

WITNESS CITIZEN

9/06/21

***UAP Conversation With
Avi Loeb***



1
00:00:06,309 --> 00:00:03,429
hello

2
00:00:09,830 --> 00:00:06,319
long time no see i'm glad you uh joined

3
00:00:13,910 --> 00:00:09,840
us here for round two

4
00:00:17,430 --> 00:00:13,920
we have a fantastic guest on um his name

5
00:00:19,109 --> 00:00:17,440
is abraham lo avelo

6
00:00:20,710 --> 00:00:19,119
and i'm looking very much forward to

7
00:00:22,230 --> 00:00:20,720
that

8
00:00:24,470 --> 00:00:22,240
i know he's done his rounds with

9
00:00:25,750 --> 00:00:24,480
interviews the guy is a maniac he's done

10
00:00:28,870 --> 00:00:25,760
so many

11
00:00:30,470 --> 00:00:28,880
um so i did my part to at least um

12
00:00:31,509 --> 00:00:30,480
you know get some good questions in

13
00:00:33,350 --> 00:00:31,519

there

14

00:00:35,270 --> 00:00:33,360

um i do have super chat and all that for

15

00:00:38,549 --> 00:00:35,280

questions if you want i can't guarantee

16

00:00:39,350 --> 00:00:38,559

i'll ask him but um i would like to

17

00:00:41,910 --> 00:00:39,360

um

18

00:00:45,029 --> 00:00:41,920

conversation with him comes first

19

00:00:46,869 --> 00:00:45,039

and if i do see a question there

20

00:00:48,470 --> 00:00:46,879

um that makes sense or fits in with

21

00:00:51,029 --> 00:00:48,480

everything i

22

00:00:52,950 --> 00:00:51,039

would love to throw it in there so just

23

00:00:55,110 --> 00:00:52,960

so you know

24

00:00:57,110 --> 00:00:55,120

um we also have unidentified celebrity

25

00:01:00,069 --> 00:00:57,120

review doing their last big phone home

26
00:01:01,910 --> 00:01:00,079
event day three i understand the timing

27
00:01:03,990 --> 00:01:01,920
here is a bit awkward

28
00:01:05,270 --> 00:01:04,000
um but you got to do what you got to do

29
00:01:06,789 --> 00:01:05,280
and you can always go back and watch

30
00:01:07,750 --> 00:01:06,799
this later so

31
00:01:10,630 --> 00:01:07,760
or

32
00:01:12,149 --> 00:01:10,640
there's whichever you prefer

33
00:01:14,310 --> 00:01:12,159
uh with that being said we'll be right

34
00:01:21,690 --> 00:01:14,320
back

35
00:02:04,069 --> 00:01:38,460
[Music]

36
00:02:05,590 --> 00:02:04,079
and there we go it's the same opening

37
00:02:07,510 --> 00:02:05,600
again i should have picked a different

38
00:02:09,430 --> 00:02:07,520

opening for show two but

39

00:02:10,170 --> 00:02:09,440

um i went with the same one what are you

40

00:02:12,150 --> 00:02:10,180

gonna do

41

00:02:16,070 --> 00:02:12,160

[Laughter]

42

00:02:18,470 --> 00:02:16,080

um so we're waiting for mr avi to arrive

43

00:02:22,949 --> 00:02:18,480

as soon as he does i'll bring him in

44

00:02:25,430 --> 00:02:22,959

um so yeah until then you know

45

00:02:26,309 --> 00:02:25,440

i guess we can just chat

46

00:02:29,589 --> 00:02:26,319

um

47

00:02:31,350 --> 00:02:29,599

so far i guess we can talk about uh

48

00:02:33,190 --> 00:02:31,360

the big phone home event

49

00:02:35,190 --> 00:02:33,200

i thought

50

00:02:36,949 --> 00:02:35,200

you know it's quite a task monumental

51
00:02:38,949 --> 00:02:36,959
test taking on three days of live

52
00:02:42,229 --> 00:02:38,959
streaming with guests

53
00:02:45,750 --> 00:02:42,239
um you have to keep your energy somehow

54
00:02:47,589 --> 00:02:45,760
and stay focused and uh interested and

55
00:02:50,790 --> 00:02:47,599
they're doing a fantastic job i ca i

56
00:02:52,790 --> 00:02:50,800
can't even believe it so

57
00:02:54,390 --> 00:02:52,800
um make sure they're supported those

58
00:02:57,110 --> 00:02:54,400
efforts are supportive

59
00:03:01,030 --> 00:02:57,120
uh through our actions of a phone call

60
00:03:02,949 --> 00:03:01,040
or an email or a text or twitter rather

61
00:03:04,550 --> 00:03:02,959
or whichever you prefer that works best

62
00:03:05,830 --> 00:03:04,560
for you

63
00:03:07,670 --> 00:03:05,840

so

64

00:03:10,309 --> 00:03:07,680

i think that's what they would want more

65

00:03:13,030 --> 00:03:10,319

than anything and myself as well i've

66

00:03:16,309 --> 00:03:13,040

shown you here how

67

00:03:19,030 --> 00:03:16,319

easy a phone call is right

68

00:03:22,550 --> 00:03:19,040

super easy um we can take it to the big

69

00:03:27,190 --> 00:03:24,949

and you pick your own representative and

70

00:03:29,990 --> 00:03:27,200

you make a phone call

71

00:03:32,710 --> 00:03:30,000

they have templates there for scripts if

72

00:03:34,149 --> 00:03:32,720

you prefer you can make it a little bit

73

00:03:35,990 --> 00:03:34,159

your own

74

00:03:37,030 --> 00:03:36,000

or you can just purely read from the

75

00:03:38,309 --> 00:03:37,040

script

76

00:03:40,070 --> 00:03:38,319

and for the emails too they have

77

00:03:41,670 --> 00:03:40,080

templates

78

00:03:43,110 --> 00:03:41,680

um

79

00:03:45,270 --> 00:03:43,120

i always prefer to throw something

80

00:03:46,550 --> 00:03:45,280

personal in there so that it has a

81

00:03:48,630 --> 00:03:46,560

little bit of meaning

82

00:03:50,869 --> 00:03:48,640

i think because humans maybe connect a

83

00:03:52,309 --> 00:03:50,879

little more that way at times

84

00:03:56,550 --> 00:03:52,319

um

85

00:04:03,110 --> 00:03:59,110

so yeah i hope you do that

86

00:04:04,800 --> 00:04:03,120

so right now i guess it's just the

87

00:04:06,789 --> 00:04:04,810

waiting game

88

00:04:07,750 --> 00:04:06,799

[Laughter]

89

00:04:10,149 --> 00:04:07,760

so

90

00:04:12,869 --> 00:04:10,159

i'm just waiting for him

91

00:04:18,870 --> 00:04:14,470

hopefully

92

00:04:23,830 --> 00:04:20,789

there's i guess one thing that i've been

93

00:04:26,830 --> 00:04:23,840

thinking about a lot lately is

94

00:04:31,510 --> 00:04:26,840

um the whole science and

95

00:04:35,670 --> 00:04:33,189

i think the first thing that we could do

96

00:04:39,590 --> 00:04:35,680

i mean you know we all do it

97

00:04:41,749 --> 00:04:39,600

we catch it happening all the time um

98

00:04:44,469 --> 00:04:41,759

you know lambasting uh scientists for

99

00:04:45,990 --> 00:04:44,479

not getting involved

100

00:04:48,310 --> 00:04:46,000

you know scientists need to get involved

101
00:04:51,830 --> 00:04:48,320
and we always use that word scientist

102
00:04:55,110 --> 00:04:53,510
well what does that mean you know

103
00:04:58,310 --> 00:04:55,120
there's a lot of different types of

104
00:05:02,310 --> 00:05:00,150
what scientists

105
00:05:04,950 --> 00:05:02,320
are the ones that should be getting

106
00:05:05,909 --> 00:05:04,960
involved

107
00:05:10,710 --> 00:05:05,919
and

108
00:05:12,629 --> 00:05:10,720
how easy or not is it for them to do so

109
00:05:15,270 --> 00:05:12,639
you know there still is a stigma

110
00:05:17,350 --> 00:05:15,280
attached whether we think so or not

111
00:05:20,710 --> 00:05:17,360
for instance i can't just go back to my

112
00:05:25,270 --> 00:05:22,950
you know because i'm the alien guy

113
00:05:27,430 --> 00:05:25,280

you know

114

00:05:30,310 --> 00:05:27,440

so we're all kind of in this together

115

00:05:33,430 --> 00:05:30,320

and experiencers it's the same thing

116

00:05:36,629 --> 00:05:35,590

there's different things that happen to

117

00:05:38,870 --> 00:05:36,639

people

118

00:05:41,350 --> 00:05:38,880

there's a sighting where you just you

119

00:05:43,029 --> 00:05:41,360

see something

120

00:05:44,629 --> 00:05:43,039

you know then there's abductions that's

121

00:05:45,909 --> 00:05:44,639

like their own thing

122

00:05:48,870 --> 00:05:45,919

and there's something but you know what

123

00:05:52,870 --> 00:05:48,880

happened to me that's an experience

124

00:05:53,990 --> 00:05:52,880

but those are all vastly different

125

00:05:56,469 --> 00:05:54,000

you know

126
00:05:59,110 --> 00:05:56,479
so i think the more we can stop using a

127
00:06:00,950 --> 00:05:59,120
broad brush to paint these groups of

128
00:06:02,070 --> 00:06:00,960
people

129
00:06:03,909 --> 00:06:02,080
you know

130
00:06:09,990 --> 00:06:03,919
until we can stop doing that i don't

131
00:06:10,000 --> 00:06:13,350
know what i mean

132
00:06:17,430 --> 00:06:15,590
but that's just my take i think

133
00:06:21,510 --> 00:06:17,440
you know we have to treat people as

134
00:06:27,270 --> 00:06:25,029
and yeah we want scientists

135
00:06:29,670 --> 00:06:27,280
to get involved but

136
00:06:31,029 --> 00:06:29,680
um that's just such a

137
00:06:32,469 --> 00:06:31,039
it's too

138
00:06:34,469 --> 00:06:32,479

vague

139

00:06:37,670 --> 00:06:34,479

need to be more specific with that

140

00:06:39,749 --> 00:06:37,680

the man of the hour is here

141

00:06:41,189 --> 00:06:39,759

it's good because i was just so nervous

142

00:06:42,710 --> 00:06:41,199

talking to the camera by myself i

143

00:06:45,909 --> 00:06:42,720

thought i was going to start crying it

144

00:06:48,790 --> 00:06:45,919

was going to get really weird but

145

00:06:51,589 --> 00:06:48,800

he showed up thank god so without

146

00:06:53,909 --> 00:06:51,599

further ado mr abraham love how are you

147

00:06:56,150 --> 00:06:53,919

i'm doing great thank you good thank you

148

00:06:57,670 --> 00:06:56,160

so much for joining us yes you're busy

149

00:06:59,589 --> 00:06:57,680

man you're a maniac what number

150

00:07:01,749 --> 00:06:59,599

interviews is for you

151

00:07:06,150 --> 00:07:01,759

well i had about 1200 over the past

152

00:07:08,550 --> 00:07:06,160

seven months no really yeah holy cow i

153

00:07:10,550 --> 00:07:08,560

did 150 shows in 90 days i thought that

154

00:07:12,629 --> 00:07:10,560

was a lot

155

00:07:14,629 --> 00:07:12,639

yeah well i didn't anticipate it it's

156

00:07:16,550 --> 00:07:14,639

pretty much a reflection of the interest

157

00:07:18,550 --> 00:07:16,560

of the public

158

00:07:19,670 --> 00:07:18,560

yeah most definitely

159

00:07:21,189 --> 00:07:19,680

um

160

00:07:22,790 --> 00:07:21,199

are you

161

00:07:23,830 --> 00:07:22,800

do you kind of use that do you notice

162

00:07:25,990 --> 00:07:23,840

here as

163

00:07:28,390 --> 00:07:26,000

typically the same questions on these

164

00:07:30,230 --> 00:07:28,400

interviews uh not necessarily you can

165

00:07:32,629 --> 00:07:30,240

ask me anything you want uh if i don't

166

00:07:35,430 --> 00:07:32,639

know the answer i'll admit it

167

00:07:36,950 --> 00:07:35,440

no i'm just curious um you know i kind

168

00:07:39,670 --> 00:07:36,960

of did a little

169

00:07:41,189 --> 00:07:39,680

tiny bit of a deep dive on you just to

170

00:07:43,189 --> 00:07:41,199

to check you out and you know give you

171

00:07:46,629 --> 00:07:43,199

the respect you need in this interview

172

00:07:48,629 --> 00:07:46,639

and it's clear to me you've been

173

00:07:49,510 --> 00:07:48,639

searching for something for quite a long

174

00:07:52,550 --> 00:07:49,520

time

175

00:07:55,189 --> 00:07:52,560

um it seems like it started with finding

176

00:07:56,950 --> 00:07:55,199

out the creation of planets and stars

177

00:08:00,070 --> 00:07:56,960

correct

178

00:08:01,830 --> 00:08:00,080

um well early in my career i was i was

179

00:08:04,309 --> 00:08:01,840

interested in the scientific version of

180

00:08:06,950 --> 00:08:04,319

the story of genesis how the first stars

181

00:08:09,749 --> 00:08:06,960

formed we know that the universe started

182

00:08:10,830 --> 00:08:09,759

13.8 billion years ago in the big bang

183

00:08:13,589 --> 00:08:10,840

and

184

00:08:16,070 --> 00:08:13,599

obviously early on the universe was very

185

00:08:18,469 --> 00:08:16,080

hot and dense much denser and hotter

186

00:08:20,790 --> 00:08:18,479

than the sun so a star like the sun

187

00:08:22,869 --> 00:08:20,800

could not have existed early on and the

188

00:08:25,189 --> 00:08:22,879

question is when did the first stars

189

00:08:26,869 --> 00:08:25,199

form we know that the sun formed about

190

00:08:27,909 --> 00:08:26,879

five billion years ago but that was

191

00:08:30,070 --> 00:08:27,919

roughly

192

00:08:32,389 --> 00:08:30,080

uh you know the last third in the

193

00:08:34,949 --> 00:08:32,399

evolution history of the universe so

194

00:08:36,790 --> 00:08:34,959

when did the very first stars form and

195

00:08:38,709 --> 00:08:36,800

uh of course the related question is

196

00:08:41,430 --> 00:08:38,719

when did life start in the universe you

197

00:08:43,909 --> 00:08:41,440

know we are born into this world like

198

00:08:46,310 --> 00:08:43,919

actors put on a stage and we tend to

199

00:08:47,030 --> 00:08:46,320

think that the play is about us that we

200

00:08:49,110 --> 00:08:47,040

are

201
00:08:51,590 --> 00:08:49,120
central players but

202
00:08:53,190 --> 00:08:51,600
actually the play started 13.8 billion

203
00:08:55,829 --> 00:08:53,200
years ago and

204
00:08:57,190 --> 00:08:55,839
you know the the stage itself is

205
00:08:59,509 --> 00:08:57,200
10 to the power

206
00:09:02,630 --> 00:08:59,519
26 times bigger than the size of our

207
00:09:04,790 --> 00:09:02,640
body so we are not the play is not about

208
00:09:07,430 --> 00:09:04,800
us we are not central players and of

209
00:09:10,550 --> 00:09:07,440
course the latest subject that i work on

210
00:09:12,710 --> 00:09:10,560
is other other actors in this play but

211
00:09:15,030 --> 00:09:12,720
but early on in my career i was

212
00:09:16,310 --> 00:09:15,040
interested in when did the first stars

213
00:09:18,630 --> 00:09:16,320

form and

214

00:09:20,710 --> 00:09:18,640

when was the first light produced by

215

00:09:22,630 --> 00:09:20,720

these stars and there were only a few

216

00:09:24,550 --> 00:09:22,640

people around the world the interest in

217

00:09:25,350 --> 00:09:24,560

this question when i started working on

218

00:09:27,269 --> 00:09:25,360

it

219

00:09:28,550 --> 00:09:27,279

i arrived there at harvard

220

00:09:30,150 --> 00:09:28,560

and after that

221

00:09:32,630 --> 00:09:30,160

you know after getting some interesting

222

00:09:35,030 --> 00:09:32,640

results i published two

223

00:09:38,310 --> 00:09:35,040

books on this subject

224

00:09:40,150 --> 00:09:38,320

right yeah i i found a video of you 10

225

00:09:42,949 --> 00:09:40,160

years ago talking about it i think it

226

00:09:45,110 --> 00:09:42,959

was uh like on a princeton youtube

227

00:09:45,990 --> 00:09:45,120

channel or something and i have to tell

228

00:09:53,509 --> 00:09:46,000

you

229

00:09:54,790 --> 00:09:53,519

my weight um i couldn't i didn't

230

00:09:56,470 --> 00:09:54,800

recognize you

231

00:09:59,350 --> 00:09:56,480

yeah so good

232

00:10:02,230 --> 00:09:59,360

yeah yeah and you know half of my

233

00:10:04,949 --> 00:10:02,240

calories on a daily basis come from dark

234

00:10:07,910 --> 00:10:04,959

chocolate so and i talk every morning at

235

00:10:10,069 --> 00:10:07,920

5 00 a.m so i would suggest that you

236

00:10:11,430 --> 00:10:10,079

know a diet

237

00:10:13,190 --> 00:10:11,440

based on

238

00:10:16,150 --> 00:10:13,200

low carbs and

239

00:10:17,990 --> 00:10:16,160

antioxidants is very good for you and an

240

00:10:19,750 --> 00:10:18,000

exercise of course i do that every

241

00:10:20,790 --> 00:10:19,760

morning at 5 00 a.m in the company of

242

00:10:21,990 --> 00:10:20,800

birds

243

00:10:25,030 --> 00:10:22,000

ducks

244

00:10:27,990 --> 00:10:25,040

rabbits and wild turkeys

245

00:10:29,110 --> 00:10:28,000

um yeah so your hypothesis is i mean

246

00:10:32,470 --> 00:10:29,120

it's kind of

247

00:10:34,150 --> 00:10:32,480

it's a confronting hypothesis is it not

248

00:10:35,990 --> 00:10:34,160

um

249

00:10:38,069 --> 00:10:36,000

you know we're not special which implies

250

00:10:40,230 --> 00:10:38,079

we're not alone right

251
00:10:42,230 --> 00:10:40,240
how are people going to egotistically

252
00:10:45,350 --> 00:10:42,240
deal with that

253
00:10:47,990 --> 00:10:45,360
yeah so we currently have this

254
00:10:50,389 --> 00:10:48,000
rover on mars called perseverance that

255
00:10:51,910 --> 00:10:50,399
nasa sent and of course

256
00:10:55,110 --> 00:10:51,920
you know if it finds evidence for

257
00:10:56,630 --> 00:10:55,120
microbes that may have existed on mars

258
00:10:58,389 --> 00:10:56,640
nobody would have a problem with that

259
00:11:00,230 --> 00:10:58,399
because we can still maintain our

260
00:11:03,269 --> 00:11:00,240
self-esteem we're much smarter than

261
00:11:06,310 --> 00:11:03,279
those microbes so it's not a big deal

262
00:11:08,630 --> 00:11:06,320
but suppose the rover bumps against the

263
00:11:10,550 --> 00:11:08,640

wreckage of a

264

00:11:12,310 --> 00:11:10,560

spaceship that is far more advanced than

265

00:11:15,190 --> 00:11:12,320

we ever produced

266

00:11:16,470 --> 00:11:15,200

that would be a blow to our ego

267

00:11:18,389 --> 00:11:16,480

and

268

00:11:20,470 --> 00:11:18,399

that's pretty much

269

00:11:22,870 --> 00:11:20,480

the issue with finding

270

00:11:24,790 --> 00:11:22,880

a smarter kid on the block most people

271

00:11:26,829 --> 00:11:24,800

prefer not to look through the window

272

00:11:29,590 --> 00:11:26,839

yeah that includes the scientific

273

00:11:32,069 --> 00:11:29,600

community which argues that we need

274

00:11:35,110 --> 00:11:32,079

extraordinary evidence yet it doesn't

275

00:11:37,509 --> 00:11:35,120

look through the window so

276

00:11:39,350 --> 00:11:37,519

if you're not funding the research

277

00:11:41,030 --> 00:11:39,360

obviously you will not find anything and

278

00:11:43,030 --> 00:11:41,040

it's a self-fulfilling prophecy so it's

279

00:11:45,110 --> 00:11:43,040

very comfortable to basically say i

280

00:11:46,870 --> 00:11:45,120

don't want to engage in this discussion

281

00:11:49,190 --> 00:11:46,880

until i have extraordinary evidence and

282

00:11:51,670 --> 00:11:49,200

then not even check you know that's what

283

00:11:54,230 --> 00:11:51,680

the philosophers did during the days of

284

00:11:55,829 --> 00:11:54,240

galileo they said we know that the sun

285

00:11:57,590 --> 00:11:55,839

moves around the earth we don't need to

286

00:11:58,550 --> 00:11:57,600

look through your telescopes

287

00:12:03,269 --> 00:11:58,560

and

288

00:12:05,829 --> 00:12:03,279

they maintain their ignorance so if we

289

00:12:07,430 --> 00:12:05,839

want we can stay ignorant no problem

290

00:12:09,350 --> 00:12:07,440

with that it's a self-fulfilling

291

00:12:10,389 --> 00:12:09,360

prophecy if you want to be ignorant you

292

00:12:12,629 --> 00:12:10,399

will be ignorant

293

00:12:14,790 --> 00:12:12,639

that's correct

294

00:12:16,470 --> 00:12:14,800

as a scientist i don't want to be

295

00:12:19,030 --> 00:12:16,480

ignorant i want to figure out which

296

00:12:20,629 --> 00:12:19,040

reality i live in you know my daughters

297

00:12:22,550 --> 00:12:20,639

when they were young and they thought

298

00:12:23,990 --> 00:12:22,560

that they are the smartest and because

299

00:12:26,150 --> 00:12:24,000

they compare themselves against the

300

00:12:28,310 --> 00:12:26,160

family members they were just at home

301
00:12:30,150 --> 00:12:28,320
and when i took them to the kindergarten

302
00:12:32,150 --> 00:12:30,160
it changed their perspective now of

303
00:12:34,949 --> 00:12:32,160
course they would tell me on the first

304
00:12:36,870 --> 00:12:34,959
day in kindergarten we want to be home

305
00:12:39,269 --> 00:12:36,880
because it was a threat to their

306
00:12:40,949 --> 00:12:39,279
self-esteem yeah and yeah

307
00:12:43,350 --> 00:12:40,959
you know that's pretty much the approach

308
00:12:45,990 --> 00:12:43,360
that a lot of my colleagues take now i

309
00:12:47,910 --> 00:12:46,000
always give this analogy with a caveman

310
00:12:49,269 --> 00:12:47,920
suppose a caveman would find you know

311
00:12:51,190 --> 00:12:49,279
any

312
00:12:53,350 --> 00:12:51,200
no

313
00:12:55,350 --> 00:12:53,360

but i just imagined that

314

00:12:58,150 --> 00:12:55,360

finds a cell phone you know the first

315

00:13:00,629 --> 00:12:58,160

reaction of a caveman would be to say

316

00:13:02,150 --> 00:13:00,639

it's a shiny rock you know like uh

317

00:13:03,829 --> 00:13:02,160

because that's what the caveman is used

318

00:13:05,829 --> 00:13:03,839

to playing with and

319

00:13:08,150 --> 00:13:05,839

that's pretty much the reaction of the

320

00:13:09,590 --> 00:13:08,160

scientific community to umua this first

321

00:13:11,350 --> 00:13:09,600

interstellar

322

00:13:13,110 --> 00:13:11,360

that didn't look like anything we have

323

00:13:15,269 --> 00:13:13,120

seen before and

324

00:13:17,590 --> 00:13:15,279

the the people that paid attention to

325

00:13:19,190 --> 00:13:17,600

the properties of this object argued

326

00:13:20,949 --> 00:13:19,200

that it's a rock of a type that we've

327

00:13:23,269 --> 00:13:20,959

never seen before so that's what the

328

00:13:25,030 --> 00:13:23,279

caveman would say you know it's a rock

329

00:13:27,110 --> 00:13:25,040

that of a type that i've never seen

330

00:13:29,030 --> 00:13:27,120

before just shiny but then of course

331

00:13:31,190 --> 00:13:29,040

it's the beginning of a learning because

332

00:13:33,509 --> 00:13:31,200

the caveman can press on a button

333

00:13:35,670 --> 00:13:33,519

and realize that he records his voice

334

00:13:37,110 --> 00:13:35,680

this this shiny rock and press on

335

00:13:39,269 --> 00:13:37,120

another button and realize that it

336

00:13:41,189 --> 00:13:39,279

records in his image and and at some

337

00:13:43,829 --> 00:13:41,199

point the caveman would realize

338

00:13:45,110 --> 00:13:43,839

you know this is not really a rock so i

339

00:13:47,189 --> 00:13:45,120

think

340

00:13:49,030 --> 00:13:47,199

the key is get evidence now of course if

341

00:13:50,470 --> 00:13:49,040

the caveman would sage a shiny rock and

342

00:13:53,030 --> 00:13:50,480

throw it away

343

00:13:54,949 --> 00:13:53,040

that would maintain its ignorance so i'm

344

00:13:57,030 --> 00:13:54,959

i'm just suggesting that we get more

345

00:13:59,189 --> 00:13:57,040

evidence on objects like it and

346

00:14:00,870 --> 00:13:59,199

fortunately i don't need to rely on

347

00:14:02,629 --> 00:14:00,880

other people i don't need to rely on the

348

00:14:04,230 --> 00:14:02,639

government getting more evidence i don't

349

00:14:05,990 --> 00:14:04,240

need to rely on my colleagues getting

350

00:14:07,910 --> 00:14:06,000

more evident i just established the

351

00:14:11,350 --> 00:14:07,920

galileo project so that i will get the

352

00:14:13,829 --> 00:14:11,360

evidence right no it's fantastic and i

353

00:14:17,829 --> 00:14:13,839

do admire the work and it seems like you

354

00:14:19,829 --> 00:14:17,839

know maybe not this particular thing was

355

00:14:21,670 --> 00:14:19,839

always in your head

356

00:14:23,829 --> 00:14:21,680

but it's clear that you've always been

357

00:14:25,750 --> 00:14:23,839

running towards something for a while

358

00:14:28,389 --> 00:14:25,760

and maybe this is it it seems it seems

359

00:14:31,189 --> 00:14:28,399

like it's some what of a climax so i

360

00:14:33,509 --> 00:14:31,199

hope it all comes together for you oh i

361

00:14:35,990 --> 00:14:33,519

should say i should say that it was not

362

00:14:37,189 --> 00:14:36,000

planned that i basically approached this

363

00:14:39,430 --> 00:14:37,199

subject

364

00:14:42,470 --> 00:14:39,440

uh when um was discovered this object

365

00:14:44,230 --> 00:14:42,480

from 2017 that looked weird uh the first

366

00:14:46,790 --> 00:14:44,240

interstellar object from outside the

367

00:14:48,310 --> 00:14:46,800

solar system um you know i approached

368

00:14:50,150 --> 00:14:48,320

this subject the same way that i

369

00:14:53,350 --> 00:14:50,160

approached other subjects that i worked

370

00:14:54,949 --> 00:14:53,360

on and uh to my surprise the response of

371

00:14:57,350 --> 00:14:54,959

both the scientific community and the

372

00:14:59,590 --> 00:14:57,360

public was quite different than

373

00:15:01,990 --> 00:14:59,600

my past studies and but i haven't

374

00:15:03,430 --> 00:15:02,000

changed my colors i i pretty much behave

375

00:15:05,910 --> 00:15:03,440

the same way and

376

00:15:08,310 --> 00:15:05,920

it's uh what makes me different

377

00:15:10,069 --> 00:15:08,320

is the reaction of

378

00:15:12,550 --> 00:15:10,079

my environment to the subject not so

379

00:15:13,430 --> 00:15:12,560

much the way i deal with it

380

00:15:16,389 --> 00:15:13,440

right

381

00:15:17,990 --> 00:15:16,399

yeah um but do you think we paint too

382

00:15:19,269 --> 00:15:18,000

broad of a brush when we just say

383

00:15:21,590 --> 00:15:19,279

scientists right because there's

384

00:15:23,509 --> 00:15:21,600

different kinds and some maybe not so

385

00:15:24,470 --> 00:15:23,519

applicable oh no

386

00:15:26,550 --> 00:15:24,480

i mean

387

00:15:29,269 --> 00:15:26,560

i should say you know i always remember

388

00:15:31,430 --> 00:15:29,279

this example of a congressman right that

389

00:15:34,710 --> 00:15:31,440

um that the head

390

00:15:35,829 --> 00:15:34,720

made anti-gay statements uh years ago

391

00:15:37,430 --> 00:15:35,839

and then when

392

00:15:39,590 --> 00:15:37,440

he retired

393

00:15:41,110 --> 00:15:39,600

he um came out of the closet and said

394

00:15:43,749 --> 00:15:41,120

that he's gay

395

00:15:47,350 --> 00:15:43,759

uh and so a lot of times when people

396

00:15:49,910 --> 00:15:47,360

respond negatively they sort of

397

00:15:52,629 --> 00:15:49,920

show a facade just to satisfy other

398

00:15:54,389 --> 00:15:52,639

people in some ways but deep down

399

00:15:55,509 --> 00:15:54,399

they're really intrigued

400

00:15:57,430 --> 00:15:55,519

yeah and

401
00:16:00,470 --> 00:15:57,440
i won't be surprised if many of the

402
00:16:02,790 --> 00:16:00,480
critics of my hypothesis

403
00:16:05,350 --> 00:16:02,800
end up being on my camp once the

404
00:16:07,910 --> 00:16:05,360
evidence is clear you know like uh if we

405
00:16:09,670 --> 00:16:07,920
find a high resolution and another

406
00:16:12,150 --> 00:16:09,680
object like como mo and take a high

407
00:16:14,710 --> 00:16:12,160
resolution image of it and we can see

408
00:16:16,870 --> 00:16:14,720
the buttons you can see the screws and

409
00:16:17,749 --> 00:16:16,880
the the bolts on it

410
00:16:19,910 --> 00:16:17,759
i think

411
00:16:22,389 --> 00:16:19,920
you know any reasonable person would be

412
00:16:23,910 --> 00:16:22,399
on on my side of the argument and and

413
00:16:25,749 --> 00:16:23,920

that's what we're trying to find of

414

00:16:27,670 --> 00:16:25,759

course you can argue there is no point

415

00:16:30,629 --> 00:16:27,680

in trying to find it because we know the

416

00:16:32,470 --> 00:16:30,639

answer in advance but my point is then

417

00:16:35,269 --> 00:16:32,480

you resemble the philosophers during the

418

00:16:37,110 --> 00:16:35,279

days of galileo yeah and yeah i mean

419

00:16:38,870 --> 00:16:37,120

it's a simple cliché but because it's

420

00:16:40,870 --> 00:16:38,880

true right you miss every shot you don't

421

00:16:42,550 --> 00:16:40,880

take

422

00:16:44,790 --> 00:16:42,560

yeah now the question i mean of course

423

00:16:47,670 --> 00:16:44,800

we live a short time and we don't want

424

00:16:50,949 --> 00:16:47,680

to waste our time chasing ghosts okay

425

00:16:52,949 --> 00:16:50,959

but on the other hand this is such a

426
00:16:55,269 --> 00:16:52,959
fundamental question that society cares

427
00:16:57,670 --> 00:16:55,279
about society funds science you should

428
00:16:59,670 --> 00:16:57,680
find out we now know that about half of

429
00:17:01,110 --> 00:16:59,680
the sun-like stars have a planet the

430
00:17:02,949 --> 00:17:01,120
size of the earth roughly the same

431
00:17:05,590 --> 00:17:02,959
separation so it's very reasonable to

432
00:17:07,750 --> 00:17:05,600
imagine something like us that existed

433
00:17:10,470 --> 00:17:07,760
around another star that sent equipment

434
00:17:12,630 --> 00:17:10,480
into space and predated us you know by a

435
00:17:14,150 --> 00:17:12,640
billion years

436
00:17:16,150 --> 00:17:14,160
and and i should say there are things

437
00:17:18,150 --> 00:17:16,160
that scientists are searching that are

438
00:17:19,669 --> 00:17:18,160

much more uncertain than this for

439

00:17:21,350 --> 00:17:19,679

example specifically

440

00:17:23,350 --> 00:17:21,360

dark matter you know we invested

441

00:17:25,669 --> 00:17:23,360

hundreds of millions of dollars for

442

00:17:27,750 --> 00:17:25,679

four decades and in some directions of

443

00:17:30,390 --> 00:17:27,760

time types of dark matter we haven't

444

00:17:32,390 --> 00:17:30,400

found it so my point is science the main

445

00:17:34,310 --> 00:17:32,400

stream of science is already

446

00:17:36,950 --> 00:17:34,320

going in directions that are far less

447

00:17:39,029 --> 00:17:36,960

than certain than this search and why

448

00:17:41,430 --> 00:17:39,039

not include it in the mainstream

449

00:17:42,870 --> 00:17:41,440

that's very true um what you know i want

450

00:17:45,190 --> 00:17:42,880

to do what you said just kind of

451
00:17:46,950 --> 00:17:45,200
reminded me of something i just heard

452
00:17:49,909 --> 00:17:46,960
you say which really struck me and kind

453
00:17:52,549 --> 00:17:49,919
of put me in an aw and it's a great line

454
00:17:55,669 --> 00:17:52,559
um there's more habitable earth mass

455
00:18:00,310 --> 00:17:55,679
planets in the observable universe than

456
00:18:01,350 --> 00:18:00,320
grains of sand on all of earth right is

457
00:18:04,310 --> 00:18:01,360
crazy

458
00:18:06,789 --> 00:18:04,320
well another another thing that might

459
00:18:08,950 --> 00:18:06,799
interest you is that you know both

460
00:18:10,150 --> 00:18:08,960
richard branson and jeff bezos lifted

461
00:18:12,710 --> 00:18:10,160
their body

462
00:18:16,549 --> 00:18:12,720
by one percent of the earth radius using

463
00:18:18,549 --> 00:18:16,559

their wealth recently right and then

464

00:18:20,470 --> 00:18:18,559

just by one percent of the radius of the

465

00:18:21,750 --> 00:18:20,480

earth that you know and they were very

466

00:18:22,950 --> 00:18:21,760

proud of that

467

00:18:25,029 --> 00:18:22,960

um

468

00:18:26,830 --> 00:18:25,039

you know the size of the universe is 10

469

00:18:28,390 --> 00:18:26,840

to the power 19

470

00:18:30,070 --> 00:18:28,400

times

471

00:18:31,190 --> 00:18:30,080

it was 20 you said before has that

472

00:18:32,150 --> 00:18:31,200

changed

473

00:18:34,310 --> 00:18:32,160

sorry

474

00:18:36,310 --> 00:18:34,320

um quarter of the stars in the milky way

475

00:18:37,110 --> 00:18:36,320

habitable 10 to the power of 20 is that

476

00:18:38,789 --> 00:18:37,120

right

477

00:18:41,510 --> 00:18:38,799

yeah yeah but i'm saying

478

00:18:43,750 --> 00:18:41,520

i'm saying the size not the number not

479

00:18:45,990 --> 00:18:43,760

the number of planets like the earth but

480

00:18:47,510 --> 00:18:46,000

the size of the universe the observable

481

00:18:49,590 --> 00:18:47,520

volume of the universe is 10 the power

482

00:18:51,590 --> 00:18:49,600

19 bigger than the radius of the earth

483

00:18:52,789 --> 00:18:51,600

that's a different number

484

00:18:57,430 --> 00:18:52,799

and

485

00:19:00,390 --> 00:18:57,440

space bragging

486

00:19:03,110 --> 00:19:00,400

is an oxymoron you can't really brag in

487

00:19:05,510 --> 00:19:03,120

space i think the only way you can be

488

00:19:06,630 --> 00:19:05,520

proud of yourself is if you were to

489

00:19:09,270 --> 00:19:06,640

launch

490

00:19:11,590 --> 00:19:09,280

uh a spacecraft that is equipped with

491

00:19:14,310 --> 00:19:11,600

artificial intelligence that you know

492

00:19:16,150 --> 00:19:14,320

carries your wishes into space that

493

00:19:19,350 --> 00:19:16,160

follows your guiding principles sort of

494

00:19:21,830 --> 00:19:19,360

like sending a kid into space and that

495

00:19:24,310 --> 00:19:21,840

system could survive for a billion years

496

00:19:26,230 --> 00:19:24,320

and travel through the milky way galaxy

497

00:19:28,710 --> 00:19:26,240

then you can be proud of that i mean

498

00:19:30,789 --> 00:19:28,720

that would make sense but being proud of

499

00:19:33,029 --> 00:19:30,799

lifting your body by one percent of the

500

00:19:35,350 --> 00:19:33,039

earth radius that's nothing in in the

501
00:19:36,710 --> 00:19:35,360
big scheme of things right i think the

502
00:19:38,549 --> 00:19:36,720
other thing i should

503
00:19:41,669 --> 00:19:38,559
yeah and another anecdote i should tell

504
00:19:43,510 --> 00:19:41,679
you is you know the new horizons uh

505
00:19:45,669 --> 00:19:43,520
spacecraft um

506
00:19:48,789 --> 00:19:45,679
carried the ashes of

507
00:19:51,430 --> 00:19:48,799
clyde tambo that discovered the pluto

508
00:19:53,669 --> 00:19:51,440
because it went to to explore

509
00:19:56,390 --> 00:19:53,679
pluto interesting

510
00:20:00,070 --> 00:19:56,400
now what are ashes if you think about it

511
00:20:00,870 --> 00:20:00,080
ashes are burnt up dna you know you take

512
00:20:12,230 --> 00:20:00,880
the

513
00:20:14,470 --> 00:20:12,240

that made this body right so you're

514

00:20:16,230 --> 00:20:14,480

burning up all the information then you

515

00:20:18,230 --> 00:20:16,240

put it on a spacecraft that makes very

516

00:20:20,070 --> 00:20:18,240

little sense in celebration of the

517

00:20:22,710 --> 00:20:20,080

person if you wanted to celebrate the

518

00:20:23,830 --> 00:20:22,720

person clyde tumba the discovered pluto

519

00:20:25,909 --> 00:20:23,840

what you really want to do

520

00:20:28,310 --> 00:20:25,919

scientifically is put

521

00:20:30,549 --> 00:20:28,320

uh the dna of that person the

522

00:20:32,470 --> 00:20:30,559

information encoded in the dna on the

523

00:20:35,350 --> 00:20:32,480

spacecraft you can put it in electronic

524

00:20:37,830 --> 00:20:35,360

form you can take a stem cell and freeze

525

00:20:40,070 --> 00:20:37,840

it from the body of the person you don't

526

00:20:41,830 --> 00:20:40,080

burn it and then put the ashes i mean

527

00:20:43,990 --> 00:20:41,840

that is actually a disgrace you're

528

00:20:45,029 --> 00:20:44,000

saying

529

00:20:47,029 --> 00:20:45,039

so

530

00:20:49,750 --> 00:20:47,039

you know think about it this this new

531

00:20:52,470 --> 00:20:49,760

horizons mission was sent by nasa you

532

00:20:55,750 --> 00:20:52,480

know and you would expect science to be

533

00:20:57,510 --> 00:20:55,760

celebrated on such a mission but instead

534

00:20:59,990 --> 00:20:57,520

what they put on the mission

535

00:21:02,789 --> 00:21:00,000

is ashes of a person that they wanted to

536

00:21:04,310 --> 00:21:02,799

celebrate i would say that

537

00:21:06,789 --> 00:21:04,320

what do you do if you want the guy

538

00:21:08,710 --> 00:21:06,799

wanted to be cremated

539

00:21:10,310 --> 00:21:08,720

fine so don't send anything i mean when

540

00:21:12,149 --> 00:21:10,320

you're sending ashes you're sending

541

00:21:13,830 --> 00:21:12,159

nothing basically

542

00:21:15,029 --> 00:21:13,840

i destroyed the information about this

543

00:21:17,590 --> 00:21:15,039

person

544

00:21:18,390 --> 00:21:17,600

why would you send that message to space

545

00:21:20,390 --> 00:21:18,400

uh

546

00:21:22,390 --> 00:21:20,400

it's better not anything

547

00:21:24,710 --> 00:21:22,400

i mean it's sort of like

548

00:21:26,549 --> 00:21:24,720

uh admitting that you don't care about

549

00:21:29,510 --> 00:21:26,559

this person while saying i do care about

550

00:21:31,430 --> 00:21:29,520

this person that makes no sense

551
00:21:33,830 --> 00:21:31,440
i mean anything intelligent out there

552
00:21:35,110 --> 00:21:33,840
must think we are just losing it i mean

553
00:21:36,230 --> 00:21:35,120
yeah what have we said

554
00:21:38,470 --> 00:21:36,240
tesla

555
00:21:40,710 --> 00:21:38,480
ashes

556
00:21:42,470 --> 00:21:40,720
and also if you think before that in the

557
00:21:45,669 --> 00:21:42,480
voyager mission there was the golden

558
00:21:47,830 --> 00:21:45,679
record yes that was like who cares about

559
00:21:49,430 --> 00:21:47,840
the beatles you know out there

560
00:21:51,830 --> 00:21:49,440
like who cares about like they're gonna

561
00:21:54,230 --> 00:21:51,840
be like what is this oh

562
00:21:55,669 --> 00:21:54,240
the beatles yeah no

563
00:21:57,430 --> 00:21:55,679

no but i mean

564

00:21:59,590 --> 00:21:57,440

we are proud of ourselves of course but

565

00:22:01,669 --> 00:21:59,600

but if you think about another

566

00:22:03,590 --> 00:22:01,679

civilization that perhaps

567

00:22:05,510 --> 00:22:03,600

was more technologically advanced by a

568

00:22:07,590 --> 00:22:05,520

thousand years than us

569

00:22:10,070 --> 00:22:07,600

you know they would look at us as if we

570

00:22:13,510 --> 00:22:10,080

are the cavemen you know i think we are

571

00:22:15,909 --> 00:22:13,520

so why should we brag you know that that

572

00:22:18,630 --> 00:22:15,919

makes no sense no yeah it should be a

573

00:22:21,350 --> 00:22:18,640

humble attitude right looking for more

574

00:22:26,549 --> 00:22:23,190

so i was interested in this i kind of

575

00:22:28,310 --> 00:22:26,559

wanted to update on this uh prox

576

00:22:30,710 --> 00:22:28,320

proxima b

577

00:22:33,510 --> 00:22:30,720

um i think the video i watched it was a

578

00:22:35,190 --> 00:22:33,520

ted talk perhaps you were thinking about

579

00:22:38,149 --> 00:22:35,200

if it had an atmosphere and there's a

580

00:22:41,270 --> 00:22:38,159

way you could tell but i believe you

581

00:22:43,669 --> 00:22:41,280

said in 2019 which is two years ago now

582

00:22:45,990 --> 00:22:43,679

the james webb telescope may be able to

583

00:22:47,909 --> 00:22:46,000

tell us is there an update there

584

00:22:49,750 --> 00:22:47,919

right so the james webb space telescope

585

00:22:51,750 --> 00:22:49,760

is supposed to be launched by the end of

586

00:22:54,070 --> 00:22:51,760

this calendar year uh we don't know

587

00:22:56,549 --> 00:22:54,080

exactly when

588

00:22:58,230 --> 00:22:56,559

you know the delays in the launch but

589

00:23:01,669 --> 00:22:58,240

hopefully before the end of the calendar

590

00:23:02,390 --> 00:23:01,679

year and in principle yes it could tell

591

00:23:03,590 --> 00:23:02,400

us

592

00:23:05,190 --> 00:23:03,600

uh

593

00:23:07,510 --> 00:23:05,200

not immediately but it would take some

594

00:23:10,070 --> 00:23:07,520

time eventually because

595

00:23:11,590 --> 00:23:10,080

as the planet moves around the star you

596

00:23:14,230 --> 00:23:11,600

know it's uh

597

00:23:15,830 --> 00:23:14,240

it it always shows the same face to the

598

00:23:18,470 --> 00:23:15,840

star because it's very close to it just

599

00:23:20,390 --> 00:23:18,480

like the moon shows us the same face

600

00:23:23,750 --> 00:23:20,400

right it moves around the earth this is

601
00:23:26,070 --> 00:23:23,760
called the tidally locked object when

602
00:23:28,950 --> 00:23:26,080
tides are locking the object to show the

603
00:23:31,110 --> 00:23:28,960
same face to the central object which in

604
00:23:33,909 --> 00:23:31,120
our case is the earth relative to the

605
00:23:36,950 --> 00:23:33,919
moon in the case of proxima b it's the

606
00:23:39,110 --> 00:23:36,960
star proxima centauri relative to the

607
00:23:40,789 --> 00:23:39,120
planet so the planet always shows the

608
00:23:42,630 --> 00:23:40,799
same face because it's very close it's

609
00:23:44,789 --> 00:23:42,640
20 times closer than the earth is from

610
00:23:47,269 --> 00:23:44,799
the sun and then there is a permanent

611
00:23:50,630 --> 00:23:47,279
day side and a permanent night side

612
00:23:52,950 --> 00:23:50,640
and so one side is constantly lit and

613
00:23:54,789 --> 00:23:52,960

the other one is dark and my daughters

614

00:23:57,190 --> 00:23:54,799

by the way say that if if we ever go

615

00:23:59,190 --> 00:23:57,200

there they want to have a house in the

616

00:24:01,350 --> 00:23:59,200

strip that separates the two sides where

617

00:24:02,950 --> 00:24:01,360

you can see the sunset forever you sit

618

00:24:05,269 --> 00:24:02,960

in the porch and you watch the sunset

619

00:24:06,870 --> 00:24:05,279

forever the sun never sets because there

620

00:24:08,630 --> 00:24:06,880

is a permanent dayside and a permanent

621

00:24:09,510 --> 00:24:08,640

nightside on the two sides

622

00:24:10,470 --> 00:24:09,520

anyway

623

00:24:12,789 --> 00:24:10,480

so

624

00:24:14,870 --> 00:24:12,799

there is a temperature i mean the

625

00:24:16,390 --> 00:24:14,880

temperature on the day side is higher

626
00:24:18,950 --> 00:24:16,400
than the temperature on the night side

627
00:24:21,110 --> 00:24:18,960
so it's hotter the day side is hotter

628
00:24:22,870 --> 00:24:21,120
than the night side and

629
00:24:24,870 --> 00:24:22,880
the temperature difference between the

630
00:24:26,310 --> 00:24:24,880
day side and the night side depends on

631
00:24:28,950 --> 00:24:26,320
whether there is an atmosphere because

632
00:24:31,350 --> 00:24:28,960
the atmosphere would circulate the heat

633
00:24:33,110 --> 00:24:31,360
and moderate the temperature contrast

634
00:24:35,430 --> 00:24:33,120
between water

635
00:24:37,430 --> 00:24:35,440
so if you can infer as the planet moves

636
00:24:39,669 --> 00:24:37,440
around the star you can see more of the

637
00:24:41,669 --> 00:24:39,679
dayside in some phases

638
00:24:44,070 --> 00:24:41,679

and more of the night side in other

639

00:24:46,549 --> 00:24:44,080

phases as it moves it moves every 11

640

00:24:48,710 --> 00:24:46,559

days so by measuring the temperature

641

00:24:50,310 --> 00:24:48,720

contrast between the two sides you can

642

00:24:52,230 --> 00:24:50,320

infer whether there is an atmosphere

643

00:24:54,390 --> 00:24:52,240

that was the paper we've wrote written

644

00:24:56,470 --> 00:24:54,400

with laura kreitberg

645

00:24:58,630 --> 00:24:56,480

in 2017 and

646

00:25:00,390 --> 00:24:58,640

we predicted that the james webb space

647

00:25:02,789 --> 00:25:00,400

telescope can measure that temperature

648

00:25:04,630 --> 00:25:02,799

contrast between the days and nightside

649

00:25:06,149 --> 00:25:04,640

we hope that it will be done and you

650

00:25:08,390 --> 00:25:06,159

know we still have to wait that

651
00:25:10,149 --> 00:25:08,400
everything works and

652
00:25:12,070 --> 00:25:10,159
now on top of that there is an

653
00:25:13,669 --> 00:25:12,080
interesting question that i wrote

654
00:25:16,070 --> 00:25:13,679
another paper about the just a few

655
00:25:19,029 --> 00:25:16,080
months ago that the james webb space

656
00:25:21,110 --> 00:25:19,039
telescope could answer and that is

657
00:25:23,190 --> 00:25:21,120
if the night side you know if there is a

658
00:25:24,870 --> 00:25:23,200
civilization there okay imagine that

659
00:25:26,070 --> 00:25:24,880
there are cities on the

660
00:25:27,510 --> 00:25:26,080
on the night side they want to

661
00:25:30,149 --> 00:25:27,520
illuminate

662
00:25:32,470 --> 00:25:30,159
the night side because it's dark so they

663
00:25:34,710 --> 00:25:32,480

what they can do is put the photovoltaic

664

00:25:36,789 --> 00:25:34,720

cells on the day side and transfer

665

00:25:38,789 --> 00:25:36,799

electricity to the night side and

666

00:25:40,390 --> 00:25:38,799

illuminate the night side so

667

00:25:42,789 --> 00:25:40,400

the question is what level of

668

00:25:45,269 --> 00:25:42,799

illumination just like we illuminate the

669

00:25:47,350 --> 00:25:45,279

night in cities what level illumination

670

00:25:49,350 --> 00:25:47,360

could we detect because then the the

671

00:25:52,310 --> 00:25:49,360

contrast in the light between the day

672

00:25:54,470 --> 00:25:52,320

and night would be moderated again now

673

00:25:56,870 --> 00:25:54,480

by artificial illumination

674

00:25:59,269 --> 00:25:56,880

and we asked the question of what will

675

00:25:59,990 --> 00:25:59,279

just be able to detect

676
00:26:02,310 --> 00:26:00,000
and

677
00:26:04,070 --> 00:26:02,320
it's an interesting possibility that you

678
00:26:05,909 --> 00:26:04,080
could tell that there is a civilization

679
00:26:08,710 --> 00:26:05,919
on a planet just by seeing that the

680
00:26:10,350 --> 00:26:08,720
night side is also illuminated by city

681
00:26:11,830 --> 00:26:10,360
lights yeah that's intense

682
00:26:14,549 --> 00:26:11,840
[Laughter]

683
00:26:17,510 --> 00:26:14,559
you i feel like um and you probably feel

684
00:26:19,750 --> 00:26:17,520
this way as well in throughout your span

685
00:26:21,830 --> 00:26:19,760
of um your career

686
00:26:24,870 --> 00:26:21,840
have you noticed the tools and

687
00:26:26,870 --> 00:26:24,880
technology are ever adapting to our

688
00:26:28,549 --> 00:26:26,880

needs as far as wanting to

689

00:26:29,990 --> 00:26:28,559

look out to the universe and actually

690

00:26:31,430 --> 00:26:30,000

make sense of it

691

00:26:33,269 --> 00:26:31,440

well it's the other way around we

692

00:26:35,590 --> 00:26:33,279

develop tools

693

00:26:38,950 --> 00:26:35,600

like our technology is evolving and as a

694

00:26:41,510 --> 00:26:38,960

result we are able to

695

00:26:43,830 --> 00:26:41,520

get better data about the universe so

696

00:26:46,230 --> 00:26:43,840

you know the telescopes that existed a

697

00:26:48,870 --> 00:26:46,240

century ago were not as good as the ones

698

00:26:50,950 --> 00:26:48,880

we have now and as a result people had

699

00:26:53,750 --> 00:26:50,960

very sort of simplistic view about the

700

00:26:55,269 --> 00:26:53,760

universe i can give you two anecdotes

701
00:26:57,110 --> 00:26:55,279
a century back

702
00:26:58,630 --> 00:26:57,120
uh there was the question of

703
00:27:00,950 --> 00:26:58,640
whether we should build a telescope

704
00:27:03,430 --> 00:27:00,960
bigger than the height of a person okay

705
00:27:05,269 --> 00:27:03,440
about two meters or so and

706
00:27:07,590 --> 00:27:05,279
the director of the harvard college

707
00:27:10,470 --> 00:27:07,600
observatory uh

708
00:27:13,029 --> 00:27:10,480
pickering he argued that no we should

709
00:27:14,789 --> 00:27:13,039
not because what is there to see you

710
00:27:17,029 --> 00:27:14,799
know we already see stars there is

711
00:27:19,669 --> 00:27:17,039
nothing to learn beyond what we already

712
00:27:20,950 --> 00:27:19,679
know no benefit to our knowledge

713
00:27:23,110 --> 00:27:20,960

therefore

714

00:27:24,950 --> 00:27:23,120

harvard university should not engage in

715

00:27:27,190 --> 00:27:24,960

a bigger telescope than the height of a

716

00:27:28,789 --> 00:27:27,200

person that's what he was arguing

717

00:27:30,950 --> 00:27:28,799

and as a result

718

00:27:38,389 --> 00:27:30,960

the

719

00:27:40,470 --> 00:27:38,399

of observational astronomy because over

720

00:27:43,029 --> 00:27:40,480

there there were no observatories

721

00:27:45,029 --> 00:27:43,039

constructed starting on mount wilson

722

00:27:47,269 --> 00:27:45,039

where telescopes bigger than the height

723

00:27:48,549 --> 00:27:47,279

of a person were built and harvard was

724

00:27:50,870 --> 00:27:48,559

not part of that because of this

725

00:27:52,950 --> 00:27:50,880

strategic misconception

726

00:27:54,470 --> 00:27:52,960

of the harvard college observatory

727

00:27:56,630 --> 00:27:54,480

director so that's

728

00:27:59,110 --> 00:27:56,640

an example for how

729

00:28:01,510 --> 00:27:59,120

bigger telescopes allowed us to realize

730

00:28:04,070 --> 00:28:01,520

it's not just stars you know we can see

731

00:28:05,830 --> 00:28:04,080

uh galaxies you know they actually the

732

00:28:08,549 --> 00:28:05,840

expansion of the universe was first

733

00:28:11,269 --> 00:28:08,559

realized on one mount wilson that was a

734

00:28:14,070 --> 00:28:11,279

discovery waiting to be to happen that

735

00:28:16,230 --> 00:28:14,080

was not anticipated by pickering and the

736

00:28:19,110 --> 00:28:16,240

hubble used that telescope on mount

737

00:28:20,950 --> 00:28:19,120

wilson uh to figure out that the

738

00:28:23,669 --> 00:28:20,960

universe is expanding so here is an

739

00:28:25,750 --> 00:28:23,679

amazing discovery that was missed as a

740

00:28:27,590 --> 00:28:25,760

result of misconception

741

00:28:29,269 --> 00:28:27,600

and beyond that you know we know of so

742

00:28:31,909 --> 00:28:29,279

many things that we can see with much

743

00:28:35,269 --> 00:28:31,919

bigger telescopes especially in space

744

00:28:38,149 --> 00:28:35,279

another example is in the 1960s nasa

745

00:28:39,430 --> 00:28:38,159

assembled a committee that would

746

00:28:42,470 --> 00:28:39,440

discuss

747

00:28:45,029 --> 00:28:42,480

the need for an x-ray telescope in space

748

00:28:47,190 --> 00:28:45,039

because you cannot see x-rays

749

00:28:50,310 --> 00:28:47,200

on the ground because the atmosphere is

750

00:28:52,789 --> 00:28:50,320

opaque it blocks x-rays so you have to

751

00:28:55,510 --> 00:28:52,799

build a space telescope to see x-rays

752

00:28:57,830 --> 00:28:55,520

and nasa wanted to know if it was doing

753

00:29:01,110 --> 00:28:57,840

it so there was a committee of

754

00:29:03,590 --> 00:29:01,120

distinguished scholars and it concluded

755

00:29:05,750 --> 00:29:03,600

no we don't think it's necessary to do

756

00:29:07,669 --> 00:29:05,760

that because

757

00:29:10,149 --> 00:29:07,679

you know we know that the sun emits

758

00:29:13,750 --> 00:29:10,159

x-rays and so okay other stars would

759

00:29:15,669 --> 00:29:13,760

emit x-rays so what what's the big point

760

00:29:17,750 --> 00:29:15,679

you know we shouldn't invest in a new

761

00:29:20,310 --> 00:29:17,760

telescope just to see the emission from

762

00:29:21,830 --> 00:29:20,320

other stars in x-rays who cares we

763

00:29:24,070 --> 00:29:21,840

pretty much understand what the sun is

764

00:29:26,630 --> 00:29:24,080

doing in x-rays and therefore it's not

765

00:29:29,510 --> 00:29:26,640

worth the money that was in 1960

766

00:29:32,389 --> 00:29:29,520

eventually ultimately nasa did build an

767

00:29:33,750 --> 00:29:32,399

x-ray telescope in the 70s and then we

768

00:29:35,669 --> 00:29:33,760

discovered

769

00:29:38,870 --> 00:29:35,679

accreting black holes black holes that

770

00:29:40,950 --> 00:29:38,880

emit x-rays we discovered x-rays coming

771

00:29:43,830 --> 00:29:40,960

from neutron stars you know x-rays

772

00:29:45,750 --> 00:29:43,840

coming from clusters of galaxies there

773

00:29:49,269 --> 00:29:45,760

is a whole by the way the nobel prize

774

00:29:50,870 --> 00:29:49,279

was given for those early uh

775

00:29:53,990 --> 00:29:50,880

discoveries

776

00:29:56,389 --> 00:29:54,000

them in x-ray astronomy and uh and and

777

00:29:58,710 --> 00:29:56,399

so it became a whole new window into the

778

00:30:01,430 --> 00:29:58,720

universe we found of on or not we found

779

00:30:04,230 --> 00:30:01,440

objects that we've never imagined before

780

00:30:07,190 --> 00:30:04,240

uh especially black hole systems uh that

781

00:30:09,750 --> 00:30:07,200

emit x-rays and so here is another

782

00:30:12,310 --> 00:30:09,760

situation where the ability to build an

783

00:30:13,669 --> 00:30:12,320

x-ray telescope in space allowed us to

784

00:30:15,590 --> 00:30:13,679

see the universe in a completely

785

00:30:17,510 --> 00:30:15,600

different way most recently it was

786

00:30:18,710 --> 00:30:17,520

gravitational waves you know the ligo

787

00:30:20,950 --> 00:30:18,720

experiment

788

00:30:22,470 --> 00:30:20,960

uh opened the new window into the

789

00:30:23,350 --> 00:30:22,480

universe and by the way

790

00:30:26,710 --> 00:30:23,360

in

791

00:30:28,630 --> 00:30:26,720

january 2013 i gave a lecture at the

792

00:30:31,510 --> 00:30:28,640

winter school in jerusalem about the

793

00:30:33,669 --> 00:30:31,520

gravitational wave astrophysics and

794

00:30:36,710 --> 00:30:33,679

ten minutes into my talk

795

00:30:38,549 --> 00:30:36,720

uh one of the other lecturers who is 20

796

00:30:40,710 --> 00:30:38,559

years younger than i am just to show you

797

00:30:43,029 --> 00:30:40,720

that it's not a matter of age he stood

798

00:30:45,269 --> 00:30:43,039

up and said why are you wasting the time

799

00:30:47,190 --> 00:30:45,279

of these students on a subject that will

800

00:30:48,630 --> 00:30:47,200

never be important throughout their

801
00:30:51,750 --> 00:30:48,640
career

802
00:30:54,230 --> 00:30:51,760
and i felt really uh

803
00:30:56,070 --> 00:30:54,240
frustrated by that because here stands a

804
00:30:58,070 --> 00:30:56,080
younger person telling me not to speak

805
00:30:59,669 --> 00:30:58,080
about the subject because i'm wasting

806
00:31:01,909 --> 00:30:59,679
the time of the students and he said

807
00:31:03,110 --> 00:31:01,919
that you know publicly in front of all

808
00:31:05,750 --> 00:31:03,120
the students

809
00:31:07,830 --> 00:31:05,760
and then two and a half years later the

810
00:31:09,669 --> 00:31:07,840
ligo experiment reported the discovery

811
00:31:11,430 --> 00:31:09,679
of gravitational waves from the

812
00:31:14,789 --> 00:31:11,440
collision of two black holes at the edge

813
00:31:16,710 --> 00:31:14,799

of the universe that was august 2015.

814

00:31:18,950 --> 00:31:16,720

just two and a half years later these

815

00:31:20,549 --> 00:31:18,960

students were still doing their phd not

816

00:31:22,870 --> 00:31:20,559

to speak about their careers that

817

00:31:24,630 --> 00:31:22,880

haven't really started right and

818

00:31:28,070 --> 00:31:24,640

this became the hottest

819

00:31:30,789 --> 00:31:28,080

frontier in astrophysics now this person

820

00:31:33,029 --> 00:31:30,799

this lecture that made the comment

821

00:31:34,549 --> 00:31:33,039

during my talk you know i haven't spoken

822

00:31:36,630 --> 00:31:34,559

to him since then but he would he

823

00:31:39,029 --> 00:31:36,640

probably forgot about it but it just

824

00:31:42,230 --> 00:31:39,039

shows you how narrow-minded sometimes uh

825

00:31:44,830 --> 00:31:42,240

as farmers are it's it's kind of a human

826
00:31:46,630 --> 00:31:44,840
trait in general isn't it just being

827
00:31:47,990 --> 00:31:46,640
pessimistic um

828
00:31:49,750 --> 00:31:48,000
yeah but you know

829
00:31:51,509 --> 00:31:49,760
that's not going to happen

830
00:31:53,750 --> 00:31:51,519
my point is we can't afford being

831
00:31:56,710 --> 00:31:53,760
pessimistic because we in a short time

832
00:31:59,110 --> 00:31:56,720
right so why waste the time just being

833
00:32:01,430 --> 00:31:59,120
pessimistic

834
00:32:04,470 --> 00:32:01,440
we live for a short time let's be happy

835
00:32:06,149 --> 00:32:04,480
let's be like exploratory let's not

836
00:32:08,070 --> 00:32:06,159
worry about making mistakes you know

837
00:32:09,990 --> 00:32:08,080
just like kids when you are a kid you

838
00:32:12,389 --> 00:32:10,000

don't think about your death you don't

839

00:32:15,029 --> 00:32:12,399

think about pessimistic things and you

840

00:32:16,789 --> 00:32:15,039

just explore the world and that's a fun

841

00:32:18,549 --> 00:32:16,799

thing to do especially when you're a

842

00:32:19,990 --> 00:32:18,559

scientist you know that's a privilege

843

00:32:22,549 --> 00:32:20,000

that you're given to maintain your

844

00:32:24,389 --> 00:32:22,559

childhood curiosity but then those kids

845

00:32:25,750 --> 00:32:24,399

that become scientists suddenly become

846

00:32:28,149 --> 00:32:25,760

very sort of

847

00:32:29,909 --> 00:32:28,159

uh serious and worry about their image

848

00:32:31,430 --> 00:32:29,919

and don't want to discuss some things

849

00:32:33,830 --> 00:32:31,440

and don't want to collect evidence on

850

00:32:36,950 --> 00:32:33,840

some things and you know they block

851
00:32:38,149 --> 00:32:36,960
their curiosity and you know my most

852
00:32:39,110 --> 00:32:38,159
memorable

853
00:32:41,430 --> 00:32:39,120
uh

854
00:32:42,470 --> 00:32:41,440
image from my childhood is being a

855
00:32:43,350 --> 00:32:42,480
dinner

856
00:32:45,509 --> 00:32:43,360
and

857
00:32:47,590 --> 00:32:45,519
asking a question a difficult question

858
00:32:49,990 --> 00:32:47,600
and then the adults in the room quote

859
00:32:51,509 --> 00:32:50,000
unquote would basically pretend that

860
00:32:53,750 --> 00:32:51,519
they know the answer even though they

861
00:32:56,230 --> 00:32:53,760
didn't really know it i i remember that

862
00:32:58,389 --> 00:32:56,240
vividly and then if i asked an even more

863
00:33:00,630 --> 00:32:58,399

difficult question the adults in the

864

00:33:01,430 --> 00:33:00,640

room would dismiss it they would say oh

865

00:33:03,350 --> 00:33:01,440

that's

866

00:33:05,029 --> 00:33:03,360

that doesn't make any sense you know

867

00:33:05,909 --> 00:33:05,039

they wouldn't want to discuss the

868

00:33:08,070 --> 00:33:05,919

question

869

00:33:10,710 --> 00:33:08,080

and i thought that by becoming a

870

00:33:12,870 --> 00:33:10,720

scientist you know the my experience

871

00:33:14,870 --> 00:33:12,880

will change i will ask questions and my

872

00:33:17,029 --> 00:33:14,880

colleagues would say great let's explore

873

00:33:19,269 --> 00:33:17,039

this you know let's but

874

00:33:22,149 --> 00:33:19,279

i must say that this experience repeats

875

00:33:23,269 --> 00:33:22,159

where uh sign other scientists dismiss

876

00:33:24,870 --> 00:33:23,279

the question

877

00:33:27,190 --> 00:33:24,880

they pretend they know more than they

878

00:33:29,830 --> 00:33:27,200

actually know yeah well i think it's

879

00:33:32,149 --> 00:33:29,840

lazy right i mean i know it's completely

880

00:33:33,990 --> 00:33:32,159

two different categories but i've spent

881

00:33:36,149 --> 00:33:34,000

a lot of time in commercial sales and

882

00:33:39,269 --> 00:33:36,159

everything and it you know there's a

883

00:33:42,230 --> 00:33:39,279

similarity there where the sales guy

884

00:33:44,630 --> 00:33:42,240

will pretend he knows a lot more than he

885

00:33:46,870 --> 00:33:44,640

does and then what happens is even if he

886

00:33:47,990 --> 00:33:46,880

gets the sale which happens

887

00:33:50,630 --> 00:33:48,000

um

888

00:33:53,509 --> 00:33:50,640

that comes out eventually and then

889

00:33:55,830 --> 00:33:53,519

you're made to look not so hot right but

890

00:33:57,669 --> 00:33:55,840

you know science is not about

891

00:33:59,909 --> 00:33:57,679

your image it's not about getting more

892

00:34:01,750 --> 00:33:59,919

likes it's not about selling something

893

00:34:03,190 --> 00:34:01,760

it's a non-profit

894

00:34:06,149 --> 00:34:03,200

not-for-profit

895

00:34:08,710 --> 00:34:06,159

activity and what science is about is

896

00:34:10,710 --> 00:34:08,720

gaining uh knowledge about the world you

897

00:34:12,470 --> 00:34:10,720

know trying to figure out the world and

898

00:34:14,550 --> 00:34:12,480

life's about in that you should you

899

00:34:16,230 --> 00:34:14,560

should expose your weaknesses when you

900

00:34:18,710 --> 00:34:16,240

don't know something you should admit it

901
00:34:20,950 --> 00:34:18,720
because that allows you to make progress

902
00:34:22,629 --> 00:34:20,960
uh you know if you make mistakes you

903
00:34:24,550 --> 00:34:22,639
know that's not so bad because it's a

904
00:34:27,030 --> 00:34:24,560
learning experience you know and

905
00:34:28,869 --> 00:34:27,040
um if you forbid yourself from asking

906
00:34:31,510 --> 00:34:28,879
some questions then you maintain your

907
00:34:33,190 --> 00:34:31,520
ignorance if you don't allow yourself to

908
00:34:34,629 --> 00:34:33,200
realize that maybe the earth moves

909
00:34:37,349 --> 00:34:34,639
around the sun

910
00:34:39,109 --> 00:34:37,359
you know you you just remain ignorant

911
00:34:40,710 --> 00:34:39,119
because you will never test whether you

912
00:34:42,470 --> 00:34:40,720
are correct or not you will never look

913
00:34:44,230 --> 00:34:42,480

through the telescope we don't want to

914

00:34:45,990 --> 00:34:44,240

repeat that mistake you know as a

915

00:34:48,950 --> 00:34:46,000

scientist within the galileo project

916

00:34:49,990 --> 00:34:48,960

that i uh established last month

917

00:34:52,149 --> 00:34:50,000

yeah

918

00:34:55,349 --> 00:34:52,159

let me ask you for a little piece of

919

00:34:58,150 --> 00:34:55,359

advice i mean i i would consider you uh

920

00:34:59,990 --> 00:34:58,160

successful um you have a dream you're

921

00:35:01,510 --> 00:35:00,000

going for it that's your life that's

922

00:35:03,990 --> 00:35:01,520

successful to me

923

00:35:06,310 --> 00:35:04,000

um if you have one piece of advice for

924

00:35:08,870 --> 00:35:06,320

people in this community let's just say

925

00:35:11,750 --> 00:35:08,880

ufo twitter for lack of a better term

926

00:35:13,349 --> 00:35:11,760

um to get truth

927

00:35:15,990 --> 00:35:13,359

what would you give them what would you

928

00:35:18,390 --> 00:35:16,000

say okay so um the one thing that is

929

00:35:21,109 --> 00:35:18,400

clear to me is that we need better

930

00:35:22,790 --> 00:35:21,119

evidence than is available out

931

00:35:24,470 --> 00:35:22,800

to the public right now i mean it's

932

00:35:27,109 --> 00:35:24,480

possible that there is classified

933

00:35:28,950 --> 00:35:27,119

information that some people sow but we

934

00:35:30,790 --> 00:35:28,960

don't have access to it and frankly i

935

00:35:33,030 --> 00:35:30,800

don't want access to it because it would

936

00:35:34,790 --> 00:35:33,040

limit my freedom as a scientist

937

00:35:37,510 --> 00:35:34,800

but i think the key

938

00:35:39,829 --> 00:35:37,520

to making this a mainstream

939

00:35:43,510 --> 00:35:39,839

uh subject of of the scientific

940

00:35:46,230 --> 00:35:43,520

community is to get clear-cut evidence

941

00:35:48,550 --> 00:35:46,240

you know like for example a megapixel

942

00:35:51,030 --> 00:35:48,560

image of a uap okay just a

943

00:35:53,750 --> 00:35:51,040

high-resolution image that tells us

944

00:35:56,390 --> 00:35:53,760

here is an object it has bolts and

945

00:35:58,870 --> 00:35:56,400

screws on it there are even buttons that

946

00:35:59,990 --> 00:35:58,880

you can press okay so when you have such

947

00:36:02,310 --> 00:36:00,000

an image

948

00:36:03,910 --> 00:36:02,320

rather than a fuzzy image of something

949

00:36:05,990 --> 00:36:03,920

moving in a way that you can't really

950

00:36:08,150 --> 00:36:06,000

understand that's not convincing to

951
00:36:10,390 --> 00:36:08,160
assign this also you have to understand

952
00:36:13,430 --> 00:36:10,400
that even though in the courtroom

953
00:36:15,430 --> 00:36:13,440
eyewitness testimony counts and you you

954
00:36:17,589 --> 00:36:15,440
know if you have corroborating evidence

955
00:36:20,310 --> 00:36:17,599
from multiple people you can put another

956
00:36:22,230 --> 00:36:20,320
person in jail that doesn't hold water

957
00:36:24,630 --> 00:36:22,240
in science science is based on

958
00:36:27,349 --> 00:36:24,640
quantitative measurements by

959
00:36:29,190 --> 00:36:27,359
instruments that you have

960
00:36:32,150 --> 00:36:29,200
that you have full control over so if

961
00:36:34,870 --> 00:36:32,160
you have a jittery camera in the cockpit

962
00:36:36,550 --> 00:36:34,880
of a fighter jet that is not a

963
00:36:38,310 --> 00:36:36,560

scientific experiment because you don't

964

00:36:40,470 --> 00:36:38,320

know what the fighter jet was doing when

965

00:36:42,870 --> 00:36:40,480

the images were taken right so if the

966

00:36:44,390 --> 00:36:42,880

fighter jet moves in a strange way the

967

00:36:46,470 --> 00:36:44,400

image may move in

968

00:36:48,310 --> 00:36:46,480

also in a strange way what you want is

969

00:36:49,990 --> 00:36:48,320

to have full control

970

00:36:51,829 --> 00:36:50,000

over the instruments that you're using

971

00:36:53,349 --> 00:36:51,839

so that you know exactly what it is

972

00:36:55,589 --> 00:36:53,359

happening and

973

00:36:57,670 --> 00:36:55,599

also have open data that

974

00:37:00,230 --> 00:36:57,680

and that you analyze through transparent

975

00:37:02,230 --> 00:37:00,240

analysis and that's what galileo project

976

00:37:04,870 --> 00:37:02,240

aims to do so what i would highly

977

00:37:06,069 --> 00:37:04,880

recommend on this subject to bring it to

978

00:37:08,470 --> 00:37:06,079

the mainstream

979

00:37:09,910 --> 00:37:08,480

uh we need to get better data scientific

980

00:37:12,390 --> 00:37:09,920

quality data

981

00:37:13,109 --> 00:37:12,400

and analyze it in an open way so that

982

00:37:19,750 --> 00:37:13,119

not

983

00:37:21,990 --> 00:37:19,760

a curtain of

984

00:37:24,230 --> 00:37:22,000

government sensors that are classified

985

00:37:26,470 --> 00:37:24,240

that we can't really get access to right

986

00:37:28,470 --> 00:37:26,480

and then this way you know if it's open

987

00:37:30,950 --> 00:37:28,480

and done in the scientific way and and

988

00:37:33,190 --> 00:37:30,960

we are using the very best instruments

989

00:37:35,270 --> 00:37:33,200

that we can get our hands on

990

00:37:38,710 --> 00:37:35,280

uh we will know you know so it's

991

00:37:41,430 --> 00:37:38,720

possible it's possible that the uap are

992

00:37:43,589 --> 00:37:41,440

have mundane explanations you know once

993

00:37:45,510 --> 00:37:43,599

we get those images maybe we'll see that

994

00:37:48,310 --> 00:37:45,520

most of them are

995

00:37:50,630 --> 00:37:48,320

a third or a drone or an airplane or

996

00:37:53,750 --> 00:37:50,640

something of that sort my point is even

997

00:37:56,069 --> 00:37:53,760

if one is of extraterrestrial origin

998

00:37:59,589 --> 00:37:56,079

that's sufficient so it may well be a

999

00:38:02,950 --> 00:37:59,599

mixed bag uh yeah we want to get

1000

00:38:05,750 --> 00:38:02,960

that one object uh we want to resolve it

1001
00:38:07,750 --> 00:38:05,760
have a very good image of it and measure

1002
00:38:08,470 --> 00:38:07,760
very well how it's moving

1003
00:38:11,510 --> 00:38:08,480
so

1004
00:38:13,510 --> 00:38:11,520
that is i think the key and the that's

1005
00:38:15,990 --> 00:38:13,520
my message to people that are curious

1006
00:38:19,030 --> 00:38:16,000
about this nature of uap

1007
00:38:21,510 --> 00:38:19,040
and and of course the nature of unusual

1008
00:38:23,670 --> 00:38:21,520
interstellar objects uh my message to

1009
00:38:25,109 --> 00:38:23,680
the scientists is

1010
00:38:27,109 --> 00:38:25,119
that uh

1011
00:38:29,670 --> 00:38:27,119
this subject should not be a ridicule

1012
00:38:31,990 --> 00:38:29,680
that this subject should be studied and

1013
00:38:33,829 --> 00:38:32,000

that we should base our inferences on

1014

00:38:35,990 --> 00:38:33,839

evidence rather than on prejudice you

1015

00:38:37,829 --> 00:38:36,000

know that's the way science is done and

1016

00:38:40,630 --> 00:38:37,839

in fact even people that don't believe

1017

00:38:41,270 --> 00:38:40,640

that uap have any unusual origin prove

1018

00:38:43,190 --> 00:38:41,280

it

1019

00:38:44,950 --> 00:38:43,200

they should be supportive of the galileo

1020

00:38:46,390 --> 00:38:44,960

project because we will

1021

00:38:48,710 --> 00:38:46,400

you know we don't have an agenda we

1022

00:38:51,430 --> 00:38:48,720

don't have a prejudice we will just

1023

00:38:53,270 --> 00:38:51,440

collect the very best data possible and

1024

00:38:55,190 --> 00:38:53,280

you know science is based on evidence

1025

00:38:57,589 --> 00:38:55,200

and they should support the fact that

1026
00:38:58,829 --> 00:38:57,599
you know we are funded by donors we have

1027
00:39:01,109 --> 00:38:58,839
crowd a

1028
00:39:03,430 --> 00:39:01,119
crowdfunding link right now on the

1029
00:39:05,750 --> 00:39:03,440
website of the galileo project at

1030
00:39:08,069 --> 00:39:05,760
harvard university uh under my name you

1031
00:39:10,390 --> 00:39:08,079
can just google it and

1032
00:39:12,790 --> 00:39:10,400
you know the funds that we are using

1033
00:39:14,550 --> 00:39:12,800
uh were not allocated to science to

1034
00:39:16,790 --> 00:39:14,560
other projects before

1035
00:39:19,190 --> 00:39:16,800
and so there is no negative aspect to

1036
00:39:22,390 --> 00:39:19,200
the fact that we are funded uh and we

1037
00:39:24,150 --> 00:39:22,400
are exploring evidence uh to other parts

1038
00:39:25,910 --> 00:39:24,160

of science so i think the scientists

1039

00:39:27,270 --> 00:39:25,920

should all be on board

1040

00:39:28,550 --> 00:39:27,280

and then

1041

00:39:30,150 --> 00:39:28,560

obviously people interested in the

1042

00:39:33,109 --> 00:39:30,160

subject should be involved

1043

00:39:35,510 --> 00:39:33,119

now are you the anonymous donor

1044

00:39:39,750 --> 00:39:37,270

i should say it's not anonymous if you

1045

00:39:41,589 --> 00:39:39,760

go to the website you go to the website

1046

00:39:42,550 --> 00:39:41,599

of the galileo project

1047

00:39:45,030 --> 00:39:42,560

and

1048

00:39:48,230 --> 00:39:45,040

you click on the item

1049

00:39:52,069 --> 00:39:49,270

under that

1050

00:39:53,910 --> 00:39:52,079

the philanthropic advisory committee in

1051
00:39:55,349 --> 00:39:53,920
the philanthropic advisory committee

1052
00:39:57,270 --> 00:39:55,359
there is a list of the people that

1053
00:39:59,349 --> 00:39:57,280
contributed no i could just see that

1054
00:40:01,910 --> 00:39:59,359
you're passionate so i could just

1055
00:40:02,870 --> 00:40:01,920
oh no i is that happening i don't have

1056
00:40:05,670 --> 00:40:02,880
money

1057
00:40:08,829 --> 00:40:05,680
at the level of um

1058
00:40:12,470 --> 00:40:08,839
so far so far we've received two million

1059
00:40:14,550 --> 00:40:12,480
dollars but we really need the 20 or so

1060
00:40:17,589 --> 00:40:14,560
in order to do a comprehensive study to

1061
00:40:20,230 --> 00:40:17,599
have enough telescope systems spread

1062
00:40:22,309 --> 00:40:20,240
throughout the globe so that we cover

1063
00:40:24,069 --> 00:40:22,319

enough of the sky and have a high chance

1064

00:40:26,230 --> 00:40:24,079

of detecting something would you be

1065

00:40:28,630 --> 00:40:26,240

building new telescopes or using ones

1066

00:40:30,870 --> 00:40:28,640

that exist already oh no it has to be

1067

00:40:32,710 --> 00:40:30,880

new telescopes because existing

1068

00:40:34,630 --> 00:40:32,720

telescopes you have to understand when

1069

00:40:37,349 --> 00:40:34,640

they look at the sky astronomers use

1070

00:40:38,630 --> 00:40:37,359

them if a bird flies above the telescope

1071

00:40:40,630 --> 00:40:38,640

it's ignored

1072

00:40:41,990 --> 00:40:40,640

we will track that bird and figure out

1073

00:40:45,270 --> 00:40:42,000

that it's a bird you know we'll have

1074

00:40:47,910 --> 00:40:45,280

software that will identify it as a bird

1075

00:40:48,950 --> 00:40:47,920

i'm not a zoologist i don't care about

1076

00:40:51,670 --> 00:40:48,960

birds

1077

00:40:53,910 --> 00:40:51,680

uh well that's mean

1078

00:40:55,990 --> 00:40:53,920

well no i mean obviously i care about

1079

00:40:58,150 --> 00:40:56,000

them but i i just don't need the high

1080

00:41:00,470 --> 00:40:58,160

resolution image of a bird i mean i'll

1081

00:41:01,829 --> 00:41:00,480

be glad to transfer that information

1082

00:41:03,750 --> 00:41:01,839

mythologies

1083

00:41:06,950 --> 00:41:03,760

and also if i see

1084

00:41:09,829 --> 00:41:06,960

an object a drone for example and we can

1085

00:41:11,510 --> 00:41:09,839

resolve the image made in china

1086

00:41:13,589 --> 00:41:11,520

you know i'm sure there are residents of

1087

00:41:16,309 --> 00:41:13,599

washington dc that would be very curious

1088

00:41:18,150 --> 00:41:16,319

to know what it's doing there and again

1089

00:41:20,710 --> 00:41:18,160

i can transfer that information it would

1090

00:41:23,589 --> 00:41:20,720

be as boring to me as a scientist as a

1091

00:41:26,950 --> 00:41:23,599

bird is because any human made the

1092

00:41:30,710 --> 00:41:26,960

object is not news you know that we know

1093

00:41:34,630 --> 00:41:30,720

we have um but what we would focus on

1094

00:41:37,190 --> 00:41:34,640

are unusual uh objects and of course

1095

00:41:37,990 --> 00:41:37,200

there is a possibility that some of the

1096

00:41:44,630 --> 00:41:38,000

uh

1097

00:41:46,230 --> 00:41:44,640

um atmospheric phenomena you know

1098

00:41:48,069 --> 00:41:46,240

something in the atmosphere not a real

1099

00:41:49,750 --> 00:41:48,079

object there is a possibility and of

1100

00:41:51,990 --> 00:41:49,760

course we will learn something new about

1101

00:41:54,069 --> 00:41:52,000

the atmosphere in that case but but what

1102

00:41:56,390 --> 00:41:54,079

we really want to see is if there are

1103

00:41:58,710 --> 00:41:56,400

any unusual objects but now what does

1104

00:42:01,030 --> 00:41:58,720

that mean the atmospheric phenomenon is

1105

00:42:02,870 --> 00:42:01,040

there a little more um

1106

00:42:04,470 --> 00:42:02,880

are there different kinds or is this

1107

00:42:05,589 --> 00:42:04,480

come in one shape are we talking about

1108

00:42:07,510 --> 00:42:05,599

well we don't know

1109

00:42:10,470 --> 00:42:07,520

it really depends uh i mean we know of

1110

00:42:13,589 --> 00:42:10,480

lightnings we know so at any event we

1111

00:42:16,069 --> 00:42:13,599

will look and try to figure out sure

1112

00:42:17,109 --> 00:42:16,079

what the unusual phenomena are right um

1113

00:42:18,230 --> 00:42:17,119

but

1114

00:42:21,510 --> 00:42:18,240

yeah

1115

00:42:22,950 --> 00:42:21,520

to me at least when people talk about

1116

00:42:25,349 --> 00:42:22,960

these reports that come out from

1117

00:42:27,589 --> 00:42:25,359

congress or anything they always put you

1118

00:42:29,589 --> 00:42:27,599

know it's um

1119

00:42:31,430 --> 00:42:29,599

probably not foreign or whatever it's

1120

00:42:34,150 --> 00:42:31,440

like i don't care about foreign drones

1121

00:42:38,390 --> 00:42:34,160

or even our own drones just give me a

1122

00:42:42,710 --> 00:42:38,400

report on what you can't identify

1123

00:42:48,630 --> 00:42:46,150

incidents that were included in the uh

1124

00:42:49,510 --> 00:42:48,640

intelligence agency's report to congress

1125

00:42:51,829 --> 00:42:49,520

were

1126
00:42:53,829 --> 00:42:51,839
things that whose nature is not clear so

1127
00:42:55,910 --> 00:42:53,839
that's that's what triggered the galileo

1128
00:42:58,550 --> 00:42:55,920
project that was that's what motivated

1129
00:43:00,630 --> 00:42:58,560
me i i should say this is one track

1130
00:43:02,390 --> 00:43:00,640
within the galileo project there is a

1131
00:43:04,550 --> 00:43:02,400
second track which is

1132
00:43:07,349 --> 00:43:04,560
to figure out the nature of objects that

1133
00:43:08,470 --> 00:43:07,359
come into the solar system from outside

1134
00:43:10,550 --> 00:43:08,480
like

1135
00:43:12,790 --> 00:43:10,560
this object that i discussed in my book

1136
00:43:15,510 --> 00:43:12,800
extraterrestrial that was the first

1137
00:43:18,309 --> 00:43:15,520
interstellar object that was spotted

1138
00:43:21,270 --> 00:43:18,319

near earth in 2017 and

1139

00:43:24,150 --> 00:43:21,280

we want to find more objects like it

1140

00:43:26,950 --> 00:43:24,160

and then get much better data on them in

1141

00:43:29,589 --> 00:43:26,960

particular maybe fly by them and and

1142

00:43:31,430 --> 00:43:29,599

take a high resolution image of them so

1143

00:43:34,550 --> 00:43:31,440

so we can tell whether they are natural

1144

00:43:35,750 --> 00:43:34,560

or artificial in origin and uh so that's

1145

00:43:39,349 --> 00:43:35,760

the second

1146

00:43:41,190 --> 00:43:39,359

component of the galileo project and uh

1147

00:43:44,870 --> 00:43:41,200

and and we will have some research

1148

00:43:46,790 --> 00:43:44,880

effort on that as well sure um

1149

00:43:49,190 --> 00:43:46,800

are there more of those objects do you

1150

00:43:50,630 --> 00:43:49,200

think that exist and we just can't see

1151

00:43:53,109 --> 00:43:50,640

them or we're not looking in the right

1152

00:43:54,390 --> 00:43:53,119

places for instance oh sure i mean so

1153

00:43:56,470 --> 00:43:54,400

our current

1154

00:43:57,910 --> 00:43:56,480

telescopes the survey telescopes that

1155

00:43:59,829 --> 00:43:57,920

survey the sky

1156

00:44:02,790 --> 00:43:59,839

are sensitive to an object roughly the

1157

00:44:04,630 --> 00:44:02,800

size of a football field

1158

00:44:07,829 --> 00:44:04,640

within the orbit of the earth around the

1159

00:44:10,710 --> 00:44:07,839

sun you have to understand the sun is

1160

00:44:12,630 --> 00:44:10,720

like a lamppost that illuminates the

1161

00:44:14,550 --> 00:44:12,640

darkness around us

1162

00:44:17,510 --> 00:44:14,560

so you can see objects because they

1163

00:44:19,430 --> 00:44:17,520

reflect sunlight okay and you can only

1164

00:44:21,190 --> 00:44:19,440

see them if they're big enough so if you

1165

00:44:23,030 --> 00:44:21,200

have an object much smaller than the

1166

00:44:25,030 --> 00:44:23,040

size of a football field

1167

00:44:26,470 --> 00:44:25,040

uh it wouldn't have enough sunlight for

1168

00:44:28,390 --> 00:44:26,480

us to see

1169

00:44:30,390 --> 00:44:28,400

and as a result there could be a lot of

1170

00:44:31,990 --> 00:44:30,400

small objects zooming by you know like

1171

00:44:34,390 --> 00:44:32,000

huge spots

1172

00:44:36,710 --> 00:44:34,400

and we haven't seen them right

1173

00:44:39,589 --> 00:44:36,720

quite a few you know uh coming from

1174

00:44:40,470 --> 00:44:39,599

industrial space many more than uh

1175

00:44:42,630 --> 00:44:40,480

football

1176

00:44:43,990 --> 00:44:42,640

field size object like

1177

00:44:46,470 --> 00:44:44,000

and what are the chances they would

1178

00:44:50,470 --> 00:44:46,480

build something that big anyways right

1179

00:44:53,109 --> 00:44:50,480

right so well so we have to develop

1180

00:44:55,190 --> 00:44:53,119

again building uh better telescopes

1181

00:44:57,270 --> 00:44:55,200

would help us so within a couple of

1182

00:44:59,270 --> 00:44:57,280

years there would be the vera rubin

1183

00:45:00,950 --> 00:44:59,280

observatory in chile that would be far

1184

00:45:02,390 --> 00:45:00,960

more sensitive than the telescope that

1185

00:45:04,630 --> 00:45:02,400

discovered

1186

00:45:06,790 --> 00:45:04,640

in hawaii and then

1187

00:45:08,630 --> 00:45:06,800

and we hope to see smaller objects we

1188

00:45:10,870 --> 00:45:08,640

hope to see objects like

1189

00:45:13,030 --> 00:45:10,880

when they're farther away so we can get

1190

00:45:15,030 --> 00:45:13,040

an alert and send a spacecraft with a

1191

00:45:17,190 --> 00:45:15,040

camera that will take a close-up photo

1192

00:45:19,430 --> 00:45:17,200

wow that's how you're gonna do it you

1193

00:45:22,630 --> 00:45:19,440

can send a spacecraft to just

1194

00:45:25,349 --> 00:45:22,640

go take a bigger picture wow yeah i mean

1195

00:45:28,150 --> 00:45:25,359

just to give an example of cyrus rex was

1196

00:45:30,230 --> 00:45:28,160

a mission that nasa launched to take a

1197

00:45:32,630 --> 00:45:30,240

close-up photograph of the asteroid

1198

00:45:34,950 --> 00:45:32,640

bennu and it actually landed on the

1199

00:45:37,589 --> 00:45:34,960

asteroid and collected the sample of

1200

00:45:39,430 --> 00:45:37,599

dirt from the surface of the asteroid

1201

00:45:43,510 --> 00:45:39,440

and it will bring it back to earth in

1202

00:45:45,750 --> 00:45:43,520

2023. so we already did that um we're

1203

00:45:47,109 --> 00:45:45,760

special come on that's pretty special

1204

00:45:48,950 --> 00:45:47,119

that's good

1205

00:45:50,150 --> 00:45:48,960

yeah but that that was a rock i should

1206

00:45:52,710 --> 00:45:50,160

say yeah

1207

00:45:55,190 --> 00:45:52,720

you know okay that's true of dirt from

1208

00:45:57,190 --> 00:45:55,200

that rock we have enough dirt on earth i

1209

00:45:59,109 --> 00:45:57,200

mean it may have some features that are

1210

00:46:01,589 --> 00:45:59,119

slightly different than the dirt on

1211

00:46:03,750 --> 00:46:01,599

earth but what i really want is to land

1212

00:46:05,030 --> 00:46:03,760

on an object that has buttons that we

1213

00:46:06,950 --> 00:46:05,040

can press

1214

00:46:09,030 --> 00:46:06,960

uh do you think ufo studies will be

1215

00:46:10,550 --> 00:46:09,040

standardized at the university level

1216

00:46:12,230 --> 00:46:10,560

anytime soon

1217

00:46:14,870 --> 00:46:12,240

i don't know about anytime that depends

1218

00:46:17,109 --> 00:46:14,880

on other people you see i think

1219

00:46:19,109 --> 00:46:17,119

that it should become

1220

00:46:20,150 --> 00:46:19,119

a part of the mainstream because i do

1221

00:46:22,390 --> 00:46:20,160

think that

1222

00:46:24,230 --> 00:46:22,400

um you know it makes a lot of sense for

1223

00:46:26,150 --> 00:46:24,240

us to search for things like us

1224

00:46:27,670 --> 00:46:26,160

elsewhere and

1225

00:46:29,109 --> 00:46:27,680

things that are more advanced than us

1226

00:46:31,270 --> 00:46:29,119

because we are not that intelligent

1227

00:46:34,150 --> 00:46:31,280

after all as we discussed before and you

1228

00:46:36,309 --> 00:46:34,160

can imagine out of the tens of billions of

1229

00:46:38,550 --> 00:46:36,319

other planets like the earth there was

1230

00:46:39,349 --> 00:46:38,560

something more more intelligent than we

1231

00:46:40,950 --> 00:46:39,359

are

1232

00:46:43,670 --> 00:46:40,960

in the past few billion years you know

1233

00:46:45,510 --> 00:46:43,680

so why not check rather than assume that

1234

00:46:47,430 --> 00:46:45,520

we are the smartest kid on the block you

1235

00:46:49,430 --> 00:46:47,440

know yeah you'd think the percentages

1236

00:46:51,670 --> 00:46:49,440

would be in favor of that actually

1237

00:46:54,150 --> 00:46:51,680

considering how large everything is

1238

00:46:56,069 --> 00:46:54,160

yeah but the point the point is that we

1239

00:46:58,309 --> 00:46:56,079

really need to search this is not the

1240

00:47:00,390 --> 00:46:58,319

philosophical question you know

1241

00:47:02,790 --> 00:47:00,400

so the mistake a lot of people are

1242

00:47:04,790 --> 00:47:02,800

making is to have an opinion before

1243

00:47:06,790 --> 00:47:04,800

looking for data and i think

1244

00:47:09,349 --> 00:47:06,800

you know and and the way we searched in

1245

00:47:10,390 --> 00:47:09,359

the past was to look for radio signals

1246

00:47:12,950 --> 00:47:10,400

well

1247

00:47:14,710 --> 00:47:12,960

for 70 years that's not a good approach

1248

00:47:16,390 --> 00:47:14,720

because it's just like trying to have a

1249

00:47:20,390 --> 00:47:16,400

phone conversation you need the

1250

00:47:24,309 --> 00:47:22,069

you know if there is a small window of

1251
00:47:26,630 --> 00:47:24,319
opportunity because we transmitted radio

1252
00:47:28,710 --> 00:47:26,640
waves only over the past century or so

1253
00:47:30,630 --> 00:47:28,720
out of the four and a half billion years

1254
00:47:32,309 --> 00:47:30,640
that the earth existed

1255
00:47:34,950 --> 00:47:32,319
if there is a very short window of

1256
00:47:36,549 --> 00:47:34,960
opportunity the chance of us

1257
00:47:38,790 --> 00:47:36,559
being in conversation with another

1258
00:47:40,230 --> 00:47:38,800
civilization is very small

1259
00:47:42,470 --> 00:47:40,240
it's much more likely that you would

1260
00:47:44,549 --> 00:47:42,480
find relics that they left behind even

1261
00:47:46,950 --> 00:47:44,559
after they perished you know they might

1262
00:47:49,430 --> 00:47:46,960
not be around anymore but they sent out

1263
00:47:51,829 --> 00:47:49,440

mail you know and you can find a letter

1264

00:47:55,589 --> 00:47:51,839

from them even though they died sucks

1265

00:48:01,430 --> 00:47:57,829

i got a question for you is it is it

1266

00:48:06,309 --> 00:48:01,440

still true that now is kind of the

1267

00:48:08,630 --> 00:48:06,319

um how do i put this the best time for

1268

00:48:11,589 --> 00:48:08,640

other life to be

1269

00:48:12,870 --> 00:48:11,599

in our galaxy i heard you say something

1270

00:48:14,950 --> 00:48:12,880

like that

1271

00:48:17,589 --> 00:48:14,960

um the ages of the universe is

1272

00:48:20,390 --> 00:48:17,599

comparable to the sun right right right

1273

00:48:21,829 --> 00:48:20,400

so right now the i mean the age of the

1274

00:48:23,910 --> 00:48:21,839

sun is roughly

1275

00:48:25,190 --> 00:48:23,920

a third or or so of the age of the

1276

00:48:28,069 --> 00:48:25,200

universe so

1277

00:48:29,349 --> 00:48:28,079

um stars like the sun are sort of

1278

00:48:31,349 --> 00:48:29,359

typical

1279

00:48:33,589 --> 00:48:31,359

these days because they have a lifetime

1280

00:48:35,990 --> 00:48:33,599

comparable to the age of the universe if

1281

00:48:37,750 --> 00:48:36,000

you go back in time

1282

00:48:40,150 --> 00:48:37,760

the most

1283

00:48:42,150 --> 00:48:40,160

typical stars were stars that were

1284

00:48:44,230 --> 00:48:42,160

that live for a shorter time than the

1285

00:48:46,309 --> 00:48:44,240

sun you know and if you go into the

1286

00:48:47,910 --> 00:48:46,319

future

1287

00:48:49,670 --> 00:48:47,920

most of the stars would be those that

1288

00:48:51,910 --> 00:48:49,680

live longer than the sun and these are

1289

00:48:54,870 --> 00:48:51,920

small stars like proxima centauri for

1290

00:48:57,270 --> 00:48:54,880

example proxima centauri has 12 of the

1291

00:48:59,349 --> 00:48:57,280

mass of the sun it would live a thousand

1292

00:49:02,309 --> 00:48:59,359

times long up to a thousand times longer

1293

00:49:04,710 --> 00:49:02,319

than the sun and so the universe can age

1294

00:49:07,270 --> 00:49:04,720

to be trillions of years old

1295

00:49:10,230 --> 00:49:07,280

you know and um stars like proxima

1296

00:49:12,150 --> 00:49:10,240

centauri will still be around uh so if

1297

00:49:14,470 --> 00:49:12,160

you were to live

1298

00:49:16,549 --> 00:49:14,480

in the future uh trillions of years from

1299

00:49:18,549 --> 00:49:16,559

now that's the kind of stars you will

1300

00:49:21,030 --> 00:49:18,559

see and it would make sense for us to

1301

00:49:22,790 --> 00:49:21,040

move to a low mass stars star like

1302

00:49:24,950 --> 00:49:22,800

proxima centauri i mean the reason they

1303

00:49:27,990 --> 00:49:24,960

live for so long is because they are

1304

00:49:30,069 --> 00:49:28,000

smaller mass so they burn their they

1305

00:49:32,549 --> 00:49:30,079

have a lower temperature and they burn

1306

00:49:34,230 --> 00:49:32,559

the nuclear fuel more slowly they have

1307

00:49:36,549 --> 00:49:34,240

some nuclear fuel in their core and they

1308

00:49:38,950 --> 00:49:36,559

burn it more slowly so then they last

1309

00:49:46,470 --> 00:49:38,960

longer than than bigger stars kind of

1310

00:49:50,309 --> 00:49:48,549

it's good to be near the sun but you

1311

00:49:52,710 --> 00:49:50,319

know within a few billion years the sun

1312

00:49:56,309 --> 00:49:52,720

will die and it will not be a good place

1313

00:49:58,630 --> 00:49:56,319

to be in so we need to move our eggs out

1314

00:50:00,150 --> 00:49:58,640

of this basket where they are right now

1315

00:50:01,030 --> 00:50:00,160

interesting is that

1316

00:50:03,349 --> 00:50:01,040

here

1317

00:50:05,910 --> 00:50:03,359

um is that a part of your motivation

1318

00:50:08,390 --> 00:50:05,920

because you know what i did yeah

1319

00:50:09,190 --> 00:50:08,400

there was something you said about um

1320

00:50:12,710 --> 00:50:09,200

like

1321

00:50:15,910 --> 00:50:12,720

it's the galaxy is forever expanding so

1322

00:50:18,549 --> 00:50:15,920

our opportunity of exploring galaxies

1323

00:50:21,030 --> 00:50:18,559

next to us will be more difficult as

1324

00:50:23,750 --> 00:50:21,040

time goes on because we'll be separated

1325

00:50:24,790 --> 00:50:23,760

from them and eventually be left all by

1326
00:50:26,630 --> 00:50:24,800
ourselves

1327
00:50:27,910 --> 00:50:26,640
yeah so the universe is not just

1328
00:50:30,230 --> 00:50:27,920
expanding

1329
00:50:31,510 --> 00:50:30,240
its expansion is speeding up

1330
00:50:34,870 --> 00:50:31,520
with time

1331
00:50:37,510 --> 00:50:34,880
right now and that means that distant

1332
00:50:39,510 --> 00:50:37,520
galaxies are moving away from us faster

1333
00:50:41,990 --> 00:50:39,520
and faster as time goes on and

1334
00:50:43,109 --> 00:50:42,000
eventually they'll recede from us faster

1335
00:50:46,870 --> 00:50:43,119
than light

1336
00:50:48,710 --> 00:50:46,880
so we won't be able to speak with any

1337
00:50:50,630 --> 00:50:48,720
neighbors in the distant future any

1338
00:50:52,230 --> 00:50:50,640

neighboring galaxies because they will

1339

00:50:54,870 --> 00:50:52,240

move faster than light so even light

1340

00:50:55,750 --> 00:50:54,880

will not bridge the gap between us and

1341

00:50:57,990 --> 00:50:55,760

them

1342

00:51:00,230 --> 00:50:58,000

and that is called the accelerating

1343

00:51:02,790 --> 00:51:00,240

universe that was discovered

1344

00:51:05,030 --> 00:51:02,800

over the past 20 years and uh we live in

1345

00:51:07,030 --> 00:51:05,040

such a universe so eventually you know

1346

00:51:09,510 --> 00:51:07,040

if you wait when the universe will age

1347

00:51:12,390 --> 00:51:09,520

by a factor of 10 we will be surrounded

1348

00:51:15,670 --> 00:51:12,400

by vacuum there will be nothing outside

1349

00:51:19,510 --> 00:51:15,680

of our galaxy and so it's a so it will

1350

00:51:21,670 --> 00:51:19,520

become a lonely place um yeah and um it

1351
00:51:24,950 --> 00:51:21,680
will be surrounded by darkness that's

1352
00:51:27,109 --> 00:51:24,960
the future that awaits us uh and so if

1353
00:51:29,750 --> 00:51:27,119
we ever want to establish

1354
00:51:32,230 --> 00:51:29,760
to shake the hand of extraterrestrials

1355
00:51:34,470 --> 00:51:32,240
beyond the milky way galaxy now is the

1356
00:51:36,950 --> 00:51:34,480
time to try and do that because

1357
00:51:37,910 --> 00:51:36,960
eventually they will be driven away from

1358
00:51:40,549 --> 00:51:37,920
us and

1359
00:51:42,710 --> 00:51:40,559
uh there is only one caveat the the

1360
00:51:45,190 --> 00:51:42,720
milky way galaxy has a sister galaxy

1361
00:51:47,030 --> 00:51:45,200
called the andromeda galaxy which is not

1362
00:51:49,270 --> 00:51:47,040
far from us and it's actually on a

1363
00:51:52,230 --> 00:51:49,280

collision course it's falling towards

1364

00:51:54,710 --> 00:51:52,240

them yeah and we will merge with it and

1365

00:51:56,710 --> 00:51:54,720

i actually did the first the drawings up

1366

00:51:59,190 --> 00:51:56,720

there start with the graphs in europe

1367

00:52:01,190 --> 00:51:59,200

yeah i did the first calculation of what

1368

00:52:03,670 --> 00:52:01,200

will happen when the two galaxies will

1369

00:52:05,990 --> 00:52:03,680

collide but in merge i call the the

1370

00:52:07,829 --> 00:52:06,000

merger product milk comeda

1371

00:52:09,430 --> 00:52:07,839

which is sort of the

1372

00:52:12,230 --> 00:52:09,440

combination of the milky way and

1373

00:52:14,069 --> 00:52:12,240

andromeda and then that will be our

1374

00:52:15,670 --> 00:52:14,079

future you know a future galaxy would

1375

00:52:18,390 --> 00:52:15,680

not look like

1376
00:52:20,309 --> 00:52:18,400
a strip of stars in the sky the reason

1377
00:52:22,069 --> 00:52:20,319
it's called the milky way it's because

1378
00:52:23,829 --> 00:52:22,079
we're looking at the disc

1379
00:52:25,750 --> 00:52:23,839
and we're looking like a plate and

1380
00:52:27,670 --> 00:52:25,760
you're looking at it edge on and it

1381
00:52:29,190 --> 00:52:27,680
looks like a strip of stars from the sky

1382
00:52:31,430 --> 00:52:29,200
that's the milky way

1383
00:52:33,990 --> 00:52:31,440
but once it collides with andromeda

1384
00:52:36,870 --> 00:52:34,000
galaxy which is also made of a disk of

1385
00:52:38,470 --> 00:52:36,880
stars the two disks will sort of mix

1386
00:52:40,069 --> 00:52:38,480
together and you'll get something that

1387
00:52:42,470 --> 00:52:40,079
looks like a football

1388
00:52:44,790 --> 00:52:42,480

it will be more spheroidal in in shape

1389

00:52:47,109 --> 00:52:44,800

and that you know we see such elliptical

1390

00:52:49,109 --> 00:52:47,119

galaxies elsewhere but that is our

1391

00:52:50,230 --> 00:52:49,119

future we will be part of an elliptical

1392

00:52:50,950 --> 00:52:50,240

galaxy

1393

00:52:53,510 --> 00:52:50,960

that

1394

00:52:55,270 --> 00:52:53,520

i called the milk comeda and you know

1395

00:52:57,910 --> 00:52:55,280

it's the only prediction that i made in

1396

00:52:59,430 --> 00:52:57,920

my scientific career that perhaps will

1397

00:53:01,030 --> 00:52:59,440

be quoted

1398

00:53:04,549 --> 00:53:01,040

five billion years from now when the two

1399

00:53:09,589 --> 00:53:07,430

will remember me if you said it

1400

00:53:11,190 --> 00:53:09,599

he told us now here we are but maybe

1401
00:53:12,829 --> 00:53:11,200
that's how we meet extraterrestrials

1402
00:53:14,470 --> 00:53:12,839
finally by

1403
00:53:16,710 --> 00:53:14,480
force

1404
00:53:17,910 --> 00:53:16,720
yeah we will have to leave the solar

1405
00:53:19,510 --> 00:53:17,920
system

1406
00:53:20,950 --> 00:53:19,520
at that point if we want to survive

1407
00:53:21,910 --> 00:53:20,960
because the sun will not be around

1408
00:53:24,710 --> 00:53:21,920
anymore

1409
00:53:26,069 --> 00:53:24,720
um do you have a sec for just a couple

1410
00:53:29,270 --> 00:53:26,079
um

1411
00:53:33,430 --> 00:53:29,280
uh chat questions sure go ahead okay

1412
00:53:35,109 --> 00:53:33,440
i'm just gonna scroll through these here

1413
00:53:36,790 --> 00:53:35,119

um

1414

00:53:37,990 --> 00:53:36,800

what are your thoughts on the more

1415

00:53:38,950 --> 00:53:38,000

fringe

1416

00:53:48,150 --> 00:53:38,960

in

1417

00:53:51,589 --> 00:53:48,160

away from

1418

00:53:53,829 --> 00:53:51,599

people's impressions people's reports

1419

00:53:55,349 --> 00:53:53,839

because in science you have to rely on

1420

00:53:57,430 --> 00:53:55,359

instruments and

1421

00:53:59,430 --> 00:53:57,440

you know people can have hallucinations

1422

00:54:02,309 --> 00:53:59,440

they can have wishful thinking they can

1423

00:54:04,309 --> 00:54:02,319

have they can ignore some facts we we

1424

00:54:06,230 --> 00:54:04,319

know that we know that if you just look

1425

00:54:07,510 --> 00:54:06,240

at politics you know you see

1426

00:54:09,190 --> 00:54:07,520

uh

1427

00:54:11,109 --> 00:54:09,200

you see the country polarized because

1428

00:54:13,030 --> 00:54:11,119

people on both sides ignore some of the

1429

00:54:16,309 --> 00:54:13,040

facts you know and that's why they never

1430

00:54:17,349 --> 00:54:16,319

come together and uh so humans are known

1431

00:54:20,309 --> 00:54:17,359

for

1432

00:54:23,510 --> 00:54:20,319

not always being reliable okay and i say

1433

00:54:25,349 --> 00:54:23,520

that you know in

1434

00:54:27,109 --> 00:54:25,359

so and that's why science relies on

1435

00:54:29,109 --> 00:54:27,119

instruments instruments do not have

1436

00:54:31,190 --> 00:54:29,119

those tendencies they just record

1437

00:54:33,270 --> 00:54:31,200

whatever comes in and you know that's

1438

00:54:35,349 --> 00:54:33,280

why science relies on quantitative

1439

00:54:36,390 --> 00:54:35,359

measurements and by instruments and you

1440

00:54:39,109 --> 00:54:36,400

can never

1441

00:54:41,910 --> 00:54:39,119

write a scientific paper uh you know in

1442

00:54:43,910 --> 00:54:41,920

physics saying this person told me that

1443

00:54:44,710 --> 00:54:43,920

you can't do that uh you have to say

1444

00:54:47,910 --> 00:54:44,720

this

1445

00:54:50,069 --> 00:54:47,920

instrument

1446

00:54:51,910 --> 00:54:50,079

full control over and that's what the

1447

00:54:54,069 --> 00:54:51,920

measurement showed and i'm trying to

1448

00:54:56,390 --> 00:54:54,079

understand to explain that that that's

1449

00:54:58,470 --> 00:54:56,400

the discourse of science and

1450

00:54:59,750 --> 00:54:58,480

it has been like that for more than a

1451

00:55:01,670 --> 00:54:59,760

century and

1452

00:55:03,910 --> 00:55:01,680

as a result you know when i do my

1453

00:55:06,710 --> 00:55:03,920

research and i'm operating as a

1454

00:55:09,190 --> 00:55:06,720

scientist also in the context of of uap

1455

00:55:10,150 --> 00:55:09,200

yeah i want to get them first of all i

1456

00:55:12,950 --> 00:55:10,160

want to

1457

00:55:15,109 --> 00:55:12,960

get my own data so that i know what you

1458

00:55:17,030 --> 00:55:15,119

know how the data was collected so

1459

00:55:19,030 --> 00:55:17,040

science is about reproducibility of

1460

00:55:20,870 --> 00:55:19,040

results and second i want data from

1461

00:55:23,349 --> 00:55:20,880

instruments not from huma i mean you can

1462

00:55:25,030 --> 00:55:23,359

think of a human as a detector but it's

1463

00:55:27,030 --> 00:55:25,040

not a reliable detector it's sort of

1464

00:55:28,390 --> 00:55:27,040

like a detector that tells you something

1465

00:55:29,910 --> 00:55:28,400

but you know you don't know whether to

1466

00:55:31,750 --> 00:55:29,920

trust it

1467

00:55:33,750 --> 00:55:31,760

uh because i see that every day you know

1468

00:55:35,620 --> 00:55:33,760

people tell me things that i i don't

1469

00:55:37,109 --> 00:55:35,630

trust many of the people maybe

1470

00:55:39,349 --> 00:55:37,119

[Laughter]

1471

00:55:41,109 --> 00:55:39,359

although you know as i said before in in

1472

00:55:43,990 --> 00:55:41,119

the legal system

1473

00:55:45,510 --> 00:55:44,000

eyewitness testimonies do hold the

1474

00:55:47,589 --> 00:55:45,520

uh and

1475

00:55:48,710 --> 00:55:47,599

in the courtroom but but not in science

1476

00:55:51,589 --> 00:55:48,720

okay so

1477

00:55:53,510 --> 00:55:51,599

um i i prefer to approach this subject

1478

00:55:55,670 --> 00:55:53,520

scientifically and not deal with

1479

00:55:58,069 --> 00:55:55,680

human testimonies because i want to

1480

00:56:00,150 --> 00:55:58,079

bring it to the mainstream and so just

1481

00:56:01,750 --> 00:56:00,160

you know for whoever

1482

00:56:04,230 --> 00:56:01,760

uh

1483

00:56:07,109 --> 00:56:04,240

cares a lot about what people say i

1484

00:56:08,950 --> 00:56:07,119

would say just bear with me because in

1485

00:56:11,430 --> 00:56:08,960

order for the subject to

1486

00:56:13,670 --> 00:56:11,440

reach the scientific community

1487

00:56:16,470 --> 00:56:13,680

you really need the to approach it in a

1488

00:56:19,030 --> 00:56:16,480

scientific way and meaning using

1489

00:56:20,630 --> 00:56:19,040

instruments that record evidence beyond

1490

00:56:21,910 --> 00:56:20,640

any reasonable doubt

1491

00:56:24,230 --> 00:56:21,920

and then

1492

00:56:26,390 --> 00:56:24,240

just bear with me so that you know we

1493

00:56:29,430 --> 00:56:26,400

can get that evidence well you're on a

1494

00:56:30,870 --> 00:56:29,440

crusade i got i have to be honest um

1495

00:56:32,950 --> 00:56:30,880

because like you said this can't move

1496

00:56:35,349 --> 00:56:32,960

forward without

1497

00:56:36,789 --> 00:56:35,359

some sort of hard proof at least for

1498

00:56:38,950 --> 00:56:36,799

everybody to get involved in i would

1499

00:56:41,190 --> 00:56:38,960

even say the general public to get

1500

00:56:43,190 --> 00:56:41,200

involved because a lot of times i notice

1501

00:56:45,589 --> 00:56:43,200

it's really just the ufo twitter people

1502

00:56:47,750 --> 00:56:45,599

who are focused on this stuff and a lot

1503

00:56:50,150 --> 00:56:47,760

of the general public ah they can take

1504

00:56:51,750 --> 00:56:50,160

it or leave it but if uh mr abraham

1505

00:56:53,109 --> 00:56:51,760

comes back

1506

00:56:55,589 --> 00:56:53,119

with some hard proof i think that's

1507

00:56:57,670 --> 00:56:55,599

gonna change everything so there is this

1508

00:56:59,829 --> 00:56:57,680

you have these two bubbles of the

1509

00:57:01,510 --> 00:56:59,839

scientists ridiculing the subject and

1510

00:57:03,910 --> 00:57:01,520

then you have people who

1511

00:57:05,190 --> 00:57:03,920

uh are intrigued by the evidence that we

1512

00:57:07,270 --> 00:57:05,200

have so far

1513

00:57:08,710 --> 00:57:07,280

and there is not much crosstalk and what

1514

00:57:11,270 --> 00:57:08,720

we are trying to do with the galileo

1515

00:57:13,510 --> 00:57:11,280

project is basically break the ice

1516

00:57:15,349 --> 00:57:13,520

break this status quo where

1517

00:57:17,829 --> 00:57:15,359

you know the scientific bubble will

1518

00:57:19,270 --> 00:57:17,839

suddenly realize that there is perhaps i

1519

00:57:22,309 --> 00:57:19,280

mean i don't know we will see what we

1520

00:57:24,630 --> 00:57:22,319

get if there is evidence that is beyond

1521

00:57:26,630 --> 00:57:24,640

the reasonable doubt then the the the

1522

00:57:29,109 --> 00:57:26,640

scientists will have no choice

1523

00:57:31,589 --> 00:57:29,119

if there is none then it will poke the

1524

00:57:33,910 --> 00:57:31,599

bubble of the other side you know so so

1525

00:57:35,829 --> 00:57:33,920

whatever we find we i mean we don't have

1526

00:57:37,910 --> 00:57:35,839

any agenda or prejudice and i think it's

1527

00:57:39,270 --> 00:57:37,920

the right approach to actually

1528

00:57:41,430 --> 00:57:39,280

resolve the

1529

00:57:43,109 --> 00:57:41,440

the lack of communication between the

1530

00:57:46,870 --> 00:57:43,119

two bubbles right now

1531

00:57:49,190 --> 00:57:46,880

yeah i i think uh that's very true when

1532

00:57:51,430 --> 00:57:49,200

you're not you know secretly inside

1533

00:57:54,069 --> 00:57:51,440

hoping for one outcome or the other or

1534

00:57:55,990 --> 00:57:54,079

even if you are but you're just focused

1535

00:57:58,150 --> 00:57:56,000

on the facts at hand that present them

1536

00:58:00,309 --> 00:57:58,160

yeah i i told that i told the research

1537

00:58:02,230 --> 00:58:00,319

team on the galileo project i said keep

1538

00:58:05,270 --> 00:58:02,240

your eyes on the ball not on the

1539

00:58:07,190 --> 00:58:05,280

audience yeah that's beautiful

1540

00:58:09,829 --> 00:58:07,200

and as a musician singer songwriter

1541

00:58:12,150 --> 00:58:09,839

spent a lot of time on stage that is

1542

00:58:13,990 --> 00:58:12,160

very true because the second you do

1543

00:58:16,710 --> 00:58:14,000

start paying attention to the audience

1544

00:58:18,630 --> 00:58:16,720

you miss a note you forget a line you're

1545

00:58:20,549 --> 00:58:18,640

not in tune with your band anymore

1546

00:58:23,349 --> 00:58:20,559

that's very true good one

1547

00:58:25,030 --> 00:58:23,359

um last question i'll ask for you um

1548

00:58:27,750 --> 00:58:25,040

from megan

1549

00:58:31,109 --> 00:58:27,760

um will you be getting fast walker data

1550

00:58:32,309 --> 00:58:31,119

or just closer objects um

1551

00:58:34,870 --> 00:58:32,319

what if they can make themselves

1552

00:58:36,309 --> 00:58:34,880

invisible do they have any sensors to

1553

00:58:38,470 --> 00:58:36,319

still detect them there's a lot of

1554

00:58:41,030 --> 00:58:38,480

questions

1555

00:58:43,750 --> 00:58:41,040

i don't know where to put their sensors

1556

00:58:46,230 --> 00:58:43,760

so it's really important not to observe

1557

00:58:47,910 --> 00:58:46,240

the sky just in visible light you know

1558

00:58:50,309 --> 00:58:47,920

during the day you can look for

1559

00:58:52,789 --> 00:58:50,319

reflection of sunlight from objects for

1560

00:58:55,349 --> 00:58:52,799

example in the context of uap

1561

00:58:58,069 --> 00:58:55,359

uh that will allow you to find them only

1562

00:59:00,630 --> 00:58:58,079

during the day but in addition you can

1563

00:59:03,750 --> 00:59:00,640

look for emission in the infrared from

1564

00:59:05,829 --> 00:59:03,760

objects that are warm or hot you know if

1565

00:59:08,230 --> 00:59:05,839

an object moves through the atmosphere

1566

00:59:10,150 --> 00:59:08,240

it heats up the atmosphere the surface

1567

00:59:11,030 --> 00:59:10,160

of the object gets warmer we know that

1568

00:59:15,910 --> 00:59:11,040

from

1569

00:59:16,829 --> 00:59:15,920

shuttle when it moved through the

1570

00:59:19,270 --> 00:59:16,839

uh

1571

00:59:21,270 --> 00:59:19,280

atmospheric was heated by hundreds of

1572

00:59:23,190 --> 00:59:21,280

degrees and you can see that infrared

1573

00:59:25,910 --> 00:59:23,200

emission from the hot surface

1574

00:59:28,230 --> 00:59:25,920

and from the air around it so

1575

00:59:30,789 --> 00:59:28,240

uh we will look for that infrared

1576

00:59:33,190 --> 00:59:30,799

emission we will also look in the radio

1577

00:59:34,789 --> 00:59:33,200

you know for reflection of radio waves

1578

00:59:37,589 --> 00:59:34,799

from the object

1579

00:59:38,710 --> 00:59:37,599

and of course we will have audio sensors

1580

00:59:41,190 --> 00:59:38,720

look for

1581

00:59:43,510 --> 00:59:41,200

uh sound waves that are generated any

1582

00:59:46,309 --> 00:59:43,520

object with their very sensitive

1583

00:59:48,230 --> 00:59:46,319

microphones and so we will basically use

1584

00:59:51,270 --> 00:59:48,240

all the resources that we can buy off

1585

00:59:54,230 --> 00:59:51,280

the shelf right to detect the objects of

1586

00:59:56,390 --> 00:59:54,240

interest in all possible ways because we

1587

00:59:58,230 --> 00:59:56,400

want to get as much information as

1588

00:59:59,349 --> 00:59:58,240

possible and also to tell the difference

1589

01:00:01,270 --> 00:59:59,359

between

1590

01:00:03,190 --> 01:00:01,280

some phenomena in the atmosphere of the

1591

01:00:04,870 --> 01:00:03,200

earth and a real object moving through

1592

01:00:06,309 --> 01:00:04,880

it yeah

1593

01:00:08,549 --> 01:00:06,319

um

1594

01:00:10,470 --> 01:00:08,559

yeah well there's multiple phenomena

1595

01:00:11,430 --> 01:00:10,480

apparently to the report right there

1596

01:00:15,510 --> 01:00:11,440

there's

1597

01:00:17,349 --> 01:00:15,520

uap in itself is means multiple yeah

1598

01:00:20,390 --> 01:00:17,359

it's probably a mixed bag you know there

1599

01:00:26,470 --> 01:00:23,030

mundane explanations to many of those uh

1600

01:00:29,510 --> 01:00:26,480

incidents yeah my point is again even if

1601
01:00:31,349 --> 01:00:29,520
one is of extraterrestrial technological

1602
01:00:33,910 --> 01:00:31,359
origin that would have a huge impact on

1603
01:00:36,309 --> 01:00:33,920
society because it would change the way

1604
01:00:37,910 --> 01:00:36,319
we perceive ourselves in the universe it

1605
01:00:40,549 --> 01:00:37,920
will change our relations with each

1606
01:00:42,390 --> 01:00:40,559
other you know humans often try to feel

1607
01:00:43,829 --> 01:00:42,400
superior relative to each other

1608
01:00:45,589 --> 01:00:43,839
that's the

1609
01:00:47,670 --> 01:00:45,599
reason for the worst thing in human

1610
01:00:50,390 --> 01:00:47,680
history like for example the second

1611
01:00:53,190 --> 01:00:50,400
world war which killed 75 million people

1612
01:00:54,950 --> 01:00:53,200
was based on racism that the nazi regime

1613
01:00:56,390 --> 01:00:54,960

adopted they wanted to feel superior

1614

01:00:58,390 --> 01:00:56,400

relative to others and

1615

01:01:01,030 --> 01:00:58,400

uh you know there were 10 times more

1616

01:01:02,069 --> 01:01:01,040

people that died in that war triggered

1617

01:01:02,870 --> 01:01:02,079

by

1618

01:01:08,230 --> 01:01:02,880

uh

1619

01:01:10,789 --> 01:01:08,240

the virus of kovite 19 killed so far and

1620

01:01:12,870 --> 01:01:10,799

uh so just think about it and it makes

1621

01:01:14,710 --> 01:01:12,880

very little sense if there is a neighbor

1622

01:01:16,470 --> 01:01:14,720

that is far more advanced than we are

1623

01:01:19,109 --> 01:01:16,480

all of our differences will become

1624

01:01:21,190 --> 01:01:19,119

minuscule meaningless we will have to

1625

01:01:23,109 --> 01:01:21,200

change the way we behave with each other

1626

01:01:26,150 --> 01:01:23,119

because there is a smarter kid on our

1627

01:01:27,190 --> 01:01:26,160

blog and my point is it's really an

1628

01:01:29,349 --> 01:01:27,200

important

1629

01:01:31,589 --> 01:01:29,359

thing to search for because we want to

1630

01:01:33,190 --> 01:01:31,599

figure out if there is something smarter

1631

01:01:35,349 --> 01:01:33,200

than us out there

1632

01:01:37,430 --> 01:01:35,359

and i guess what you're kind of saying

1633

01:01:38,710 --> 01:01:37,440

is the

1634

01:01:42,870 --> 01:01:38,720

if you

1635

01:01:44,710 --> 01:01:42,880

um that yeah that just changes the face

1636

01:01:46,230 --> 01:01:44,720

of our reality and our relationships

1637

01:01:49,589 --> 01:01:46,240

together that's changes everything and

1638

01:01:51,349 --> 01:01:49,599

in my book i talk about uh omua's wager

1639

01:01:54,549 --> 01:01:51,359

i basically say

1640

01:01:56,470 --> 01:01:54,559

um you know that uh the the this

1641

01:01:58,470 --> 01:01:56,480

question is so important has such big

1642

01:01:59,270 --> 01:01:58,480

implications that we cannot just dismiss

1643

01:02:04,630 --> 01:01:59,280

it

1644

01:02:06,309 --> 01:02:04,640

we we've been trying to find stuff

1645

01:02:07,750 --> 01:02:06,319

haven't we throughout the past and all

1646

01:02:10,309 --> 01:02:07,760

these different projects that the

1647

01:02:12,870 --> 01:02:10,319

government's had or colorado or

1648

01:02:14,789 --> 01:02:12,880

whatever but we never had a group of

1649

01:02:17,510 --> 01:02:14,799

scientists come together

1650

01:02:19,270 --> 01:02:17,520

uh use the you know astronomers use the

1651
01:02:20,870 --> 01:02:19,280
best instruments that we have right now

1652
01:02:22,230 --> 01:02:20,880
which were not available let's say 20

1653
01:02:24,390 --> 01:02:22,240
years ago

1654
01:02:25,750 --> 01:02:24,400
and approach the subject scientifically

1655
01:02:28,230 --> 01:02:25,760
the way we are trying to do in the

1656
01:02:29,910 --> 01:02:28,240
galileo project so it's really new

1657
01:02:31,029 --> 01:02:29,920
and the reason it came to fruition is

1658
01:02:33,190 --> 01:02:31,039
because

1659
01:02:34,789 --> 01:02:33,200
a number of wealthy individuals came

1660
01:02:36,309 --> 01:02:34,799
forward and offered me two million

1661
01:02:38,710 --> 01:02:36,319
dollars you know that

1662
01:02:40,710 --> 01:02:38,720
if i had to rely on committees that are

1663
01:02:43,670 --> 01:02:40,720

populated by mainstream scientists to

1664

01:02:44,789 --> 01:02:43,680

find this research i wouldn't get funded

1665

01:02:46,950 --> 01:02:44,799

right

1666

01:02:49,270 --> 01:02:46,960

um well i think you're doing a fantastic

1667

01:02:51,589 --> 01:02:49,280

job is any of your equipment vulnerable

1668

01:02:53,910 --> 01:02:51,599

to anything um

1669

01:02:55,829 --> 01:02:53,920

you know uh this person in the chat asks

1670

01:02:58,470 --> 01:02:55,839

do you fear foreign

1671

01:03:02,549 --> 01:02:58,480

advisory attacking u.s satellites usa

1672

01:03:04,230 --> 01:03:02,559

satellites uh not really um okay so we

1673

01:03:06,630 --> 01:03:04,240

are using um

1674

01:03:08,549 --> 01:03:06,640

equipment like telescopes you know and

1675

01:03:09,670 --> 01:03:08,559

telescopes are being used by astronomers

1676

01:03:11,750 --> 01:03:09,680

all the time

1677

01:03:13,589 --> 01:03:11,760

uh the the only difference is that we

1678

01:03:15,430 --> 01:03:13,599

are using them in a special way we will

1679

01:03:17,430 --> 01:03:15,440

call you know the images that we get

1680

01:03:19,910 --> 01:03:17,440

will go through a camera that

1681

01:03:22,069 --> 01:03:19,920

uh sends them to a computer system that

1682

01:03:24,789 --> 01:03:22,079

will analyze the images and try to

1683

01:03:26,950 --> 01:03:24,799

figure out whether we see a drone a bird

1684

01:03:29,510 --> 01:03:26,960

or an airplane or something else

1685

01:03:31,589 --> 01:03:29,520

and then the telescope system will

1686

01:03:33,270 --> 01:03:31,599

uh track the object and we'll have

1687

01:03:34,710 --> 01:03:33,280

multiple telescopes looking at the

1688

01:03:36,870 --> 01:03:34,720

object from different directions so we

1689

01:03:39,190 --> 01:03:36,880

can figure out its

1690

01:03:40,870 --> 01:03:39,200

motion in three dimensions and all

1691

01:03:43,190 --> 01:03:40,880

together you know the kind of

1692

01:03:45,670 --> 01:03:43,200

instruments we will use are

1693

01:03:47,829 --> 01:03:45,680

you know are used for a special purpose

1694

01:03:49,750 --> 01:03:47,839

but they are themselves they are not

1695

01:03:52,150 --> 01:03:49,760

unusual um you know these are

1696

01:03:54,470 --> 01:03:52,160

off-the-shelf um instruments that we put

1697

01:03:56,829 --> 01:03:54,480

together in in a special way and for

1698

01:03:58,390 --> 01:03:56,839

that you know they will be a little

1699

01:04:00,630 --> 01:03:58,400

expensive uh

1700

01:04:02,789 --> 01:04:00,640

we can't really give it to citizens to

1701

01:04:04,950 --> 01:04:02,799

put in their backyard because each of

1702

01:04:07,510 --> 01:04:04,960

the telescope systems will will be quite

1703

01:04:08,390 --> 01:04:07,520

expensive and will take time to assemble

1704

01:04:10,230 --> 01:04:08,400

but

1705

01:04:12,069 --> 01:04:10,240

we have professional instrumentalists on

1706

01:04:14,230 --> 01:04:12,079

the research team i mean we have an

1707

01:04:15,990 --> 01:04:14,240

exceptional group of scientists and

1708

01:04:17,910 --> 01:04:16,000

every week we have a a lot of

1709

01:04:20,470 --> 01:04:17,920

discussions about you know how to

1710

01:04:23,430 --> 01:04:20,480

proceed and i i must say that it's going

1711

01:04:25,190 --> 01:04:23,440

extremely well actually uh so far we had

1712

01:04:26,390 --> 01:04:25,200

the month worth of

1713

01:04:28,870 --> 01:04:26,400

work together

1714

01:04:30,230 --> 01:04:28,880

wow have you been looking already or is

1715

01:04:32,309 --> 01:04:30,240

it still

1716

01:04:34,230 --> 01:04:32,319

ready to look what we are doing right

1717

01:04:36,309 --> 01:04:34,240

now is deciding about the instruments we

1718

01:04:39,349 --> 01:04:36,319

want to put together and then we are

1719

01:04:42,150 --> 01:04:39,359

just starting now to test some of these

1720

01:04:43,589 --> 01:04:42,160

instruments just starting and uh so we

1721

01:04:45,750 --> 01:04:43,599

are in the process of assembling

1722

01:04:47,990 --> 01:04:45,760

deciding about the shopping list

1723

01:04:50,230 --> 01:04:48,000

and then we will put those instruments

1724

01:04:52,549 --> 01:04:50,240

together we will test them and that will

1725

01:04:55,270 --> 01:04:52,559

take some months and eventually we'll

1726

01:04:57,349 --> 01:04:55,280

deploy them in uh appropriate locations

1727

01:04:59,270 --> 01:04:57,359

and start to collect data i very much

1728

01:05:01,589 --> 01:04:59,280

hope that this will be done within

1729

01:05:03,430 --> 01:05:01,599

within a year from now uh and we'll

1730

01:05:05,510 --> 01:05:03,440

start getting data and of course i'll be

1731

01:05:07,589 --> 01:05:05,520

glad to speak with you again if yeah

1732

01:05:10,390 --> 01:05:07,599

anything unusual and a million other

1733

01:05:11,910 --> 01:05:10,400

people in between

1734

01:05:13,910 --> 01:05:11,920

i'm just kidding

1735

01:05:16,150 --> 01:05:13,920

no you're i think you're doing fantastic

1736

01:05:18,150 --> 01:05:16,160

there's some questions in the chat i saw

1737

01:05:20,150 --> 01:05:18,160

on like i don't want to ask questions

1738

01:05:22,230 --> 01:05:20,160

that you can't answer and i'm

1739

01:05:24,069 --> 01:05:22,240

quiet enough to

1740

01:05:25,670 --> 01:05:24,079

well i just what that

1741

01:05:27,750 --> 01:05:25,680

you know like um

1742

01:05:28,870 --> 01:05:27,760

just don't have a whole lot of sense

1743

01:05:30,150 --> 01:05:28,880

because

1744

01:05:32,470 --> 01:05:30,160

you know like have you seen any

1745

01:05:35,430 --> 01:05:32,480

classified uab photos no you're not

1746

01:05:37,670 --> 01:05:35,440

gonna no no the point is i don't

1747

01:05:39,750 --> 01:05:37,680

i don't want to see that because it will

1748

01:05:42,549 --> 01:05:39,760

limit my freedom as a scientist to talk

1749

01:05:45,670 --> 01:05:42,559

about this subject so i actually prefer

1750

01:05:47,510 --> 01:05:45,680

not to see it no that's interesting so

1751

01:05:49,670 --> 01:05:47,520

what if you could just see the

1752

01:05:51,510 --> 01:05:49,680

classified stuff and i don't see that

1753

01:05:53,190 --> 01:05:51,520

there's nothing to it right away and you

1754

01:05:55,510 --> 01:05:53,200

could save time

1755

01:05:57,589 --> 01:05:55,520

no it's not done because then

1756

01:05:59,510 --> 01:05:57,599

the classified data may not have been

1757

01:06:00,950 --> 01:05:59,520

assembled by the best instruments you

1758

01:06:03,029 --> 01:06:00,960

see correct

1759

01:06:06,150 --> 01:06:03,039

so i want you know just like a kid i

1760

01:06:08,150 --> 01:06:06,160

want to figure it out for myself right

1761

01:06:10,630 --> 01:06:08,160

when you tell a kid what the truth is

1762

01:06:13,430 --> 01:06:10,640

the kid doesn't listen

1763

01:06:15,510 --> 01:06:13,440

so you know

1764

01:06:17,910 --> 01:06:15,520

i'm a little stubborn on this i want to

1765

01:06:19,829 --> 01:06:17,920

figure it out for myself and you know we

1766

01:06:23,109 --> 01:06:19,839

have instruments that

1767

01:06:25,430 --> 01:06:23,119

the military didn't have two decades ago

1768

01:06:26,710 --> 01:06:25,440

so we can do a better job so i don't

1769

01:06:29,190 --> 01:06:26,720

want to see

1770

01:06:31,670 --> 01:06:29,200

uh classified data

1771

01:06:34,230 --> 01:06:31,680

you know that has fuzzy images i want to

1772

01:06:37,029 --> 01:06:34,240

get much better images now

1773

01:06:40,950 --> 01:06:37,039

oh what if they are 23 minute long

1774

01:06:42,870 --> 01:06:40,960

videos of stuff that would um shake you

1775

01:06:44,870 --> 01:06:42,880

like you know there's there's always

1776

01:06:47,430 --> 01:06:44,880

talk that there's

1777

01:06:50,150 --> 01:06:47,440

okay so it's a double-edged sword

1778

01:06:51,829 --> 01:06:50,160

because if you do have access to this

1779

01:06:53,190 --> 01:06:51,839

data you will not be allowed to talk

1780

01:06:56,309 --> 01:06:53,200

about it right

1781

01:06:57,750 --> 01:06:56,319

and then if i were to get my data

1782

01:06:59,349 --> 01:06:57,760

independently

1783

01:07:01,109 --> 01:06:59,359

you know obviously the government would

1784

01:07:03,430 --> 01:07:01,119

be concerned that

1785

01:07:05,270 --> 01:07:03,440

i might release some of the information

1786

01:07:07,670 --> 01:07:05,280

in the back of my mind that even even

1787

01:07:10,230 --> 01:07:07,680

though i'm not talking about their video

1788

01:07:12,710 --> 01:07:10,240

so i prefer not to know about it you see

1789

01:07:14,870 --> 01:07:12,720

because it would limit my ability to act

1790

01:07:16,789 --> 01:07:14,880

freely as a scientist yeah then you have

1791

01:07:19,109 --> 01:07:16,799

to worry about wait is it can i do this

1792

01:07:21,109 --> 01:07:19,119

can i show okay yeah and

1793

01:07:22,950 --> 01:07:21,119

without that you can just do your thing

1794

01:07:23,910 --> 01:07:22,960

exactly exactly

1795

01:07:25,670 --> 01:07:23,920

awesome

1796

01:07:27,349 --> 01:07:25,680

um

1797

01:07:29,750 --> 01:07:27,359

anything you want to touch on before we

1798

01:07:32,230 --> 01:07:29,760

get out of here i mean yeah

1799

01:07:34,230 --> 01:07:32,240

and i'd like to say that i'm doing

1800

01:07:35,990 --> 01:07:34,240

everything i'm doing is for the younger

1801
01:07:40,630 --> 01:07:36,000
generation

1802
01:07:46,150 --> 01:07:45,029
open for uh scientific inquiry uh by the

1803
01:07:47,829 --> 01:07:46,160
young

1804
01:07:49,750 --> 01:07:47,839
generation of today so that they can go

1805
01:07:51,430 --> 01:07:49,760
into academia and become scientists and

1806
01:07:54,230 --> 01:07:51,440
explore it in a way that is not

1807
01:07:57,109 --> 01:07:54,240
stigmatized you know when i was young at

1808
01:07:59,430 --> 01:07:57,119
age 18 i uh

1809
01:08:00,630 --> 01:07:59,440
went to the military and i remember

1810
01:08:02,470 --> 01:08:00,640
saying

1811
01:08:04,549 --> 01:08:02,480
that sometimes the soldier needs to put

1812
01:08:06,710 --> 01:08:04,559
his body on the barbed wire so that

1813
01:08:09,270 --> 01:08:06,720

others can pass through and that's the

1814

01:08:11,510 --> 01:08:09,280

way i see my role it's not about me it's

1815

01:08:13,910 --> 01:08:11,520

about me allowing

1816

01:08:15,670 --> 01:08:13,920

uh the discussion to be open on this

1817

01:08:18,309 --> 01:08:15,680

subject and the discussion should be

1818

01:08:20,470 --> 01:08:18,319

based on evidence not on prejudice and

1819

01:08:22,950 --> 01:08:20,480

it ha it's too important for the future

1820

01:08:25,910 --> 01:08:22,960

of humanity for us to ignore it and

1821

01:08:29,110 --> 01:08:25,920

ridicule it so my message is for the

1822

01:08:30,630 --> 01:08:29,120

young people uh maintain your childhood

1823

01:08:32,950 --> 01:08:30,640

curiosity and

1824

01:08:35,349 --> 01:08:32,960

never lose that curiosity in the face of

1825

01:08:37,030 --> 01:08:35,359

becoming an adult

1826
01:08:38,470 --> 01:08:37,040
well thank you for that clip because i'm

1827
01:08:40,870 --> 01:08:38,480
chopping that up and putting it on

1828
01:08:42,149 --> 01:08:40,880
twitter asap

1829
01:08:45,910 --> 01:08:42,159
that was great

1830
01:08:48,470 --> 01:08:45,920
um yeah um you're sacrificing a lot

1831
01:08:51,030 --> 01:08:48,480
in hopes to create a better future and

1832
01:08:52,870 --> 01:08:51,040
you know people like that are rare and

1833
01:08:54,630 --> 01:08:52,880
i'm grateful that they exist and that i

1834
01:08:56,709 --> 01:08:54,640
got to speak with you so thank you so

1835
01:08:58,789 --> 01:08:56,719
much for stopping by professor thanks

1836
01:09:00,789 --> 01:08:58,799
for inviting me yeah you have a great

1837
01:09:03,269 --> 01:09:00,799
rest of the day anything you need i

1838
01:09:04,870 --> 01:09:03,279

don't know what it'd be but i'm here

1839

01:09:07,910 --> 01:09:04,880

just time more time that's what they

1840

01:09:12,550 --> 01:09:07,920

need all right we'll work on it we'll

1841

01:09:18,470 --> 01:09:15,910

all right that was a great talk with mr

1842

01:09:21,669 --> 01:09:18,480

loeb so um i appreciate you guys joining

1843

01:09:24,070 --> 01:09:21,679

me um we have uh the big phone home

1844

01:09:27,269 --> 01:09:24,080

still going on so go over there

1845

01:09:28,870 --> 01:09:27,279

and check that out make sure you're um

1846

01:09:30,070 --> 01:09:28,880

you know making yourself known saint

1847

01:09:32,550 --> 01:09:30,080

what's up

1848

01:09:36,470 --> 01:09:34,390

you know just giving them support

1849

01:09:39,030 --> 01:09:36,480

because whether you agree with certain

1850

01:09:43,110 --> 01:09:39,040

things they say or not or whatever like

1851
01:09:45,669 --> 01:09:43,120
in context ucr has been they're doing 24

1852
01:09:49,189 --> 01:09:45,679
hours

1853
01:09:50,070 --> 01:09:49,199
of talking in three days um and that is

1854
01:09:53,269 --> 01:09:50,080
just

1855
01:09:55,750 --> 01:09:53,279
amazing um and that is sacrifice because

1856
01:09:57,910 --> 01:09:55,760
they all have lives and they're not

1857
01:10:00,229 --> 01:09:57,920
um able to

1858
01:10:01,189 --> 01:10:00,239
you know pay car payments and house

1859
01:10:04,149 --> 01:10:01,199
bills

1860
01:10:07,590 --> 01:10:04,159
off of that stuff they're doing this for

1861
01:10:09,669 --> 01:10:07,600
a purpose just like professor loeb is um

1862
01:10:11,910 --> 01:10:09,679
these are great people out there

1863
01:10:13,590 --> 01:10:11,920

sacrificing things

1864

01:10:15,189 --> 01:10:13,600

and i'm grateful to be around it because

1865

01:10:17,590 --> 01:10:15,199

that's the kind of thing that motivates

1866

01:10:19,510 --> 01:10:17,600

me to do more

1867

01:10:21,590 --> 01:10:19,520

knowing that other people are and i want

1868

01:10:23,270 --> 01:10:21,600

to help them so

1869

01:10:25,110 --> 01:10:23,280

yeah

1870

01:10:27,510 --> 01:10:25,120

it was a great day today great two

1871

01:10:30,149 --> 01:10:27,520

interviews don't forget invisible night

1872

01:10:31,910 --> 01:10:30,159

night school

1873

01:10:34,709 --> 01:10:31,920

night college i forget

1874

01:10:36,229 --> 01:10:34,719

but uh the another great guy

1875

01:10:38,070 --> 01:10:36,239

who is a skeptic

1876

01:10:39,030 --> 01:10:38,080

and

1877

01:10:40,550 --> 01:10:39,040

turned

1878

01:10:42,390 --> 01:10:40,560

based off of the case he's working on

1879

01:10:44,790 --> 01:10:42,400

now so go check it out

1880

01:10:48,630 --> 01:10:44,800

um yeah

1881

01:10:52,149 --> 01:10:51,270

i really appreciate you guys hanging out

1882

01:10:54,870 --> 01:10:52,159

so

1883

01:10:56,830 --> 01:10:54,880

thanks spaghetti appreciate you megan

1884

01:11:00,790 --> 01:10:56,840

scott ben

1885

01:11:02,470 --> 01:11:00,800

um everybody babin gage

1886

01:11:06,229 --> 01:11:02,480

i appreciate yeah i tried to get to some

1887

01:11:06,620 --> 01:11:06,239

questions um the best i could so

1888

01:11:08,229 --> 01:11:06,630

um

1889

01:11:10,390 --> 01:11:08,239

[Music]

1890

01:11:12,390 --> 01:11:10,400

hopefully i did all right for you now

1891

01:11:14,870 --> 01:11:12,400

that being said i'm

1892

01:11:18,310 --> 01:11:14,880

going away for the rest of the week

1893

01:11:23,430 --> 01:11:21,990

a very historical spot in regards to

1894

01:11:25,350 --> 01:11:23,440

uaps

1895

01:11:26,390 --> 01:11:25,360

and ufos

1896

01:11:29,750 --> 01:11:26,400

um

1897

01:11:33,270 --> 01:11:29,760

possible

1898

01:11:35,189 --> 01:11:33,280

and bring something back to show you so

1899

01:11:37,350 --> 01:11:35,199

but i do have plenty

1900

01:11:39,110 --> 01:11:37,360

of stuff for you to catch up on 150

1901

01:11:42,550 --> 01:11:39,120

episodes

1902

01:11:43,350 --> 01:11:42,560

so oh man dude holy cow that is way too

1903

01:11:45,430 --> 01:11:43,360

nice

1904

01:11:47,990 --> 01:11:45,440

thank you very much

1905

01:11:50,550 --> 01:11:48,000

that's for the vacation

1906

01:11:53,270 --> 01:11:50,560

super nice of you thank you um yeah have

1907

01:11:55,110 --> 01:11:53,280

a great week guys

1908

01:11:56,470 --> 01:11:55,120

and

1909

01:11:58,390 --> 01:11:56,480

yeah we'll be in touch maybe i'll do

1910

01:12:00,950 --> 01:11:58,400

some like instagram lives or something

1911

01:12:02,630 --> 01:12:00,960

here there or whatever i don't know but

1912

01:12:03,510 --> 01:12:02,640

keep in touch in order to get at me

1913

01:12:07,110 --> 01:12:03,520

peace

1914

01:12:12,070 --> 01:12:09,590

all that stuff and when i get back from

1915

01:12:21,310 --> 01:12:12,080

catalina island i'll let you know i went