907  
00:38:46,970 --> 00:38:44,880  
of course this preceded the UAP task

908  
00:38:49,430 --> 00:38:46,980  
force report that you've spoken about

909  
00:38:51,589 --> 00:38:49,440  
and other things but this quote it's a

910  
00:38:53,870 --> 00:38:51,599  
quote by a man named Dr Eric Davis who

911  
00:38:55,730 --> 00:38:53,880  
has worked in the past on contracts and

912  
00:38:58,130 --> 00:38:55,740  
projects with people like Dr Jacque

913  
00:39:00,170 --> 00:38:58,140

Valley who's on your research team over

914

00:39:03,050 --> 00:39:00,180

there at the Galileo project now here's

915

00:39:04,910 --> 00:39:03,060

the quote Mr Davis who now works for

916

00:39:07,010 --> 00:39:04,920

Aerospace Corporation a defense

917

00:39:09,290 --> 00:39:07,020

contractor said he gave a classified

918

00:39:11,990 --> 00:39:09,300

briefing to a defense department agency

919

00:39:14,450 --> 00:39:12,000

as recently as March about retrievals

920

00:39:17,329 --> 00:39:14,460

from quote off-world Vehicles not made

921

00:39:19,490 --> 00:39:17,339

on this Earth unquote Mr Davis said he

922

00:39:21,890 --> 00:39:19,500

also gave classified briefings on

923

00:39:23,569 --> 00:39:21,900

retrievals of unexplained objects to

924

00:39:25,910 --> 00:39:23,579

staff members of the Senate armed

925

00:39:28,430 --> 00:39:25,920

service committee on October 21st 2019

926

00:39:29,990 --> 00:39:28,440

and to staff members of the Senate

927

00:39:32,569 --> 00:39:30,000

intelligence committee two days later

928

00:39:34,790 --> 00:39:32,579

have you talked to anyone Dr Davis or

929

00:39:38,089 --> 00:39:34,800

otherwise about this area of craft

930

00:39:40,910 --> 00:39:38,099

retrievals and if such retrieved objects

931

00:39:43,190 --> 00:39:40,920

do exist of known technology not made by

932

00:39:45,109 --> 00:39:43,200

our civilization how quickly would you

933

00:39:47,109 --> 00:39:45,119

be knocking on those doors have you

934

00:39:51,770 --> 00:39:47,119

knocked on any doors like that or ready

935

00:39:55,910 --> 00:39:51,780

no I mean I did not try to approach any

936

00:39:58,490 --> 00:39:55,920

government data you know I think the

937

00:40:01,130 --> 00:39:58,500

most convincing data is classified for

938

00:40:04,010 --> 00:40:01,140

good reasons that the sensors that

939

00:40:08,329 --> 00:40:04,020

discovered the data are classified but

940

00:40:11,870 --> 00:40:08,339

in terms of materials recovered I have

941

00:40:16,550 --> 00:40:11,880

no direct information on such material

942

00:40:19,309 --> 00:40:16,560

and what it uh what it entails and

943

00:40:21,770 --> 00:40:19,319

um of course I would love to see it and

944

00:40:24,530 --> 00:40:21,780

learn about it but at the same time I'm

945

00:40:27,349 --> 00:40:24,540

not naive you know waiting for the

946

00:40:30,290 --> 00:40:27,359

government to declassify information is

947

00:40:33,109 --> 00:40:30,300

just like waiting for Godot in this

948

00:40:36,290 --> 00:40:33,119

famous play by Samuel Beckett you can

949

00:40:39,589 --> 00:40:36,300

wait forever now the one thing that we

950

00:40:42,349 --> 00:40:39,599

see is people who were exposed who saw

951  
00:40:44,150 --> 00:40:42,359  
the data that the government has talking

952  
00:40:47,089 --> 00:40:44,160  
about it seriously and to me that's

953  
00:40:49,309 --> 00:40:47,099  
quite intriguing I mean many scientists

954  
00:40:51,530 --> 00:40:49,319  
simply ignore that and dismiss that but

955  
00:40:55,250 --> 00:40:51,540  
the fact that there is something

956  
00:40:57,349 --> 00:40:55,260  
interesting is implied by responsible

957  
00:41:00,710 --> 00:40:57,359  
politicians talking about it seriously

958  
00:41:02,329 --> 00:41:00,720  
uh they would not do that unless there

959  
00:41:05,150 --> 00:41:02,339  
was convincing evidence but we haven't

960  
00:41:08,630 --> 00:41:05,160  
seen it all the data we have seen uh in

961  
00:41:11,089 --> 00:41:08,640  
the public uh has to do with fuzzy

962  
00:41:12,890 --> 00:41:11,099  
images from cell phones from that that

963  
00:41:16,970 --> 00:41:12,900

are not really convincing including in

964

00:41:19,670 --> 00:41:16,980

the uh Congressional discussion that was

965

00:41:22,609 --> 00:41:19,680

most recently you know in the open part

966

00:41:24,950 --> 00:41:22,619

that was open to the public the data

967

00:41:27,770 --> 00:41:24,960

that was shown was of low quality very

968

00:41:32,450 --> 00:41:27,780

sort of disappointing but then they had

969

00:41:34,329 --> 00:41:32,460

a a another part for their deliberations

970

00:41:37,670 --> 00:41:34,339

that was classified

971

00:41:40,790 --> 00:41:37,680

behind closed doors and you know I would

972

00:41:43,790 --> 00:41:40,800

have loved to be a a fly on the wall of

973

00:41:47,030 --> 00:41:43,800

that of that me too but the point is

974

00:41:49,430 --> 00:41:47,040

since they don't release it we should

975

00:41:51,230 --> 00:41:49,440

just go ahead and retrieve our own data

976  
00:41:52,430 --> 00:41:51,240  
that's the philosophy of the Galileo

977  
00:41:54,770 --> 00:41:52,440  
project because the sky is not

978  
00:41:56,290 --> 00:41:54,780  
classified you know if it's if it's a

979  
00:41:59,030 --> 00:41:56,300  
scientific matter

980  
00:42:00,410 --> 00:41:59,040  
it doesn't adhere to National borders

981  
00:42:03,170 --> 00:42:00,420  
it's not a matter of National Security

982  
00:42:04,370 --> 00:42:03,180  
it's only the sensors that collected the

983  
00:42:05,930 --> 00:42:04,380  
data that are a matter of National

984  
00:42:08,750 --> 00:42:05,940  
Security that's why the government keeps

985  
00:42:10,370 --> 00:42:08,760  
it secret but a scientist we can try and

986  
00:42:12,349 --> 00:42:10,380  
collect our own data and figure it out

987  
00:42:14,870 --> 00:42:12,359  
and I don't mind you know if we figure

988  
00:42:16,849 --> 00:42:14,880

out that all these objects have simple

989

00:42:19,730 --> 00:42:16,859

explanations as being atmospheric

990

00:42:22,730 --> 00:42:19,740

phenomena or being some natural objects

991

00:42:24,530 --> 00:42:22,740

or being human-made objects I don't care

992

00:42:26,569 --> 00:42:24,540

at least we will clear up the fog it's

993

00:42:28,190 --> 00:42:26,579

not as if we have an agenda we are

994

00:42:30,710 --> 00:42:28,200

completely agnostic in the gala project

995

00:42:33,829 --> 00:42:30,720

and I brought people that are that are

996

00:42:35,930 --> 00:42:33,839

both Advocates and Skeptics of the

997

00:42:39,589 --> 00:42:35,940

various interpretations and my reason

998

00:42:43,069 --> 00:42:39,599

for doing that is simple uh if the two

999

00:42:45,530 --> 00:42:43,079

sides agree after we collect the data on

1000

00:42:47,930 --> 00:42:45,540

the interpretation that that is a litmus

1001

00:42:50,030 --> 00:42:47,940

test you know it's like nari in a cave

1002

00:42:52,430 --> 00:42:50,040

it tells me that the evidence is strong

1003

00:42:55,309 --> 00:42:52,440

enough so I want to have both sides of

1004

00:42:57,230 --> 00:42:55,319

the conversation in the team such that

1005

00:42:59,410 --> 00:42:57,240

eventually it's the data that will

1006

00:43:02,569 --> 00:42:59,420

settle the issue

1007

00:43:04,910 --> 00:43:02,579

so is it safe to say that you would hope

1008

00:43:07,130 --> 00:43:04,920

uh the data would be stronger than what

1009

00:43:09,770 --> 00:43:07,140

you have for El muamua because we do see

1010

00:43:13,190 --> 00:43:09,780

Skeptics on that too yeah definitely I

1011

00:43:15,589 --> 00:43:13,200

mean obviously you should be skeptic uh

1012

00:43:17,930 --> 00:43:15,599

but it should be also intriguing to get

1013

00:43:20,150 --> 00:43:17,940

more data that's that's my main point my

1014

00:43:22,550 --> 00:43:20,160

main point is yeah this is

1015

00:43:25,010 --> 00:43:22,560

an outlier this is there are some

1016

00:43:28,370 --> 00:43:25,020

anomalies of a muamua let's find out

1017

00:43:30,589 --> 00:43:28,380

more about objects like it and instead

1018

00:43:32,750 --> 00:43:30,599

of saying it's a nitrogen Iceberg it's a

1019

00:43:36,109 --> 00:43:32,760

hydrogen Iceberg Case Closed forget

1020

00:43:37,970 --> 00:43:36,119

about it it's natural and get upset by

1021

00:43:40,430 --> 00:43:37,980

any discussion on anything else because

1022

00:43:42,230 --> 00:43:40,440

that's not the way we make progress the

1023

00:43:44,030 --> 00:43:42,240

way to make progress is to collect more

1024

00:43:46,609 --> 00:43:44,040

data and the way to collect more data is

1025

00:43:49,490 --> 00:43:46,619

to invest in the search put funds

1026  
00:43:52,490 --> 00:43:49,500  
towards that search and allow yourself

1027  
00:43:55,430 --> 00:43:52,500  
to find whatever you find yeah

1028  
00:43:58,370 --> 00:43:55,440  
yeah I think let me let me ask you this

1029  
00:43:59,510 --> 00:43:58,380  
so let's let's go ahead to the Future a

1030  
00:44:01,250 --> 00:43:59,520  
little bit

1031  
00:44:05,410 --> 00:44:01,260  
um you have everything set up and and

1032  
00:44:08,569 --> 00:44:05,420  
you get an image and it says Made in

1033  
00:44:11,030 --> 00:44:08,579  
some star we've never heard of on on the

1034  
00:44:13,550 --> 00:44:11,040  
side right there's big red buttons that

1035  
00:44:16,849 --> 00:44:13,560  
you could press and everything and so

1036  
00:44:20,150 --> 00:44:16,859  
you see this what's your next step how

1037  
00:44:22,190 --> 00:44:20,160  
do you inform uh the public

1038  
00:44:24,589 --> 00:44:22,200

um you know where does that come as far

1039

00:44:27,430 --> 00:44:24,599

as uh your goals after you find that uh

1040

00:44:32,270 --> 00:44:27,440

that object so first of all I should say

1041

00:44:34,130 --> 00:44:32,280

that would be the most important

1042

00:44:37,250 --> 00:44:34,140

um event in my life

1043

00:44:40,550 --> 00:44:37,260

uh because it's not so much I don't care

1044

00:44:42,890 --> 00:44:40,560

uh you know what other people say what

1045

00:44:44,930 --> 00:44:42,900

other people think that's not really the

1046

00:44:47,270 --> 00:44:44,940

issue I want to figure out which reality

1047

00:44:49,550 --> 00:44:47,280

we live in okay that's the fundamental

1048

00:44:51,770 --> 00:44:49,560

thing uh and eventually people will come

1049

00:44:53,630 --> 00:44:51,780

around because if that's the reality we

1050

00:44:55,130 --> 00:44:53,640

live in eventually you know even if it

1051  
00:44:57,410 --> 00:44:55,140  
takes a hundred years a thousand years

1052  
00:44:59,210 --> 00:44:57,420  
uh you know in the case of Galileo it

1053  
00:45:00,950 --> 00:44:59,220  
took hundreds of years for people to

1054  
00:45:02,930 --> 00:45:00,960  
come around and of course the Vatican

1055  
00:45:05,990 --> 00:45:02,940  
declared that he was right and so forth

1056  
00:45:08,270 --> 00:45:06,000  
it doesn't really matter what matters to

1057  
00:45:10,430 --> 00:45:08,280  
me the most is what is the reality we

1058  
00:45:13,550 --> 00:45:10,440  
live in do we have probes from other

1059  
00:45:15,410 --> 00:45:13,560  
civilizations near us let's check our

1060  
00:45:17,410 --> 00:45:15,420  
backyard and figure it out rather than

1061  
00:45:21,349 --> 00:45:17,420  
argue about it and ridicule the subject

1062  
00:45:23,930 --> 00:45:21,359  
and so first of all you know I would

1063  
00:45:26,390 --> 00:45:23,940

feel that you know at last I know

1064

00:45:28,370 --> 00:45:26,400

something new I was driven as Society

1065

00:45:30,410 --> 00:45:28,380

It's Always by real you know trying to

1066

00:45:32,750 --> 00:45:30,420

find something that nobody else

1067

00:45:34,849 --> 00:45:32,760

recognized as of yet that was the

1068

00:45:37,030 --> 00:45:34,859

driving force because you know the

1069

00:45:40,010 --> 00:45:37,040

purpose of science is to discover

1070

00:45:42,589 --> 00:45:40,020

new things about the reality we live in

1071

00:45:44,210 --> 00:45:42,599

and you know if you just keep digesting

1072

00:45:47,750 --> 00:45:44,220

the same knowledge we already have

1073

00:45:52,130 --> 00:45:47,760

that's not thrilling it's um you know

1074

00:45:55,370 --> 00:45:52,140

it's like a a bureaucrat the handling

1075

00:45:59,150 --> 00:45:55,380

paper you know uh why you know so you're

1076  
00:46:01,430 --> 00:45:59,160  
not advancing a Humanity if you're just

1077  
00:46:03,730 --> 00:46:01,440  
digesting things that we already know

1078  
00:46:07,370 --> 00:46:03,740  
but that's pretty much the approach of

1079  
00:46:10,370 --> 00:46:07,380  
experts quote unquote which are gaining

1080  
00:46:12,650 --> 00:46:10,380  
their self-esteem out of past knowledge

1081  
00:46:14,750 --> 00:46:12,660  
so the past knowledge is celebrated

1082  
00:46:17,390 --> 00:46:14,760  
because then they can pretend that they

1083  
00:46:19,430 --> 00:46:17,400  
can explain everything using this past

1084  
00:46:21,950 --> 00:46:19,440  
knowledge however my Approach is more

1085  
00:46:24,290 --> 00:46:21,960  
like a kid I you know everything that is

1086  
00:46:27,710 --> 00:46:24,300  
already known is of less interest to me

1087  
00:46:29,630 --> 00:46:27,720  
I want to find something new okay so for

1088  
00:46:32,750 --> 00:46:29,640

me that moment would be tremendous

1089

00:46:35,150 --> 00:46:32,760

because here is something new and it's

1090

00:46:37,790 --> 00:46:35,160

really fundamental now now the next

1091

00:46:41,569 --> 00:46:37,800

question is how to convince other people

1092

00:46:43,849 --> 00:46:41,579

and the the question after that is

1093

00:46:47,809 --> 00:46:43,859

indeed what to do about it you know

1094

00:46:50,089 --> 00:46:47,819

because we don't have a protocol uh that

1095

00:46:53,390 --> 00:46:50,099

um about how to respond

1096

00:46:55,069 --> 00:46:53,400

to a visitor in our backyard you have to

1097

00:46:57,349 --> 00:46:55,079

respond immediately because it's not

1098

00:47:00,730 --> 00:46:57,359

like getting a radio signal from a star

1099

00:47:03,230 --> 00:47:00,740

you know thousands of light years away

1100

00:47:05,930 --> 00:47:03,240

there you can take your time you know

1101  
00:47:08,150 --> 00:47:05,940  
here you have a visitor in your backyard

1102  
00:47:12,530 --> 00:47:08,160  
you better say something or do something

1103  
00:47:15,349 --> 00:47:12,540  
or decide how to engage and that is a

1104  
00:47:18,349 --> 00:47:15,359  
big policy decision and for that

1105  
00:47:20,030 --> 00:47:18,359  
Humanity has to come together but as you

1106  
00:47:22,309 --> 00:47:20,040  
indicated the first thing to do is

1107  
00:47:24,650 --> 00:47:22,319  
communicate it and of course the best

1108  
00:47:26,809 --> 00:47:24,660  
way to communicate it is showing the

1109  
00:47:29,569 --> 00:47:26,819  
evidence collecting as much data as

1110  
00:47:31,609 --> 00:47:29,579  
possible about this showing it through

1111  
00:47:33,890 --> 00:47:31,619  
the scientific the conventional

1112  
00:47:36,410 --> 00:47:33,900  
scientific channels but also sharing it

1113  
00:47:38,990 --> 00:47:36,420

with the public I don't think hiding it

1114

00:47:40,730 --> 00:47:39,000

would serve any good purpose because if

1115

00:47:44,089 --> 00:47:40,740

that's the reality we live in Imagine

1116

00:47:45,770 --> 00:47:44,099

Galileo saying oh um I know that the

1117

00:47:48,530 --> 00:47:45,780

Earth moves around the Sun but the

1118

00:47:50,450 --> 00:47:48,540

public doesn't know it and it's better

1119

00:47:51,770 --> 00:47:50,460

for the church to believe that the the

1120

00:47:53,170 --> 00:47:51,780

Earth is at the center of the universe

1121

00:47:56,390 --> 00:47:53,180

therefore let's hide that information

1122

00:47:58,309 --> 00:47:56,400

like what will it do if the Earth moves

1123

00:48:00,470 --> 00:47:58,319

around the Sun one way or another

1124

00:48:02,750 --> 00:48:00,480

eventually humans will find out about it

1125

00:48:05,270 --> 00:48:02,760

and if you're hiding the truth it

1126  
00:48:07,790 --> 00:48:05,280  
doesn't change reality it just maintains

1127  
00:48:10,490 --> 00:48:07,800  
your ignorance so you know I I hate to

1128  
00:48:11,930 --> 00:48:10,500  
remain ignorant okay that's really if I

1129  
00:48:15,230 --> 00:48:11,940  
know something new

1130  
00:48:17,569 --> 00:48:15,240  
why would I hide it from anyone okay I

1131  
00:48:19,790 --> 00:48:17,579  
want to discuss it with everyone and and

1132  
00:48:21,770 --> 00:48:19,800  
the bet the initial step would be to

1133  
00:48:24,109 --> 00:48:21,780  
communicate the evidence so that other

1134  
00:48:26,750 --> 00:48:24,119  
people will be convinced through the

1135  
00:48:28,809 --> 00:48:26,760  
standard scientific method and then we

1136  
00:48:31,250 --> 00:48:28,819  
have to get to the policy issue and

1137  
00:48:33,770 --> 00:48:31,260  
perhaps assemble an international

1138  
00:48:39,589 --> 00:48:33,780

organization that will decide

1139

00:48:45,710 --> 00:48:42,410

assuming we could right yeah yeah so

1140

00:48:48,349 --> 00:48:45,720

that's the other thing imagine ants on a

1141

00:48:50,569 --> 00:48:48,359

sidewalk the ants can establish a

1142

00:48:53,809 --> 00:48:50,579

committee how to respond to a biker

1143

00:48:56,210 --> 00:48:53,819

riding down the sidewalk but the biker

1144

00:48:57,410 --> 00:48:56,220

wouldn't care less about them

1145

00:48:59,030 --> 00:48:57,420

no

1146

00:49:01,730 --> 00:48:59,040

um it's bringing up the scientific

1147

00:49:04,970 --> 00:49:01,740

method and the challenges here

1148

00:49:06,589 --> 00:49:04,980

um I was thinking about i i a talk you

1149

00:49:08,930 --> 00:49:06,599

did recently a discussion that you had

1150

00:49:13,130 --> 00:49:08,940

recently with Eric Weinstein and uh

1151  
00:49:14,870 --> 00:49:13,140  
Brian Keating and it kind of and an idea

1152  
00:49:17,390 --> 00:49:14,880  
that kind of passed over at one point

1153  
00:49:20,150 --> 00:49:17,400  
early on was talking about

1154  
00:49:22,370 --> 00:49:20,160  
um you know the problems of studying

1155  
00:49:24,530 --> 00:49:22,380  
something we're not often studying

1156  
00:49:27,349 --> 00:49:24,540  
something that

1157  
00:49:29,030 --> 00:49:27,359  
um is surely smarter than us or appears

1158  
00:49:30,950 --> 00:49:29,040  
to be smarter than us or we don't think

1159  
00:49:34,549 --> 00:49:30,960  
we do you know

1160  
00:49:37,370 --> 00:49:34,559  
um and also kind of the idea of

1161  
00:49:39,109 --> 00:49:37,380  
things like signature management active

1162  
00:49:40,670 --> 00:49:39,119  
camouflaging techniques and things like

1163  
00:49:43,490 --> 00:49:40,680

this and the earlier you're referring to

1164

00:49:45,890 --> 00:49:43,500

dark matter and how you know over 80

1165

00:49:47,450 --> 00:49:45,900

percent of of what's out there we know

1166

00:49:50,450 --> 00:49:47,460

it's there but we can't even figure out

1167

00:49:54,049 --> 00:49:50,460

where the there is right so along those

1168

00:49:56,089 --> 00:49:54,059

lines this is a thoughtful uh question a

1169

00:49:59,150 --> 00:49:56,099

viewer question uh from a gentleman

1170

00:50:02,150 --> 00:49:59,160

who's a psychiatrist uh up in Canada how

1171

00:50:04,490 --> 00:50:02,160

does the scientific method lead us if

1172

00:50:06,849 --> 00:50:04,500

the subject of study is an active

1173

00:50:09,950 --> 00:50:06,859

participant in the results we receive

1174

00:50:12,470 --> 00:50:09,960

I.E the study participant is potentially

1175

00:50:14,589 --> 00:50:12,480

evading our study of it

1176

00:50:18,170 --> 00:50:14,599

yeah that's a very difficult

1177

00:50:20,870 --> 00:50:18,180

question but I'm trying to be as

1178

00:50:22,910 --> 00:50:20,880

practical as possible so the way I

1179

00:50:25,250 --> 00:50:22,920

approach it is to say

1180

00:50:27,829 --> 00:50:25,260

okay suppose you detect objects in the

1181

00:50:30,230 --> 00:50:27,839

sky and the first thing you are trying

1182

00:50:35,030 --> 00:50:30,240

to do is explain them as natural objects

1183

00:50:36,530 --> 00:50:35,040

like birds uh meteors bugs you know

1184

00:50:39,049 --> 00:50:36,540

lightnings

1185

00:50:42,410 --> 00:50:39,059

so and and you figure out that for sure

1186

00:50:45,290 --> 00:50:42,420

that none of the above because you have

1187

00:50:47,390 --> 00:50:45,300

multiple sensors you track that the way

1188

00:50:49,430 --> 00:50:47,400

they move it's definitely none of the

1189

00:50:52,430 --> 00:50:49,440

natural objects you're familiar with

1190

00:50:54,829 --> 00:50:52,440

uh and then you start checking it could

1191

00:50:56,809 --> 00:50:54,839

it be Russia China's human-made vehicle

1192

00:50:59,950 --> 00:50:56,819

and then you realize no there is no way

1193

00:51:03,170 --> 00:50:59,960

that humans can produce such a device

1194

00:51:07,309 --> 00:51:03,180

for for some reason

1195

00:51:10,670 --> 00:51:07,319

um so only then you say okay well it's

1196

00:51:14,930 --> 00:51:10,680

something else I don't know what it is

1197

00:51:17,690 --> 00:51:14,940

so my point is you don't need to do uh

1198

00:51:21,470 --> 00:51:17,700

to understand how it operates what the

1199

00:51:23,630 --> 00:51:21,480

intention is and especially if it's of

1200

00:51:25,910 --> 00:51:23,640

superior intelligence you might not be

1201

00:51:28,130 --> 00:51:25,920

able to figure it out if there is a

1202

00:51:31,569 --> 00:51:28,140

large technological gap between them and

1203

00:51:35,270 --> 00:51:31,579

us just you just need to realize that

1204

00:51:37,910 --> 00:51:35,280

the chance of us meeting uh equipment

1205

00:51:40,549 --> 00:51:37,920

from a civilization which is exactly the

1206

00:51:43,069 --> 00:51:40,559

same technological development stages we

1207

00:51:45,290 --> 00:51:43,079

are is very small because we had our

1208

00:51:47,450 --> 00:51:45,300

Science and Technology only for a

1209

00:51:49,549 --> 00:51:47,460

century and that's one part in 100

1210

00:51:51,069 --> 00:51:49,559

million of the age of the Earth

1211

00:51:53,630 --> 00:51:51,079

so

1212

00:51:55,309 --> 00:51:53,640

most likely there would be either much

1213

00:51:56,930 --> 00:51:55,319

more advanced than we are or much more

1214

00:52:00,230 --> 00:51:56,940

primitive than we are you know the way

1215

00:52:01,849 --> 00:52:00,240

we were for a million or two years if

1216

00:52:04,010 --> 00:52:01,859

they are much more primitive than we are

1217

00:52:07,370 --> 00:52:04,020

the only way to find them is to go to

1218

00:52:10,190 --> 00:52:07,380

the jungles of an exoplanet and that is

1219

00:52:12,349 --> 00:52:10,200

very expensive and very tedious not only

1220

00:52:14,270 --> 00:52:12,359

you need to go to an exoplanet you need

1221

00:52:16,549 --> 00:52:14,280

to land on it start searching the

1222

00:52:18,290 --> 00:52:16,559

jungles and so forth a much better

1223

00:52:21,230 --> 00:52:18,300

approach is to look for those that are

1224

00:52:23,270 --> 00:52:21,240

much more advanced than we are and those

1225

00:52:25,190 --> 00:52:23,280

would appear in our backyard we don't

1226  
00:52:27,349 --> 00:52:25,200  
need to go anywhere if they send

1227  
00:52:29,150 --> 00:52:27,359  
equipment to space so all we need to do

1228  
00:52:31,670 --> 00:52:29,160  
is look through our window and search

1229  
00:52:34,309 --> 00:52:31,680  
for that equipment and what I'm saying

1230  
00:52:37,130 --> 00:52:34,319  
is it's likely to be far more advanced

1231  
00:52:39,230 --> 00:52:37,140  
than we imagined uh just because we

1232  
00:52:42,230 --> 00:52:39,240  
existed as a technological civilization

1233  
00:52:44,270 --> 00:52:42,240  
only for a century and it will take us a

1234  
00:52:47,109 --> 00:52:44,280  
while to figure it out both in terms of

1235  
00:52:49,490 --> 00:52:47,119  
intent but if I had to guess I would say

1236  
00:52:51,290 --> 00:52:49,500  
it has artificial intelligence because

1237  
00:52:54,349 --> 00:52:51,300  
because these systems have to be

1238  
00:52:56,770 --> 00:52:54,359

autonomous and biological creatures

1239

00:53:00,109 --> 00:52:56,780

cannot survive the long journey

1240

00:53:02,410 --> 00:53:00,119

and they cannot wait for guidance from

1241

00:53:04,910 --> 00:53:02,420

whoever send them because it takes light

1242

00:53:06,950 --> 00:53:04,920

tens of thousands of years to Traverse

1243

00:53:09,770 --> 00:53:06,960

the Milky Way galaxy so they must be

1244

00:53:13,309 --> 00:53:09,780

autonomous they must be self-learning

1245

00:53:15,710 --> 00:53:13,319

just like artificial intelligence we are

1246

00:53:19,609 --> 00:53:15,720

starting to develop now that will drive

1247

00:53:22,609 --> 00:53:19,619

cars that we operate on its own and

1248

00:53:25,670 --> 00:53:22,619

um so if I had to guess I would say it's

1249

00:53:28,490 --> 00:53:25,680

a piece of equipment and it follows some

1250

00:53:31,309 --> 00:53:28,500

blueprint and it could be learning from

1251

00:53:33,430 --> 00:53:31,319

experience and it could be equipped with

1252

00:53:36,410 --> 00:53:33,440

a 3D printer in case it was

1253

00:53:39,790 --> 00:53:36,420

self-replicating you know the way

1254

00:53:42,049 --> 00:53:39,800

um envisioned by for Neumann back in

1255

00:53:43,730 --> 00:53:42,059

1940s I'm glad you brought that up what

1256

00:53:46,130 --> 00:53:43,740

do you think of that idea

1257

00:53:49,670 --> 00:53:46,140

well for Neumann headed as a very

1258

00:53:52,849 --> 00:53:49,680

abstract idea but then Freeman Dyson

1259

00:53:56,630 --> 00:53:52,859

um uh about the 30 years later three

1260

00:53:59,809 --> 00:53:56,640

decades later Freeman Dyson was faculty

1261

00:54:01,069 --> 00:53:59,819

at the same place as for Neumann was the

1262

00:54:03,650 --> 00:54:01,079

institute for advanced study at

1263

00:54:07,370 --> 00:54:03,660

Princeton where I was a postdoc uh and

1264

00:54:10,910 --> 00:54:07,380

uh Freeman invented this idea of Astro

1265

00:54:13,250 --> 00:54:10,920

chicken that lays eggs in space and the

1266

00:54:15,170 --> 00:54:13,260

eggs hatch and cheese come out of them

1267

00:54:17,450 --> 00:54:15,180

and so

1268

00:54:19,010 --> 00:54:17,460

um you know and he was thinking about it

1269

00:54:21,710 --> 00:54:19,020

in the solar system as a way of

1270

00:54:25,430 --> 00:54:21,720

exploring the solar system and

1271

00:54:28,430 --> 00:54:25,440

um but I do think that this is a very

1272

00:54:31,370 --> 00:54:28,440

good idea in general if you want to fill

1273

00:54:33,170 --> 00:54:31,380

up the Galaxy with probes to allow them

1274

00:54:35,390 --> 00:54:33,180

to replicate because that's what we

1275

00:54:37,250 --> 00:54:35,400

learned from nature nature does it you

1276

00:54:40,849 --> 00:54:37,260

know in fact for Neumann came with the

1277

00:54:44,109 --> 00:54:40,859

idea a couple of years before the double

1278

00:54:45,730 --> 00:54:44,119

helix structure of DNA was discovered

1279

00:54:49,190 --> 00:54:45,740

and

1280

00:54:51,650 --> 00:54:49,200

biology actually follows his idea you

1281

00:54:53,569 --> 00:54:51,660

have these machines that replicate

1282

00:54:56,390 --> 00:54:53,579

themselves and they have mutations so

1283

00:55:00,890 --> 00:54:56,400

they can evolve to a better uh system

1284

00:55:04,250 --> 00:55:00,900

over time uh so the copying device is

1285

00:55:07,990 --> 00:55:04,260

remains fixed but the information gets

1286

00:55:10,970 --> 00:55:08,000

updated and and that's what biology

1287

00:55:15,349 --> 00:55:10,980

tells us in terms of cells replicating

1288

00:55:16,970 --> 00:55:15,359

themselves through DNA and then when for

1289

00:55:18,770 --> 00:55:16,980

Neumann came up with the idea of

1290

00:55:20,390 --> 00:55:18,780

self-replicating machines he was not

1291

00:55:23,030 --> 00:55:20,400

aware of the DNA structure so that's

1292

00:55:25,730 --> 00:55:23,040

quite amazing he was a brilliant guy and

1293

00:55:28,870 --> 00:55:25,740

what I'm saying is if biology is using

1294

00:55:31,390 --> 00:55:28,880

it why wouldn't technological

1295

00:55:34,010 --> 00:55:31,400

civilizations like ours use it in space

1296

00:55:35,990 --> 00:55:34,020

and then first the reason to use

1297

00:55:40,370 --> 00:55:36,000

technology in space is because biology

1298

00:55:43,970 --> 00:55:40,380

was by natural selection uh you know

1299

00:55:45,530 --> 00:55:43,980

designed to survive on Earth uh that's

1300

00:55:48,410 --> 00:55:45,540

uh you know that was the selection

1301  
00:55:49,730 --> 00:55:48,420  
process if you put humans in space they

1302  
00:55:52,069 --> 00:55:49,740  
wouldn't survive for more than a few

1303  
00:55:54,710 --> 00:55:52,079  
years unprotected it's quite a harsh

1304  
00:55:58,789 --> 00:55:54,720  
environment uh because of the energetic

1305  
00:56:00,589 --> 00:55:58,799  
particles and so forth so the point is

1306  
00:56:02,750 --> 00:56:00,599  
that you can send equipment that

1307  
00:56:04,670 --> 00:56:02,760  
survives in space for very long times

1308  
00:56:07,190 --> 00:56:04,680  
and that is equipped with artificial

1309  
00:56:09,770 --> 00:56:07,200  
intelligence and that can replicate

1310  
00:56:12,170 --> 00:56:09,780  
itself I think that that would be the

1311  
00:56:13,789 --> 00:56:12,180  
way to go and perhaps the systems that

1312  
00:56:16,309 --> 00:56:13,799  
will visit us are the ones that were

1313  
00:56:17,870 --> 00:56:16,319

replicated many times over and they are

1314

00:56:19,910 --> 00:56:17,880

not the same as the ones that were sent

1315

00:56:22,730 --> 00:56:19,920

because they went through mutations they

1316

00:56:24,710 --> 00:56:22,740

adapted to the circumstances around them

1317

00:56:26,470 --> 00:56:24,720

and it's possible that these

1318

00:56:28,789 --> 00:56:26,480

unidentified objects that the government

1319

00:56:31,490 --> 00:56:28,799

talks about are you know

1320

00:56:34,370 --> 00:56:31,500

self-replicating machines and they use

1321

00:56:37,190 --> 00:56:34,380

the raw materials that they find to

1322

00:56:39,770 --> 00:56:37,200

produce more copies it's um that would

1323

00:56:42,170 --> 00:56:39,780

make such systems the most abundant

1324

00:56:44,450 --> 00:56:42,180

because their population can grow

1325

00:56:46,970 --> 00:56:44,460

exponentially very quickly and

1326

00:56:49,549 --> 00:56:46,980

um you know to move across the Milky Way

1327

00:56:52,430 --> 00:56:49,559

galaxy with chemical Rockets takes about

1328

00:56:55,370 --> 00:56:52,440

half a billion years just billionaires

1329

00:56:57,349 --> 00:56:55,380

so you can imagine a civilization that

1330

00:56:59,390 --> 00:56:57,359

sends such things a billion years ago

1331

00:57:02,150 --> 00:56:59,400

there was another half billionaires for

1332

00:57:04,990 --> 00:57:02,160

those instruments to replicate

1333

00:57:08,390 --> 00:57:05,000

themselves and populate everything and

1334

00:57:11,809 --> 00:57:08,400

by the way if we ever decide to do that

1335

00:57:15,109 --> 00:57:11,819

uh the number of stars in the Milky Way

1336

00:57:18,170 --> 00:57:15,119

galaxy is several hundreds of Billion

1337

00:57:22,490 --> 00:57:18,180

Stars the number of people that ever

1338

00:57:25,970 --> 00:57:22,500

lived on earth is a 117 billion right

1339

00:57:28,069 --> 00:57:25,980

now other 8 billion people living but if

1340

00:57:31,549 --> 00:57:28,079

you in if you sum over history there

1341

00:57:34,970 --> 00:57:31,559

were 117 billion people that were ever

1342

00:57:36,710 --> 00:57:34,980

alive on Earth okay and there so that

1343

00:57:38,770 --> 00:57:36,720

there is more than one star per person

1344

00:57:42,530 --> 00:57:38,780

available

1345

00:57:46,069 --> 00:57:42,540

the thing is you can imagine each person

1346

00:57:49,730 --> 00:57:46,079

is being assigned the star okay that

1347

00:57:52,010 --> 00:57:49,740

sounds so lonely and well it's a Wish

1348

00:57:54,650 --> 00:57:52,020

Upon a Star you know

1349

00:57:56,390 --> 00:57:54,660

um Your Dreams May Come True because you

1350

00:57:58,670 --> 00:57:56,400

know at the end we live for a short time

1351  
00:58:02,390 --> 00:57:58,680  
and we might want some you know an

1352  
00:58:06,770 --> 00:58:02,400  
avatar a tiny spacecraft sent to to your

1353  
00:58:10,849 --> 00:58:06,780  
star and that will you know follow your

1354  
00:58:13,549 --> 00:58:10,859  
wishes uh and then so you can imagine a

1355  
00:58:16,069 --> 00:58:13,559  
tiny spacecraft being sent by each

1356  
00:58:17,450 --> 00:58:16,079  
person on Earth towards the star in the

1357  
00:58:21,069 --> 00:58:17,460  
Milky Way and imagine another

1358  
00:58:23,870 --> 00:58:21,079  
civilization who did which did that and

1359  
00:58:26,809 --> 00:58:23,880  
those probes are targeting the habitable

1360  
00:58:29,030 --> 00:58:26,819  
regions around stars and you know maybe

1361  
00:58:33,710 --> 00:58:29,040  
there are some around us we just need to

1362  
00:58:35,450 --> 00:58:33,720  
check yeah beautiful now people often

1363  
00:58:38,030 --> 00:58:35,460

say we're running towards the end of our

1364

00:58:39,589 --> 00:58:38,040

time here today thank you so much um for

1365

00:58:42,170 --> 00:58:39,599

joining us today yes you know people

1366

00:58:44,329 --> 00:58:42,180

often say that when you're studying a

1367

00:58:46,849 --> 00:58:44,339

subject as challenging as anomalous

1368

00:58:49,549 --> 00:58:46,859

studies or the field of even just you

1369

00:58:52,430 --> 00:58:49,559

UAP specifically it borderline

1370

00:58:55,069 --> 00:58:52,440

necessitates consideration from almost

1371

00:58:57,589 --> 00:58:55,079

every other academic field

1372

00:59:00,829 --> 00:58:57,599

here we have you in the Galileo project

1373

00:59:02,870 --> 00:59:00,839

representing the harder sciences and um

1374

00:59:04,730 --> 00:59:02,880

of course there have been efforts in the

1375

00:59:07,910 --> 00:59:04,740

past from psychiatrists and

1376

00:59:10,910 --> 00:59:07,920

psychologists or even painters to try to

1377

00:59:13,609 --> 00:59:10,920

try to approach the the subject of

1378

00:59:15,349 --> 00:59:13,619

people that have had encounters or

1379

00:59:17,450 --> 00:59:15,359

people trying to report these things

1380

00:59:19,250 --> 00:59:17,460

there are also admirable efforts

1381

00:59:21,289 --> 00:59:19,260

beginning in the social sciences and

1382

00:59:22,970 --> 00:59:21,299

Humanities like Jeff cripples Archives

1383

00:59:25,609 --> 00:59:22,980

of The Impossible Project at Rice

1384

00:59:27,410 --> 00:59:25,619

University securing records that may be

1385

00:59:29,690 --> 00:59:27,420

of extraordinary historical importance

1386

00:59:33,470 --> 00:59:29,700

Within These Realms and his gym program

1387

00:59:35,150 --> 00:59:33,480

encouraging dialogue between disciplines

1388

00:59:37,190 --> 00:59:35,160

um there have been moments where you may

1389

00:59:39,289 --> 00:59:37,200

have been seen as a little hard on the

1390

00:59:41,569 --> 00:59:39,299

anecdotal aspects for understandable

1391

00:59:43,789 --> 00:59:41,579

reasons of many anomalous cases under

1392

00:59:46,970 --> 00:59:43,799

consideration within the social sciences

1393

00:59:49,549 --> 00:59:46,980

since the Galileo project has begun what

1394

00:59:51,470 --> 00:59:49,559

have you found to be most useful for

1395

00:59:52,670 --> 00:59:51,480

anomalist study within the social

1396

00:59:55,010 --> 00:59:52,680

sciences

1397

00:59:56,329 --> 00:59:55,020

oh I I do believe that the social

1398

00:59:59,630 --> 00:59:56,339

sciences

1399

01:00:03,589 --> 00:59:59,640

and Humanities in general could play a

1400

01:00:06,049 --> 01:00:03,599

very important role in this context you

1401

01:00:08,030 --> 01:00:06,059

know but I do think that we first for

1402

01:00:10,789 --> 01:00:08,040

the evidence side we need to use the

1403

01:00:12,950 --> 01:00:10,799

hard Sciences just to give your

1404

01:00:15,049 --> 01:00:12,960

perspective I was as a young kid I was

1405

01:00:16,970 --> 01:00:15,059

mostly interested in philosophy that's

1406

01:00:18,609 --> 01:00:16,980

what makes me different from a typical

1407

01:00:21,410 --> 01:00:18,619

scientist and

1408

01:00:22,990 --> 01:00:21,420

circumstances led me to become an

1409

01:00:26,109 --> 01:00:23,000

astrophysicist

1410

01:00:31,670 --> 01:00:26,119

and I still have

1411

01:00:33,950 --> 01:00:31,680

a philosophy as my most my passion and I

1412

01:00:36,109 --> 01:00:33,960

do appreciate the significance you know

1413

01:00:37,970 --> 01:00:36,119

of the and the importance of the

1414

01:00:40,970 --> 01:00:37,980

humanities and social sciences in this

1415

01:00:44,150 --> 01:00:40,980

context so in fact that we submitted 10

1416

01:00:46,069 --> 01:00:44,160

papers for publication from the Galileo

1417

01:00:49,789 --> 01:00:46,079

project after the first year and one of

1418

01:00:52,130 --> 01:00:49,799

them is about social implications and

1419

01:00:53,870 --> 01:00:52,140

um we haven't made them public yet until

1420

01:00:55,309 --> 01:00:53,880

they are referred they are review peer

1421

01:00:58,130 --> 01:00:55,319

reviewed that then we will make them

1422

01:01:00,650 --> 01:00:58,140

public but the point of the matter is if

1423

01:01:02,530 --> 01:01:00,660

we do find data that indicates that we

1424

01:01:05,950 --> 01:01:02,540

are not the smartest kid on the Block

1425

01:01:08,809 --> 01:01:05,960

then the next steps will be

1426

01:01:10,549 --> 01:01:08,819

dictated by people in the humanities and

1427

01:01:13,390 --> 01:01:10,559

the social sciences they would lead the

1428

01:01:16,309 --> 01:01:13,400

way so you can think of

1429

01:01:20,569 --> 01:01:16,319

physics instrumentation as just being

1430

01:01:23,030 --> 01:01:20,579

the first step necessary to establish

1431

01:01:26,210 --> 01:01:23,040

the evidence so it's sort of like

1432

01:01:29,030 --> 01:01:26,220

imagine a detective story where you

1433

01:01:31,670 --> 01:01:29,040

first need to collect the evidence from

1434

01:01:34,010 --> 01:01:31,680

the crime scene before you jump into any

1435

01:01:36,289 --> 01:01:34,020

conclusion so there is a person that

1436

01:01:38,750 --> 01:01:36,299

will be a technical person collecting

1437

01:01:40,849 --> 01:01:38,760

that evidence then the implications of

1438

01:01:43,789 --> 01:01:40,859

that evidence and what to do with it you

1439

01:01:46,250 --> 01:01:43,799

know that is the subject of

1440

01:01:48,650 --> 01:01:46,260

um people in other professions you know

1441

01:01:50,990 --> 01:01:48,660

including lawyers including politics

1442

01:01:53,390 --> 01:01:51,000

depending on the crime itself but the

1443

01:01:55,190 --> 01:01:53,400

point of the matter is that all these

1444

01:01:57,710 --> 01:01:55,200

other disciplines will come into play

1445

01:02:00,230 --> 01:01:57,720

but they really rely on the evidence

1446

01:02:02,470 --> 01:02:00,240

being firm because if we jump into

1447

01:02:06,829 --> 01:02:02,480

conclusions before the evidence shows it

1448

01:02:08,390 --> 01:02:06,839

then you know that's risky that's we can

1449

01:02:10,730 --> 01:02:08,400

go in many different directions that are

1450

01:02:12,470 --> 01:02:10,740

not substantiated you see that in

1451

01:02:14,690 --> 01:02:12,480

politics you know people believing in

1452

01:02:17,270 --> 01:02:14,700

things or you see that you know in other

1453

01:02:19,609 --> 01:02:17,280

aspects of philosophy uh you can believe

1454

01:02:23,210 --> 01:02:19,619

in things but in the context of figuring

1455

01:02:27,349 --> 01:02:23,220

out reality you better know the evidence

1456

01:02:29,390 --> 01:02:27,359

that confirms your basic assumptions you

1457

01:02:31,069 --> 01:02:29,400

know like is the Earth moving around the

1458

01:02:33,109 --> 01:02:31,079

Sun or the Sun moving around yeah you

1459

01:02:35,569 --> 01:02:33,119

know that changes your worldview once

1460

01:02:37,970 --> 01:02:35,579

you know that the implication of that

1461

01:02:41,150 --> 01:02:37,980

and what to do about it that's

1462

01:02:44,089 --> 01:02:41,160

completely separate from the hard

1463

01:02:46,430 --> 01:02:44,099

sciences and I really think that it

1464

01:02:48,289 --> 01:02:46,440

would be a huge boost in the importance

1465

01:02:49,510 --> 01:02:48,299

of these other disciplines once we get

1466

01:02:52,970 --> 01:02:49,520

there

1467

01:02:53,930 --> 01:02:52,980

well Dr Loeb I really appreciate your

1468

01:02:55,970 --> 01:02:53,940

time

1469

01:02:57,529 --> 01:02:55,980

um I I know you're a busy man and and

1470

01:02:59,270 --> 01:02:57,539

you took time out of your day to do this

1471

01:03:01,190 --> 01:02:59,280

for us and I always appreciate you

1472

01:03:03,049 --> 01:03:01,200

stopping by I always have such a good

1473

01:03:06,170 --> 01:03:03,059

time talking with you um is there

1474

01:03:07,730 --> 01:03:06,180

anything that you uh may want to say or

1475

01:03:09,770 --> 01:03:07,740

something that we weren't able to touch

1476

01:03:11,390 --> 01:03:09,780

on by chance that you want to

1477

01:03:12,890 --> 01:03:11,400

that you want to mention or leave us

1478

01:03:16,130 --> 01:03:12,900

with

1479

01:03:19,250 --> 01:03:16,140

um just anyone interested in funding the

1480

01:03:21,309 --> 01:03:19,260

this effort uh either the expedition to

1481

01:03:25,250 --> 01:03:21,319

Papua New Guinea or the Galileo project

1482

01:03:27,789 --> 01:03:25,260

uh is welcome to to approach me and via

1483

01:03:30,890 --> 01:03:27,799

email I'll be delighted to discuss it

1484

01:03:32,990 --> 01:03:30,900

and we will not disappoint you uh I hope

1485

01:03:34,609 --> 01:03:33,000

that within a year we'll have some very

1486

01:03:37,730 --> 01:03:34,619

interesting things to say

1487

01:03:39,829 --> 01:03:37,740

great thank you so much Dr Lowe it's

1488

01:03:41,750 --> 01:03:39,839

been an absolute pleasure thank you

1489

01:03:43,069 --> 01:03:41,760

thanks for having me have a great rest

1490

01:03:46,130 --> 01:03:43,079

of the day

1491

01:03:52,849 --> 01:03:49,430

oh golly gosh that was great yeah really

1492

01:03:55,190 --> 01:03:52,859

really enjoyed that it was fantastic and

1493

01:03:56,690 --> 01:03:55,200

I think we're not done with each other

1494

01:03:59,270 --> 01:03:56,700

yet are we

1495

01:04:04,010 --> 01:04:01,370

um not only just right now

1496

01:04:06,589 --> 01:04:04,020

um but we also oh you're gonna make me

1497

01:04:09,289 --> 01:04:06,599

dizzy it's okay you can keep doing it

1498

01:04:13,010 --> 01:04:09,299

um but um yeah uh later this evening

1499

01:04:16,010 --> 01:04:13,020

we've got another episode another

1500

01:04:18,289 --> 01:04:16,020

um piping hot episode of good questions

1501  
01:04:20,210 --> 01:04:18,299  
by the way I wanted to say you brought

1502  
01:04:22,970 --> 01:04:20,220  
some really great questions today oh

1503  
01:04:24,589 --> 01:04:22,980  
thanks fantastic you did too yeah well

1504  
01:04:27,230 --> 01:04:24,599  
you know I'm gonna shoot from the hip

1505  
01:04:28,370 --> 01:04:27,240  
kind of guy in your well thought out

1506  
01:04:30,289 --> 01:04:28,380  
kind of guy

1507  
01:04:32,329 --> 01:04:30,299  
and you know when I hear some of your

1508  
01:04:34,549 --> 01:04:32,339  
questions like man I wish I was a more

1509  
01:04:40,130 --> 01:04:34,559  
well thought out kind of guy well that's

1510  
01:04:45,710 --> 01:04:42,529  
getting like saxophone player you know

1511  
01:04:47,690 --> 01:04:45,720  
what I mean and I I yeah I haven't been

1512  
01:04:49,910 --> 01:04:47,700  
at this as long as you have in terms of

1513  
01:04:52,010 --> 01:04:49,920

the public-facing podcasting stuff so I

1514

01:04:54,109 --> 01:04:52,020

have to sit here and kind of like you

1515

01:04:57,490 --> 01:04:54,119

know build and Build The Better

1516

01:05:00,529 --> 01:04:57,500

mousetrap you know kind of stuff

1517

01:05:01,849 --> 01:05:00,539

I have to sit here and methodically look

1518

01:05:03,349 --> 01:05:01,859

through the interviews and go through my

1519

01:05:06,170 --> 01:05:03,359

notes for a few hours but it works out

1520

01:05:07,010 --> 01:05:06,180

it works out in things at the end of the

1521

01:05:10,690 --> 01:05:07,020

day

1522

01:05:13,549 --> 01:05:10,700

um having great conversations and and

1523

01:05:15,589 --> 01:05:13,559

seeing the wonderful people over in the

1524

01:05:18,170 --> 01:05:15,599

chat is a great reward for for what

1525

01:05:20,210 --> 01:05:18,180

we're doing here yeah and everyone was

1526

01:05:22,970 --> 01:05:20,220

fantastic in the chat

1527

01:05:25,069 --> 01:05:22,980

um I really do appreciate that uh as

1528

01:05:27,829 --> 01:05:25,079

always you guys keep the chat uh polite

1529

01:05:30,529 --> 01:05:27,839

and I really respect that about the chat

1530

01:05:34,010 --> 01:05:30,539

one of my favorite things about uh the

1531

01:05:36,890 --> 01:05:34,020

chat is you know people are always

1532

01:05:39,470 --> 01:05:36,900

um afforded you know their their own

1533

01:05:42,349 --> 01:05:39,480

opinion right but but they just kind of

1534

01:05:45,470 --> 01:05:42,359

seem to know when it goes too far into

1535

01:05:47,450 --> 01:05:45,480

the negative aspect you know and that

1536

01:05:51,049 --> 01:05:47,460

negativity is just contagious and nobody

1537

01:05:54,230 --> 01:05:51,059

nobody wants that right so I appreciate

1538

01:05:56,930 --> 01:05:54,240

that about the chat and yeah we do have

1539

01:05:59,630 --> 01:05:56,940

another show at 6 p.m Central Standard

1540

01:06:02,630 --> 01:05:59,640

Time with Dr Michael Masters where we're

1541

01:06:06,829 --> 01:06:05,270

aliens that could be Time Travelers

1542

01:06:10,250 --> 01:06:06,839

we're going to be talking about time

1543

01:06:13,910 --> 01:06:10,260

travel yep you know I mean yep are some

1544

01:06:15,770 --> 01:06:13,920

are some non-human intities are some of

1545

01:06:18,170 --> 01:06:15,780

these anomalies that we see could they

1546

01:06:21,470 --> 01:06:18,180

possibly be Time Travelers he's now

1547

01:06:23,569 --> 01:06:21,480

written two books on the subject uh he's

1548

01:06:26,270 --> 01:06:23,579

he's a brilliant guy I met him in March

1549

01:06:28,010 --> 01:06:26,280

had lunch with him once and uh it was a

1550

01:06:30,109 --> 01:06:28,020

wonderful wonderful outbroken

1551

01:06:32,690 --> 01:06:30,119

conversation that I look forward to us

1552

01:06:34,069 --> 01:06:32,700

having an awesome conversation with them

1553

01:06:35,630 --> 01:06:34,079

this evening I'm sure it's going to be

1554

01:06:37,370 --> 01:06:35,640

great if you're going to bring some more

1555

01:06:39,829 --> 01:06:37,380

well thought out questions I'm going to

1556

01:06:42,470 --> 01:06:39,839

be shooting from the hip and

1557

01:06:43,910 --> 01:06:42,480

but see it I read his book and I watched

1558

01:06:45,190 --> 01:06:43,920

his interviews but then I don't plan

1559

01:06:47,270 --> 01:06:45,200

anything

1560

01:06:49,670 --> 01:06:47,280

well that's that's the way it works man

1561

01:06:51,230 --> 01:06:49,680

yeah like you made a Hendrix analogy

1562

01:06:52,970 --> 01:06:51,240

before and it's not the first time that

1563

01:06:55,789 --> 01:06:52,980

I've said like you're kind of like the

1564

01:06:58,190 --> 01:06:55,799

Guided by Voices of uh anomalous

1565

01:07:00,349 --> 01:06:58,200

podcasting you just kind of open your

1566

01:07:03,670 --> 01:07:00,359

mouth and a song comes out that's I mean

1567

01:07:09,770 --> 01:07:03,680

it really it really is what happened

1568

01:07:13,010 --> 01:07:09,780

well yeah I equally respect and love you

1569

01:07:15,230 --> 01:07:13,020

well all right we should probably get a

1570

01:07:17,630 --> 01:07:15,240

room uh while we're at it but uh sure

1571

01:07:19,309 --> 01:07:17,640

fair enough dude it's wonderful to see

1572

01:07:21,049 --> 01:07:19,319

you it's wonderful to see everybody over

1573

01:07:24,109 --> 01:07:21,059

here and I hope that we'll see some of

1574

01:07:26,630 --> 01:07:24,119

you uh later this evening yep peace out

1575

01:07:29,960 --> 01:07:26,640

y'all all right love you buddy love you

1576

01:07:43,290 --> 01:07:41,930

[Music]