

JANUARY 7, 2019
7 PM PT / 10 PM ET LIVE BROADCAST

ISAAC ARTHUR
SCIENCE & FUTURISM

Ep. 973
F2B
WITH JIMMY CHURCH



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1
00:00:17,189 --> 00:00:14,230

[Music]

2
00:00:20,070 --> 00:00:17,199

the smoke radio for the masses headline

3
00:00:21,910 --> 00:00:20,080

edition july 8th 1947.

4
00:00:24,390 --> 00:00:21,920

the army air forces has announced that a

5
00:00:26,070 --> 00:00:24,400

flying disc has been found and is now in

6
00:00:28,790 --> 00:00:26,080

the possession of the army

7
00:00:30,790 --> 00:00:28,800

if the game is rigged change the game

8
00:00:33,670 --> 00:00:30,800

game changer

9
00:00:35,990 --> 00:00:33,680

i occasionally think how quickly

10
00:00:37,350 --> 00:00:36,000

our differences worldwide

11
00:00:40,069 --> 00:00:37,360

would vanish

12
00:00:43,410 --> 00:00:40,079

if we were facing an alien threat from

13
00:00:46,229 --> 00:00:43,420

outside this world

14

00:00:49,029 --> 00:00:46,239

[Applause]

15

00:00:51,670 --> 00:00:49,039

this is fade to black with your host

16

00:00:54,869 --> 00:00:51,680

jimmy church on the game changer radio

17

00:00:58,549 --> 00:00:54,879

network and kgra the global radio

18

00:01:03,840 --> 00:01:00,709

i need your help to get to the year

19

00:01:09,670 --> 00:01:07,590

[Music]

20

00:01:12,630 --> 00:01:09,680

you're listening to fate to black with

21

00:01:16,149 --> 00:01:12,640

jimmy judge on the game changer network

22

00:01:18,170 --> 00:01:16,159

[Music]

23

00:01:20,630 --> 00:01:18,180

good evening fade to black

24

00:01:24,830 --> 00:01:20,640

[Music]

25

00:01:31,390 --> 00:01:28,230

4. the

26

00:01:31,400 --> 00:01:35,190

[Music]

27

00:01:38,230 --> 00:01:37,350

yeah it gets longer every night doesn't

28

00:01:42,310 --> 00:01:38,240

it

29

00:01:49,830 --> 00:01:44,789

i love frank zappa today's monday

30

00:01:53,469 --> 00:01:50,950

just

31

00:01:57,429 --> 00:01:53,479

seven days into the new year

32

00:02:04,069 --> 00:02:01,670

as always we are live from a bunker

33

00:02:05,990 --> 00:02:04,079

somewhere in the middle of beautiful

34

00:02:07,590 --> 00:02:06,000

downtown burbank california and i would

35

00:02:09,029 --> 00:02:07,600

like to welcome everybody listening all

36

00:02:12,949 --> 00:02:09,039

around the world

37

00:02:15,830 --> 00:02:12,959

all across the united states

38

00:02:18,390 --> 00:02:15,840

hither and tether to and fro back and

39

00:02:20,949 --> 00:02:18,400

forth up and down east and west north

40

00:02:24,470 --> 00:02:20,959

and south

41

00:02:32,070 --> 00:02:27,430

this is fade to black for kjcr the game

42

00:02:33,990 --> 00:02:32,080

changer network and kgra the planets

43

00:02:37,190 --> 00:02:34,000

i am your host jimmy church what is

44

00:02:39,270 --> 00:02:37,200

cracking everybody how you doing

45

00:02:41,509 --> 00:02:39,280

how you doing

46

00:02:43,990 --> 00:02:41,519

all right

47

00:02:46,229 --> 00:02:44,000

2019

48

00:02:49,030 --> 00:02:46,239

lays out in front of us and we've got

49

00:02:52,150 --> 00:02:49,040

our sights laser focused

50

00:02:54,150 --> 00:02:52,160

on 2019

51
00:02:56,390 --> 00:02:54,160
tonight

52
00:02:58,710 --> 00:02:56,400
been looking forward to this show

53
00:03:00,710 --> 00:02:58,720
for a few years now

54
00:03:02,630 --> 00:03:00,720
isaac arthur

55
00:03:04,869 --> 00:03:02,640
is finally here

56
00:03:06,390 --> 00:03:04,879
and tonight we're going to discuss alien

57
00:03:08,550 --> 00:03:06,400
technology

58
00:03:10,630 --> 00:03:08,560
we're going to discuss faster than light

59
00:03:12,390 --> 00:03:10,640
space travel we're going to talk about

60
00:03:14,630 --> 00:03:12,400
et contact

61
00:03:15,990 --> 00:03:14,640
and with isaac now that's just like

62
00:03:17,990 --> 00:03:16,000
three things i'm laying out there on the

63
00:03:20,309 --> 00:03:18,000

table with isaac and if you're familiar

64

00:03:23,670 --> 00:03:20,319

with isaac you know that we can go in

65

00:03:25,589 --> 00:03:23,680

any direction uh tonight and most likely

66

00:03:26,869 --> 00:03:25,599

we will now if i can get these three

67

00:03:29,750 --> 00:03:26,879

subjects in

68

00:03:31,190 --> 00:03:29,760

uh with isaac uh we're all winners and

69

00:03:33,430 --> 00:03:31,200

i'm gonna knock this one out of the park

70

00:03:34,470 --> 00:03:33,440

tonight with all of you but

71

00:03:36,710 --> 00:03:34,480

isaac

72

00:03:37,670 --> 00:03:36,720

is one of the brightest one of the best

73

00:03:40,390 --> 00:03:37,680

and

74

00:03:42,149 --> 00:03:40,400

since the very beginning of his

75

00:03:43,350 --> 00:03:42,159

presentations

76

00:03:44,309 --> 00:03:43,360

he had me

77

00:03:45,190 --> 00:03:44,319

and

78

00:03:47,670 --> 00:03:45,200

uh

79

00:03:50,309 --> 00:03:47,680

rita has endured

80

00:03:51,990 --> 00:03:50,319

isaac over the years many many many

81

00:03:54,630 --> 00:03:52,000

nights many

82

00:03:55,509 --> 00:03:54,640

repeats i just go back and i listen to

83

00:03:57,990 --> 00:03:55,519

him

84

00:04:02,550 --> 00:03:58,000

over and over again

85

00:04:04,390 --> 00:04:02,560

and my favorite way of of uh

86

00:04:06,949 --> 00:04:04,400

his his material

87

00:04:08,869 --> 00:04:06,959

is i listen to it in the dark without

88

00:04:10,789 --> 00:04:08,879

the visuals i i've got you know i go

89

00:04:14,309 --> 00:04:10,799

back and i watch him

90

00:04:17,270 --> 00:04:14,319

but i really absorb his stuff when i

91

00:04:20,710 --> 00:04:17,280

just listen to it he is absolutely

92

00:04:22,310 --> 00:04:20,720

amazing and just look forward uh to this

93

00:04:23,510 --> 00:04:22,320

tonight and this is going to be one of

94

00:04:24,710 --> 00:04:23,520

those shows you're going to listen to

95

00:04:25,909 --> 00:04:24,720

over and over again we're going to have

96

00:04:28,469 --> 00:04:25,919

isaac on

97

00:04:31,749 --> 00:04:28,479

uh again very soon because there's other

98

00:04:34,150 --> 00:04:31,759

subjects uh that we need to uh get into

99

00:04:35,590 --> 00:04:34,160

and get into rather deeply and he is the

100

00:04:37,909 --> 00:04:35,600

absolute best

101
00:04:39,110 --> 00:04:37,919
and now i am sure that tonight on the

102
00:04:41,590 --> 00:04:39,120
show

103
00:04:42,950 --> 00:04:41,600
as you listen to arthur and i talk

104
00:04:44,710 --> 00:04:42,960
and have our conversation where you're

105
00:04:47,270 --> 00:04:44,720
gonna go oh

106
00:04:48,390 --> 00:04:47,280
that's where jimmy is getting this

107
00:04:52,150 --> 00:04:48,400
oh

108
00:04:53,830 --> 00:04:52,160
i get well yeah okay um i listen to

109
00:04:56,790 --> 00:04:53,840
isaac a lot

110
00:04:57,830 --> 00:04:56,800
but the other thing that i enjoy about

111
00:04:58,950 --> 00:04:57,840
isaac

112
00:05:02,310 --> 00:04:58,960
is that

113
00:05:04,710 --> 00:05:02,320

the first time that i listened to him

114

00:05:06,870 --> 00:05:04,720

and and if you go back to uh fade to

115

00:05:09,029 --> 00:05:06,880

black you know you go back years ago and

116

00:05:11,270 --> 00:05:09,039

and the things that i presented and

117

00:05:13,110 --> 00:05:11,280

where my mind was going

118

00:05:15,189 --> 00:05:13,120

you know that's and i was always in

119

00:05:17,510 --> 00:05:15,199

search of right well i found isaac and

120

00:05:18,710 --> 00:05:17,520

i'm listening to him like this this guy

121

00:05:21,189 --> 00:05:18,720

gets it

122

00:05:23,830 --> 00:05:21,199

he gets me right

123

00:05:26,230 --> 00:05:23,840

this is what i enjoy this is right on

124

00:05:27,909 --> 00:05:26,240

this is perfect well that's what's gonna

125

00:05:29,990 --> 00:05:27,919

happen tonight

126

00:05:32,310 --> 00:05:30,000

and i'm i'm really looking forward to

127

00:05:34,469 --> 00:05:32,320

this all right now tomorrow night now

128

00:05:36,710 --> 00:05:34,479

talk about an amazing week here on fade

129

00:05:40,150 --> 00:05:36,720

to black tomorrow night another first

130

00:05:43,430 --> 00:05:40,160

time guest carolyn ford is here that's

131

00:05:46,550 --> 00:05:43,440

right the guardian of einstein the

132

00:05:48,469 --> 00:05:46,560

ancient crystal skull of consciousness

133

00:05:49,909 --> 00:05:48,479

that's right carolyn ford is with us

134

00:05:53,510 --> 00:05:49,919

tomorrow so we're going to do a full

135

00:05:56,710 --> 00:05:53,520

night of crystal skulls and uh everybody

136

00:06:01,110 --> 00:05:56,720

knows we've got a lot of

137

00:06:02,950 --> 00:06:01,120

crystal skulls and here's jose jose

138

00:06:05,590 --> 00:06:02,960

grew up

139

00:06:07,990 --> 00:06:05,600

sitting next to einstein

140

00:06:09,670 --> 00:06:08,000

and i was talking to carolyn and uh

141

00:06:12,629 --> 00:06:09,680

about about jose

142

00:06:15,029 --> 00:06:12,639

jose jose is you know he got energized

143

00:06:16,950 --> 00:06:15,039

from einstein i said i know

144

00:06:19,029 --> 00:06:16,960

and that's what we're gonna do tomorrow

145

00:06:21,270 --> 00:06:19,039

night and i got all kinds of little

146

00:06:23,749 --> 00:06:21,280

crystal skulls in here there's another

147

00:06:26,710 --> 00:06:23,759

one right there that one's real cool

148

00:06:28,790 --> 00:06:26,720

and then i got my my little cruiser dude

149

00:06:32,390 --> 00:06:28,800

a little cruiser

150

00:06:35,670 --> 00:06:32,400

and of course

151

00:06:38,469 --> 00:06:35,680

skull vodka skull vodka bottle in the

152

00:06:39,350 --> 00:06:38,479

studio i got the big ones down

153

00:06:44,150 --> 00:06:39,360

uh

154

00:06:46,710 --> 00:06:44,160

there i should bring out the

155

00:06:48,950 --> 00:06:46,720

the big crystal skull vodka okay all

156

00:06:50,550 --> 00:06:48,960

right so that's um where am i at that's

157

00:06:53,670 --> 00:06:50,560

tomorrow night

158

00:06:56,870 --> 00:06:53,680

wednesday night david wilcock

159

00:07:00,309 --> 00:06:56,880

is back and we are going to discuss what

160

00:07:03,830 --> 00:07:00,319

is ahead for us in 2019

161

00:07:05,830 --> 00:07:03,840

very important show an amazing week that

162

00:07:08,390 --> 00:07:05,840

we've got here and of course thursday

163

00:07:09,830 --> 00:07:08,400

night is fader night teresa inaris is

164

00:07:12,469 --> 00:07:09,840

going to be here divine frequency on the

165

00:07:14,790 --> 00:07:12,479

airwaves and of course followed by open

166

00:07:17,510 --> 00:07:14,800

lines all night long now don't forget to

167

00:07:19,670 --> 00:07:17,520

head over to jimmychurchradio.com where

168

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

you can follow like and subscribe of

169

00:07:23,589 --> 00:07:21,199

course there is i'm stellar on

170

00:07:25,830 --> 00:07:23,599

stellar.com twitter you can follow me

171

00:07:28,390 --> 00:07:25,840

there at j church radio

172

00:07:30,390 --> 00:07:28,400

facebook gb church radio is right over

173

00:07:32,150 --> 00:07:30,400

there and of course youtube

174

00:07:34,230 --> 00:07:32,160

and hello to everybody out there that

175

00:07:37,670 --> 00:07:34,240

happens to be watching it it's kind of

176

00:07:40,469 --> 00:07:37,680

weird for me um radio

177

00:07:42,550 --> 00:07:40,479

is something that is is a one-on-one

178

00:07:45,029 --> 00:07:42,560

thing you know there was no video right

179

00:07:47,830 --> 00:07:45,039

there was never video and you were able

180

00:07:49,670 --> 00:07:47,840

to as a broadcaster and as a host you

181

00:07:52,790 --> 00:07:49,680

just did your own thing right your

182

00:07:53,830 --> 00:07:52,800

imagination is going today you know now

183

00:07:56,629 --> 00:07:53,840

we've got

184

00:07:59,670 --> 00:07:56,639

cameras in the studio and it's just not

185

00:08:01,909 --> 00:07:59,680

the same thing but there you go so it's

186

00:08:04,150 --> 00:08:01,919

it's like radio and television so every

187

00:08:05,670 --> 00:08:04,160

night i have to wear a clean shirt i

188

00:08:08,629 --> 00:08:05,680

have to shave

189

00:08:10,469 --> 00:08:08,639

right i have to comb my hair

190

00:08:13,110 --> 00:08:10,479

but back in the day

191

00:08:16,950 --> 00:08:13,120

right you could just show up wearing

192

00:08:19,110 --> 00:08:16,960

shorts and wear the same ac dc t-shirt

193

00:08:21,029 --> 00:08:19,120

your ozzy blizzard device t-shirt you

194

00:08:23,270 --> 00:08:21,039

can wear it seven days in a row nobody's

195

00:08:25,589 --> 00:08:23,280

gonna know nobody's gonna know if you've

196

00:08:27,589 --> 00:08:25,599

shaved or not but it's not that kind of

197

00:08:29,990 --> 00:08:27,599

party anymore but hello everybody out

198

00:08:32,469 --> 00:08:30,000

there all right uh hashtag f2b on

199

00:08:33,269 --> 00:08:32,479

twitter is where we hang out each night

200

00:08:36,790 --> 00:08:33,279

and

201
00:08:39,110 --> 00:08:36,800
questions or comments during tonight's

202
00:08:41,670 --> 00:08:39,120
show or any other show by the way

203
00:08:44,550 --> 00:08:41,680
just use hashtag f2bq tonight with isaac

204
00:08:47,670 --> 00:08:44,560
arthur you're gonna have questions

205
00:08:49,829 --> 00:08:47,680
and it is absolutely imperative that you

206
00:08:53,030 --> 00:08:49,839
post them up on

207
00:08:55,350 --> 00:08:53,040
f2bq on twitter okay and i will get to

208
00:08:57,949 --> 00:08:55,360
them all i always do you can also email

209
00:09:03,190 --> 00:09:00,070
jimmychurchradio.com all right

210
00:09:05,110 --> 00:09:03,200
i announced a couple of months ago

211
00:09:06,550 --> 00:09:05,120
that was about a month ago

212
00:09:09,509 --> 00:09:06,560
that come

213
00:09:12,070 --> 00:09:09,519

january 1st we would have

214

00:09:13,030 --> 00:09:12,080

our new website up now

215

00:09:22,790 --> 00:09:13,040

drew

216

00:09:25,509 --> 00:09:22,800

writing by the way

217

00:09:27,030 --> 00:09:25,519

this is an official release from drew

218

00:09:29,350 --> 00:09:27,040

the geek

219

00:09:31,670 --> 00:09:29,360

the jimmy church radio website is due

220

00:09:34,230 --> 00:09:31,680

for an overhaul and a new look

221

00:09:36,790 --> 00:09:34,240

to that end this week you may find some

222

00:09:38,389 --> 00:09:36,800

small glitches as i work on the cool

223

00:09:41,430 --> 00:09:38,399

geeky stuff on the back end of the

224

00:09:43,750 --> 00:09:41,440

website if all goes well the fader knot

225

00:09:46,550 --> 00:09:43,760

should have a new look by the end of

226

00:09:49,590 --> 00:09:46,560

this weekend the new site will have

227

00:09:53,509 --> 00:09:49,600

easier upgrades and signups more

228

00:09:57,590 --> 00:09:53,519

searchable archives faster load times

229

00:10:00,870 --> 00:09:57,600

and on site https

230

00:10:04,230 --> 00:10:00,880

premium chat for the bunker bacon bar

231

00:10:06,550 --> 00:10:04,240

and game changer and yes we will have a

232

00:10:09,910 --> 00:10:06,560

better way to make sure that game

233

00:10:12,310 --> 00:10:09,920

changers get their shirts and hats

234

00:10:13,670 --> 00:10:12,320

and then he follows that up with and

235

00:10:16,710 --> 00:10:13,680

maybe

236

00:10:18,870 --> 00:10:16,720

even a special blog by me

237

00:10:23,269 --> 00:10:18,880

to let you know about site updates

238

00:10:25,030 --> 00:10:23,279

changes and things to be aware of signed

239

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

drew

240

00:10:29,990 --> 00:10:26,000

ah

241

00:10:31,829 --> 00:10:30,000

drew do we have dancing girls

242

00:10:33,030 --> 00:10:31,839

you guys are too quick on twitter yeah i

243

00:10:34,630 --> 00:10:33,040

know right

244

00:10:36,230 --> 00:10:34,640

right that's

245

00:10:40,069 --> 00:10:36,240

drew says yes

246

00:10:41,509 --> 00:10:40,079

announcement came out today it was out

247

00:10:43,030 --> 00:10:41,519

under the radar with all the other

248

00:10:44,710 --> 00:10:43,040

political stuff that's going on and i

249

00:10:46,230 --> 00:10:44,720

don't do politics on the show i just

250

00:10:48,790 --> 00:10:46,240

don't do it i do the conspiracy of

251
00:10:51,030 --> 00:10:48,800
politics including this announcement

252
00:10:54,710 --> 00:10:51,040
today president trump

253
00:10:57,269 --> 00:10:54,720
is saying that washington and pyongyang

254
00:10:58,150 --> 00:10:57,279
have been in talks over the venue for

255
00:10:59,190 --> 00:10:58,160
his

256
00:11:03,670 --> 00:10:59,200
second

257
00:11:06,150 --> 00:11:03,680
leader

258
00:11:09,990 --> 00:11:06,160
kim fatty fat

259
00:11:13,350 --> 00:11:10,000
so there you go all right come join us

260
00:11:16,310 --> 00:11:13,360
for the 2019 conscious life expo

261
00:11:18,389 --> 00:11:16,320
right here in los angeles california at

262
00:11:21,030 --> 00:11:18,399
the lax hilton

263
00:11:23,670 --> 00:11:21,040

and it goes on from february 22nd

264

00:11:26,230 --> 00:11:23,680

through uh february 25th i can't believe

265

00:11:28,470 --> 00:11:26,240

it it's a month away

266

00:11:29,829 --> 00:11:28,480

such a huge huge

267

00:11:33,030 --> 00:11:29,839

fun event

268

00:11:35,750 --> 00:11:33,040

and again uh last year 10 000 people or

269

00:11:37,990 --> 00:11:35,760

15 000 through the doors

270

00:11:40,790 --> 00:11:38,000

over those three days think about that

271

00:11:42,550 --> 00:11:40,800

for a second it's massive it's great

272

00:11:43,829 --> 00:11:42,560

and come and hang out with us because

273

00:11:46,230 --> 00:11:43,839

this year we're going to be celebrating

274

00:11:49,190 --> 00:11:46,240

the 50th anniversary of chariots of the

275

00:11:51,590 --> 00:11:49,200

gods with eric von daniken i will be

276
00:11:54,310 --> 00:11:51,600
hosting the panel with eric linda molten

277
00:11:55,720 --> 00:11:54,320
howe jason martel billy carson rabbi

278
00:11:57,190 --> 00:11:55,730
ariel

279
00:11:59,910 --> 00:11:57,200
[Music]

280
00:12:02,310 --> 00:11:59,920
and of course myself and that will be

281
00:12:04,389 --> 00:12:02,320
friday night that is the

282
00:12:06,790 --> 00:12:04,399
the kino panel kickoff

283
00:12:08,550 --> 00:12:06,800
on friday evening and you've got to get

284
00:12:11,750 --> 00:12:08,560
your tickets for that that is a separate

285
00:12:13,750 --> 00:12:11,760
event and it will sell out george nori

286
00:12:17,910 --> 00:12:13,760
nasim haramine robert shock danny

287
00:12:23,269 --> 00:12:20,230
and another 50 speakers will be

288
00:12:25,230 --> 00:12:23,279

presenting at the 2019 conscious life

289

00:12:27,110 --> 00:12:25,240

expo just go to

290

00:12:29,750 --> 00:12:27,120

consciouslifeexpo.com for tickets and

291

00:12:34,069 --> 00:12:29,760

info and a full conference schedule

292

00:12:35,350 --> 00:12:34,079

and on top of that okay on top of that

293

00:12:37,030 --> 00:12:35,360

we have a banner over at

294

00:12:39,350 --> 00:12:37,040

jimmychurchradio.com

295

00:12:41,910 --> 00:12:39,360

click on that it'll take you straight

296

00:12:43,110 --> 00:12:41,920

there okay all right

297

00:12:46,790 --> 00:12:43,120

all right

298

00:12:50,790 --> 00:12:46,800

where am i at oh hoffman's optics

299

00:12:52,629 --> 00:12:50,800

hoffman's optics.com they build my night

300

00:12:56,069 --> 00:12:52,639

vision goggles right the jimmy church

301
00:12:58,629 --> 00:12:56,079
model yeah the deep blues

302
00:13:01,389 --> 00:12:58,639
and you can get your very own hoffman's

303
00:13:03,670 --> 00:13:01,399
optics.com click on the banner over at

304
00:13:06,470 --> 00:13:03,680
jimmychurchradio.com go and talk to alec

305
00:13:08,230 --> 00:13:06,480
kaufman the the best the best premium

306
00:13:09,350 --> 00:13:08,240
night vision goggles anywhere on the

307
00:13:11,670 --> 00:13:09,360
planet

308
00:13:13,670 --> 00:13:11,680
and uh alec

309
00:13:15,829 --> 00:13:13,680
is going to be with us on fade to black

310
00:13:17,910 --> 00:13:15,839
on monday at the beginning of the show

311
00:13:19,269 --> 00:13:17,920
to to talk about all the new products

312
00:13:21,269 --> 00:13:19,279
and what is going on over there at

313
00:13:23,750 --> 00:13:21,279

hoffman's optics so

314

00:13:25,509 --> 00:13:23,760

don't forget to check that out on monday

315

00:13:27,430 --> 00:13:25,519

and you can subscribe to our podcast

316

00:13:29,590 --> 00:13:27,440

it's just two dollars a month click on

317

00:13:30,949 --> 00:13:29,600

our podcast banner over on the website

318

00:13:32,230 --> 00:13:30,959

and also

319

00:13:34,389 --> 00:13:32,240

the fader not

320

00:13:35,949 --> 00:13:34,399

membership section become a fader not

321

00:13:38,150 --> 00:13:35,959

today and just go over to

322

00:13:40,150 --> 00:13:38,160

jimmychurchradio.com the new website

323

00:13:43,509 --> 00:13:40,160

we're rolling it out this week are you

324

00:13:45,269 --> 00:13:43,519

excited you excited i am

325

00:13:47,470 --> 00:13:45,279

it looks good and don't forget to visit

326

00:13:49,110 --> 00:13:47,480

all of our sponsors here at

327

00:13:50,550 --> 00:13:49,120

jimmychurchradio.com click on all of

328

00:13:54,150 --> 00:13:50,560

their banners

329

00:13:56,550 --> 00:13:54,160

ancient life oil life change tea river

330

00:13:58,310 --> 00:13:56,560

moon coffee the absolute best coffee in

331

00:13:59,910 --> 00:13:58,320

the world the best the best you know

332

00:14:01,350 --> 00:13:59,920

what i really

333

00:14:02,949 --> 00:14:01,360

i enjoy

334

00:14:06,389 --> 00:14:02,959

uh night vision

335

00:14:09,829 --> 00:14:06,399

night watches sky watches time travel

336

00:14:11,269 --> 00:14:09,839

uh the universe space all conspiracies

337

00:14:13,430 --> 00:14:11,279

and everything else but you know what i

338

00:14:15,269 --> 00:14:13,440

really enjoy you know what i really

339

00:14:18,550 --> 00:14:15,279

really enjoy

340

00:14:20,629 --> 00:14:18,560

i enjoy when i get that email church

341

00:14:21,990 --> 00:14:20,639

that fade to black blend you guys are

342

00:14:24,790 --> 00:14:22,000

selling

343

00:14:27,030 --> 00:14:24,800

you're not hyping it up enough man

344

00:14:29,189 --> 00:14:27,040

you're not hyping it up enough

345

00:14:31,430 --> 00:14:29,199

this is absolutely the best coffee in

346

00:14:32,470 --> 00:14:31,440

the world thank you well it it really

347

00:14:34,870 --> 00:14:32,480

really is

348

00:14:39,590 --> 00:14:34,880

it is the best so go get yourself some

349

00:14:42,949 --> 00:14:39,600

today all right f2b blend is uh the

350

00:14:45,030 --> 00:14:42,959

i think that's it is that it f2b blend

351
00:14:47,189 --> 00:14:45,040
i believe is what you use the promo code

352
00:14:49,910 --> 00:14:47,199
all right 15 off of your order okay

353
00:14:52,710 --> 00:14:49,920
let's get this show cracking

354
00:14:55,350 --> 00:14:52,720
happy birthday to today nicholas cage is

355
00:14:58,230 --> 00:14:55,360
55 years old and now aside from

356
00:15:01,750 --> 00:14:58,240
everything else that nicholas has done

357
00:15:04,470 --> 00:15:01,760
and uh honeymoon in vegas right

358
00:15:06,310 --> 00:15:04,480
yeah pretty good pretty good aside from

359
00:15:07,110 --> 00:15:06,320
all of that stuff especially the early

360
00:15:09,030 --> 00:15:07,120
stuff

361
00:15:10,949 --> 00:15:09,040
his first movie

362
00:15:12,310 --> 00:15:10,959
fast times at ridgemont high and i know

363
00:15:15,829 --> 00:15:12,320

you're gonna go wait a minute he's not

364

00:15:18,230 --> 00:15:15,839

in fast times at richmond high yes he is

365

00:15:19,110 --> 00:15:18,240

when they go into all-american burger

366

00:15:21,509 --> 00:15:19,120

right

367

00:15:23,189 --> 00:15:21,519

and they shot from the counter and they

368

00:15:24,949 --> 00:15:23,199

and there you can see the cooks in the

369

00:15:27,269 --> 00:15:24,959

back

370

00:15:28,470 --> 00:15:27,279

that's nick cage and he looks right at

371

00:15:29,829 --> 00:15:28,480

the camera

372

00:15:31,670 --> 00:15:29,839

and

373

00:15:33,030 --> 00:15:31,680

it's a young

374

00:15:34,870 --> 00:15:33,040

nick cage

375

00:15:37,030 --> 00:15:34,880

he's in uh he's in two scenes in the

376

00:15:39,590 --> 00:15:37,040

movie but uh there you go nicholas cage

377

00:15:43,110 --> 00:15:39,600

today is 55 years old

378

00:15:44,629 --> 00:15:43,120

and jeremy renner today is 48 the hurt

379

00:15:47,990 --> 00:15:44,639

locker and of course he plays hawkeye in

380

00:15:49,829 --> 00:15:48,000

the avengers and also one of the greats

381

00:15:51,030 --> 00:15:49,839

kenny loggins

382

00:15:54,629 --> 00:15:51,040

today

383

00:15:57,269 --> 00:15:54,639

is 71. kenny loggins wow

384

00:16:00,310 --> 00:15:57,279

that's incredible 71 years old on this

385

00:16:01,829 --> 00:16:00,320

day in history otd 1785

386

00:16:04,870 --> 00:16:01,839

it went down

387

00:16:08,470 --> 00:16:04,880

frenchman jean pierre blanchard and

388

00:16:09,509 --> 00:16:08,480

american john jeffries travel from dover

389

00:16:11,590 --> 00:16:09,519

england

390

00:16:14,069 --> 00:16:11,600

to calais france

391

00:16:17,030 --> 00:16:14,079

in a gas balloon

392

00:16:19,670 --> 00:16:17,040

becoming the first to cross the english

393

00:16:24,150 --> 00:16:19,680

channel by air

394

00:16:26,870 --> 00:16:24,160

that's a big day and it happened in 1785

395

00:16:29,590 --> 00:16:26,880

fader fact now look i i whip these facts

396

00:16:32,069 --> 00:16:29,600

out they're all vetted they're all real

397

00:16:33,590 --> 00:16:32,079

okay but but listen to this

398

00:16:36,949 --> 00:16:33,600

all right

399

00:16:38,470 --> 00:16:36,959

the 1980 us hockey team was playing the

400

00:16:41,430 --> 00:16:38,480

ussr

401
00:16:43,910 --> 00:16:41,440
in a pre-olympics exhibition

402
00:16:48,069 --> 00:16:43,920
it was revealed that during the game

403
00:16:49,590 --> 00:16:48,079
that a soviet player had a gun under his

404
00:16:51,110 --> 00:16:49,600
jersey

405
00:16:52,389 --> 00:16:51,120
the player

406
00:16:53,829 --> 00:16:52,399
air quotes

407
00:16:57,350 --> 00:16:53,839
the player

408
00:17:01,430 --> 00:16:57,360
was a kgb agent used to prevent players

409
00:17:04,309 --> 00:17:01,440
from defecting to the west

410
00:17:06,630 --> 00:17:04,319
that is your fader fact and you really

411
00:17:10,309 --> 00:17:06,640
need to think about

412
00:17:11,750 --> 00:17:10,319
oh my oh my and i guess

413
00:17:13,829 --> 00:17:11,760

it worked

414

00:17:15,029 --> 00:17:13,839

tonight very special guest isaac arthur

415

00:17:18,150 --> 00:17:15,039

is here i'm really looking forward to

416

00:17:19,909 --> 00:17:18,160

this conversation tonight and it he has

417

00:17:22,390 --> 00:17:19,919

a way of presenting technology and

418

00:17:24,309 --> 00:17:22,400

theories and ideas and physics

419

00:17:26,949 --> 00:17:24,319

and the universe in a way that we all

420

00:17:29,029 --> 00:17:26,959

can understand and certainly with with

421

00:17:30,549 --> 00:17:29,039

my brain i've been able to absorb it

422

00:17:32,470 --> 00:17:30,559

tonight get comfortable it's going to be

423

00:17:34,549 --> 00:17:32,480

one of those conversations tomorrow

424

00:17:36,950 --> 00:17:34,559

night caroline ford is here we're going

425

00:17:37,830 --> 00:17:36,960

to talk about einstein ancient crystal

426

00:17:40,310 --> 00:17:37,840

skull

427

00:17:41,430 --> 00:17:40,320

wednesday night david wilcock is going

428

00:17:44,070 --> 00:17:41,440

to be here now we're going to talk a

429

00:17:46,310 --> 00:17:44,080

little bit about 2018 and disclosure

430

00:17:47,990 --> 00:17:46,320

what what happened and what didn't right

431

00:17:51,029 --> 00:17:48,000

and then we're going to take a look

432

00:17:52,789 --> 00:17:51,039

forward ahead into 2019 and see what

433

00:17:54,950 --> 00:17:52,799

what's in store for our community right

434

00:17:57,270 --> 00:17:54,960

the great or the great awakening

435

00:17:59,029 --> 00:17:57,280

disclosure all of that on wednesday

436

00:18:02,070 --> 00:17:59,039

night thursday is another fader night

437

00:18:04,549 --> 00:18:02,080

with teresa inerras divine frequency on

438

00:18:07,029 --> 00:18:04,559

the airwaves open lines all night long

439

00:18:13,669 --> 00:18:07,039

all right let me hit this coffee

440

00:18:19,669 --> 00:18:16,150

the one thing

441

00:18:24,150 --> 00:18:19,679

if i've tried to

442

00:18:26,150 --> 00:18:24,160

get one thing into everybody's heads

443

00:18:29,350 --> 00:18:26,160

here on this show

444

00:18:31,909 --> 00:18:29,360

is the one thing that is it just

445

00:18:33,350 --> 00:18:31,919

absolutely blows my mind

446

00:18:36,150 --> 00:18:33,360

and that is how

447

00:18:38,310 --> 00:18:36,160

far we have come

448

00:18:41,110 --> 00:18:38,320

in understanding our universe

449

00:18:43,510 --> 00:18:41,120

in such a short period of time

450

00:18:45,590 --> 00:18:43,520

one of the things that i i talk about

451
00:18:48,630 --> 00:18:45,600
so much is that if somebody was born in

452
00:18:50,870 --> 00:18:48,640
1890 right lived 400 years

453
00:18:52,710 --> 00:18:50,880
not died in 1990 what

454
00:18:54,070 --> 00:18:52,720
the things that they would have seen in

455
00:18:57,190 --> 00:18:54,080
their lifetime

456
00:18:58,230 --> 00:18:57,200
going from you know uh horses horse and

457
00:19:03,029 --> 00:18:58,240
buggies

458
00:19:05,029 --> 00:19:03,039
right all the way through to van halen

459
00:19:07,190 --> 00:19:05,039
think about that and all of the

460
00:19:08,390 --> 00:19:07,200
technology that happened in the middle

461
00:19:11,110 --> 00:19:08,400
of all of that

462
00:19:13,270 --> 00:19:11,120
stereos television radio

463
00:19:16,390 --> 00:19:13,280

you know cars jets

464

00:19:17,750 --> 00:19:16,400

planes rockets apollo

465

00:19:19,430 --> 00:19:17,760

space travel

466

00:19:21,830 --> 00:19:19,440

right lasers

467

00:19:25,430 --> 00:19:21,840

and the internet

468

00:19:26,549 --> 00:19:25,440

i mean it's just nuts it's nuts

469

00:19:29,029 --> 00:19:26,559

and and

470

00:19:30,870 --> 00:19:29,039

and i appreciate that and when i look at

471

00:19:33,350 --> 00:19:30,880

somebody's date of birth and when they

472

00:19:34,630 --> 00:19:33,360

just think about what what they have

473

00:19:38,870 --> 00:19:34,640

seen

474

00:19:45,430 --> 00:19:43,270

it it doesn't even eclipse in my opinion

475

00:19:48,950 --> 00:19:45,440

what we have learned

476
00:19:48,960 --> 00:19:52,710
1995.

477
00:19:57,350 --> 00:19:55,669
the progress that we have made on a

478
00:20:00,549 --> 00:19:57,360
technical level

479
00:20:02,870 --> 00:20:00,559
not only with our civilian lives our

480
00:20:05,590 --> 00:20:02,880
consumer lives and the lives that we

481
00:20:07,669 --> 00:20:05,600
live every single day around us

482
00:20:08,950 --> 00:20:07,679
the advances

483
00:20:10,070 --> 00:20:08,960
have been

484
00:20:13,110 --> 00:20:10,080
just

485
00:20:15,510 --> 00:20:13,120
leapfrogging over each other and what we

486
00:20:17,510 --> 00:20:15,520
went through from 1995 to the year 2000

487
00:20:20,549 --> 00:20:17,520
one of the biggest technical explosions

488
00:20:22,230 --> 00:20:20,559

in the history of all of mankind

489

00:20:24,950 --> 00:20:22,240

and to go from

490

00:20:25,830 --> 00:20:24,960

tube televisions to flat screens to go

491

00:20:28,070 --> 00:20:25,840

from

492

00:20:30,710 --> 00:20:28,080

uh the internet of where the internet

493

00:20:32,070 --> 00:20:30,720

was in 1995 to what happened by the year

494

00:20:35,110 --> 00:20:32,080

2000

495

00:20:37,510 --> 00:20:35,120

and everything else cell phones crazy

496

00:20:39,830 --> 00:20:37,520

gps

497

00:20:42,470 --> 00:20:39,840

and i can just go on and on and on

498

00:20:44,070 --> 00:20:42,480

the technological achievements have been

499

00:20:46,789 --> 00:20:44,080

tremendous

500

00:20:48,950 --> 00:20:46,799

and that's around us that's what we know

501
00:20:53,990 --> 00:20:48,960
about

502
00:20:55,830 --> 00:20:54,000
our universe

503
00:20:58,870 --> 00:20:55,840
our galaxy

504
00:21:00,230 --> 00:20:58,880
dark energy dark matter the expansion of

505
00:21:01,110 --> 00:21:00,240
the universe

506
00:21:02,390 --> 00:21:01,120
right

507
00:21:04,310 --> 00:21:02,400
there has been

508
00:21:08,070 --> 00:21:04,320
so much learned

509
00:21:11,190 --> 00:21:08,080
that i now can look back at my own life

510
00:21:13,990 --> 00:21:11,200
just like i've looked back at others

511
00:21:15,270 --> 00:21:14,000
and go holy crap i lived through all of

512
00:21:16,630 --> 00:21:15,280
this

513
00:21:22,149 --> 00:21:16,640

i've seen it

514

00:21:23,110 --> 00:21:22,159

and it's incredible to me because i

515

00:21:24,789 --> 00:21:23,120

i

516

00:21:27,590 --> 00:21:24,799

can go back

517

00:21:30,230 --> 00:21:27,600

and think about

518

00:21:33,270 --> 00:21:30,240

how many planets that we knew about

519

00:21:37,350 --> 00:21:33,280

outside of our solar system in 1995

520

00:21:40,870 --> 00:21:38,470

two

521

00:21:42,470 --> 00:21:40,880

right

522

00:21:44,070 --> 00:21:42,480

think about that

523

00:21:46,470 --> 00:21:44,080

today

524

00:21:47,590 --> 00:21:46,480

the known planets is one thing five

525

00:21:51,110 --> 00:21:47,600

thousand

526
00:21:53,190 --> 00:21:51,120
are catalogued

527
00:21:55,830 --> 00:21:53,200
another five thousand that are

528
00:21:57,990 --> 00:21:55,840
registered and ready to go

529
00:22:01,029 --> 00:21:58,000
and another hundred billion in our

530
00:22:02,950 --> 00:22:01,039
galaxy 100 billion

531
00:22:04,390 --> 00:22:02,960
100 billion

532
00:22:06,310 --> 00:22:04,400
and i need

533
00:22:07,750 --> 00:22:06,320
that thought

534
00:22:10,470 --> 00:22:07,760
that very

535
00:22:12,870 --> 00:22:10,480
germ of an idea

536
00:22:15,830 --> 00:22:12,880
into everybody's heads

537
00:22:18,310 --> 00:22:15,840
think about that it doesn't get any more

538
00:22:20,870 --> 00:22:18,320

extraordinary more extreme

539

00:22:22,630 --> 00:22:20,880

you know and when we go back to galileo

540

00:22:24,470 --> 00:22:22,640

or copernicus

541

00:22:27,110 --> 00:22:24,480

and and their knowledge and how they

542

00:22:29,510 --> 00:22:27,120

were trying to piece this thing together

543

00:22:31,669 --> 00:22:29,520

with the sun and our solar system and

544

00:22:33,750 --> 00:22:31,679

they're noticing things out there and

545

00:22:37,110 --> 00:22:33,760

they're trying to figure it out right

546

00:22:41,590 --> 00:22:37,120

that that was big stuff

547

00:22:43,909 --> 00:22:41,600

what we know today blows that just

548

00:22:44,710 --> 00:22:43,919

that's where we are today

549

00:22:47,750 --> 00:22:44,720

so

550

00:22:50,950 --> 00:22:47,760

now let's take it to the next step

551
00:22:52,630 --> 00:22:50,960
how rare is life

552
00:22:56,070 --> 00:22:52,640
how rare is it

553
00:22:59,909 --> 00:22:56,080
because in our own lifetime going back

554
00:23:01,990 --> 00:22:59,919
just a short decade or two ago a short

555
00:23:04,230 --> 00:23:02,000
decade or two ago

556
00:23:07,669 --> 00:23:04,240
we were questioning things well you know

557
00:23:09,350 --> 00:23:07,679
how how special are we how unique are we

558
00:23:11,029 --> 00:23:09,360
we are we're seeing things in the skies

559
00:23:13,350 --> 00:23:11,039
and we've had visitations and we've seen

560
00:23:15,510 --> 00:23:13,360
things we've got roswell and randall

561
00:23:18,630 --> 00:23:15,520
shim and all these other events you know

562
00:23:20,390 --> 00:23:18,640
aztec sure right maury island we've got

563
00:23:22,870 --> 00:23:20,400

these things

564

00:23:25,350 --> 00:23:22,880

but how rare is life and that was the

565

00:23:28,149 --> 00:23:25,360

question that everybody now it's not

566

00:23:31,110 --> 00:23:28,159

we we've moved on from that because

567

00:23:33,830 --> 00:23:31,120

today it's not how rare is life it's

568

00:23:36,390 --> 00:23:33,840

just how much of it is out there how old

569

00:23:39,110 --> 00:23:36,400

is it how advanced is it

570

00:23:41,669 --> 00:23:39,120

right how much is there that's the other

571

00:23:44,549 --> 00:23:41,679

side and that's where we are today it

572

00:23:46,630 --> 00:23:44,559

all comes from one thing

573

00:23:48,630 --> 00:23:46,640

comes from one thing our knowledge of

574

00:23:52,470 --> 00:23:48,640

the universe

575

00:23:53,830 --> 00:23:52,480

and edwin hubble in 1925

576

00:23:57,909 --> 00:23:53,840

there was nothing

577

00:24:01,270 --> 00:23:57,919

the universe was our galaxy by 1929 we

578

00:24:04,390 --> 00:24:01,280

found a second galaxy and a third

579

00:24:06,630 --> 00:24:04,400

and started to think oh wait a minute we

580

00:24:08,149 --> 00:24:06,640

are not the universe the universe is oh

581

00:24:10,149 --> 00:24:08,159

oh oh oh

582

00:24:12,070 --> 00:24:10,159

to today

583

00:24:13,669 --> 00:24:12,080

because of the hubble telescope and what

584

00:24:15,430 --> 00:24:13,679

we understand what is really going on

585

00:24:19,830 --> 00:24:15,440

with our universe

586

00:24:22,710 --> 00:24:19,840

this is where my mind just goes

587

00:24:26,390 --> 00:24:22,720

it's it's unbelievably huge

588

00:24:27,669 --> 00:24:26,400

it's way beyond our wildest dreams and

589

00:24:30,070 --> 00:24:27,679

now today

590

00:24:32,310 --> 00:24:30,080

coupled with everything else now we are

591

00:24:34,230 --> 00:24:32,320

understanding the expansion of the

592

00:24:35,029 --> 00:24:34,240

visible universe

593

00:24:36,789 --> 00:24:35,039

why

594

00:24:39,190 --> 00:24:36,799

well i'm going to be talking to isaac

595

00:24:43,590 --> 00:24:39,200

about this here in a few minutes

596

00:24:45,830 --> 00:24:43,600

when now today one of the

597

00:24:48,549 --> 00:24:45,840

uh things that cosmologists and

598

00:24:51,909 --> 00:24:48,559

physicists are talking about now is the

599

00:24:53,830 --> 00:24:51,919

visible universe why

600

00:24:56,390 --> 00:24:53,840

faster than light

601
00:24:59,750 --> 00:24:56,400
now if the universe on its outer edges

602
00:25:02,310 --> 00:24:59,760
is expanding to the point where

603
00:25:03,669 --> 00:25:02,320
these galaxies and objects on the

604
00:25:07,029 --> 00:25:03,679
extreme

605
00:25:09,110 --> 00:25:07,039
edges of our visible universe are now

606
00:25:12,310 --> 00:25:09,120
surpassing the speed of light

607
00:25:13,430 --> 00:25:12,320
then once they go they are now ahead of

608
00:25:15,190 --> 00:25:13,440
light

609
00:25:16,470 --> 00:25:15,200
can't see him anymore they're still

610
00:25:18,549 --> 00:25:16,480
there

611
00:25:21,510 --> 00:25:18,559
but it's now traveling faster than the

612
00:25:24,789 --> 00:25:21,520
speed of light so our universe is only

613
00:25:26,710 --> 00:25:24,799

what we can see

614

00:25:28,230 --> 00:25:26,720

even theoretically

615

00:25:29,909 --> 00:25:28,240

see

616

00:25:33,510 --> 00:25:29,919

so think about that and that's where we

617

00:25:36,149 --> 00:25:33,520

are today isaac arthur presents

618

00:25:38,630 --> 00:25:36,159

in his video series

619

00:25:39,990 --> 00:25:38,640

not only all of these uh the physics

620

00:25:45,990 --> 00:25:40,000

side of this

621

00:25:47,269 --> 00:25:46,000

theoretical side and tying all of that

622

00:25:51,029 --> 00:25:47,279

into

623

00:25:54,789 --> 00:25:51,039

the et or alien contact question

624

00:25:56,950 --> 00:25:54,799

and the the fermi paradox and if life is

625

00:25:59,590 --> 00:25:56,960

out there what's the status of it not

626

00:26:02,310 --> 00:25:59,600

only visiting us but populating other

627

00:26:05,909 --> 00:26:02,320

celestial bodies and discovering other

628

00:26:07,830 --> 00:26:05,919

galaxies and and interstellar travel and

629

00:26:09,669 --> 00:26:07,840

how they would do it what these ships

630

00:26:12,630 --> 00:26:09,679

are like what the propulsion systems are

631

00:26:15,990 --> 00:26:12,640

like are they at war are they trading

632

00:26:17,990 --> 00:26:16,000

right and are they visiting here

633

00:26:20,070 --> 00:26:18,000

think about that for a second and when

634

00:26:23,669 --> 00:26:20,080

you have somebody on the show tonight

635

00:26:25,430 --> 00:26:23,679

like isaac goes back to the very fabric

636

00:26:27,510 --> 00:26:25,440

of what the show was about

637

00:26:30,789 --> 00:26:27,520

which is science

638

00:26:32,470 --> 00:26:30,799

and this show and our community are

639

00:26:35,590 --> 00:26:32,480

starting to cross

640

00:26:40,070 --> 00:26:35,600

we're starting to understand each other

641

00:26:43,350 --> 00:26:40,080

and the the conversation of not only et

642

00:26:46,230 --> 00:26:43,360

and ufos but mainstream and science is

643

00:26:49,110 --> 00:26:46,240

what is going on all over this planet

644

00:26:51,029 --> 00:26:49,120

and this this question of disclosure

645

00:26:52,630 --> 00:26:51,039

which we'll be talking to isaac about

646

00:26:55,750 --> 00:26:52,640

this in a few minutes this question of

647

00:26:58,789 --> 00:26:55,760

disclosure is getting closer and closer

648

00:27:01,590 --> 00:26:58,799

and closer just a few years ago it

649

00:27:05,190 --> 00:27:01,600

seemed uh unachievable it didn't seem

650

00:27:08,230 --> 00:27:05,200

like we were going to get there today

651

00:27:10,630 --> 00:27:08,240

everybody is talking about it

652

00:27:13,430 --> 00:27:10,640

it's the best part of what i do it's the

653

00:27:15,669 --> 00:27:13,440

best part when uh i'm i'm gonna get out

654

00:27:17,430 --> 00:27:15,679

of here so i can get arthur on here but

655

00:27:20,310 --> 00:27:17,440

this past weekend

656

00:27:23,110 --> 00:27:20,320

uh over on uh coast to coast i had tyler

657

00:27:25,190 --> 00:27:23,120

glockner on the show from secure team

658

00:27:25,990 --> 00:27:25,200

and and chad kalec

659

00:27:30,070 --> 00:27:26,000

and

660

00:27:32,310 --> 00:27:30,080

about this

661

00:27:34,549 --> 00:27:32,320

tyler's youtube channel

662

00:27:38,149 --> 00:27:34,559

you know 2 million subscribers it's just

663

00:27:41,190 --> 00:27:38,159

past it right chad kalec who not only

664

00:27:43,430 --> 00:27:41,200

has been a director of documentaries but

665

00:27:46,230 --> 00:27:43,440

also director and producer of uh

666

00:27:49,830 --> 00:27:46,240

television programming on the subject of

667

00:27:51,430 --> 00:27:49,840

the paranormal is now visiting the ufo

668

00:27:53,909 --> 00:27:51,440

subject too as well

669

00:27:56,470 --> 00:27:53,919

and this is a global audience this is a

670

00:27:58,070 --> 00:27:56,480

huge thing and it was an easy show to do

671

00:28:00,470 --> 00:27:58,080

and it was a show that

672

00:28:02,630 --> 00:28:00,480

the coast audience that is reaching back

673

00:28:05,430 --> 00:28:02,640

to me is like this is exactly where we

674

00:28:07,110 --> 00:28:05,440

are at this is exactly it you know art

675

00:28:09,190 --> 00:28:07,120

would have been proud

676

00:28:11,590 --> 00:28:09,200

and think about that all right so that's

677

00:28:14,230 --> 00:28:11,600

the show tonight that's where i'm at if

678

00:28:16,549 --> 00:28:14,240

we can just understand one thing

679

00:28:19,669 --> 00:28:16,559

is how much we have learned in the last

680

00:28:21,590 --> 00:28:19,679

20 years it's been an incredible ride

681

00:28:23,750 --> 00:28:21,600

this is fade to black i am your host

682

00:28:26,789 --> 00:28:23,760

jimmy church our guest tonight isaac

683

00:28:29,909 --> 00:28:26,799

arthur tomorrow night carolyn ford

684

00:28:32,870 --> 00:28:29,919

wednesday night david wilcock thursday

685

00:28:34,710 --> 00:28:32,880

night's fader night with teresa yanaris

686

00:28:36,149 --> 00:28:34,720

followed by open lines all night long

687

00:28:39,190 --> 00:28:36,159

i'm your host jimmy church follow me on

688

00:28:42,950 --> 00:28:39,200

twitter at j church radio we're on the

689

00:28:44,470 --> 00:28:42,960

game changer network and kgra

690

00:28:47,060 --> 00:28:44,480

the planet i'll be right back stay with

691

00:29:21,430 --> 00:28:47,070

us

692

00:29:23,669 --> 00:29:21,440

this is nicole church daughter of you

693

00:29:24,669 --> 00:29:23,679

know who and you're listening to fade to

694

00:29:26,310 --> 00:29:24,679

black on

695

00:29:30,070 --> 00:29:26,320

jimmychurchradio.com and the game

696

00:29:36,470 --> 00:29:32,389

you're listening to jimmy church fade to

697

00:29:48,789 --> 00:29:38,710

fate to black will now pause for alien

698

00:29:53,590 --> 00:29:50,950

when you take the beans from central

699

00:29:55,990 --> 00:29:53,600

america with dashes of indonesian and

700

00:29:59,190 --> 00:29:56,000

african mixed in and then roasted to the

701
00:30:01,669 --> 00:29:59,200
dark side of fade to black you create

702
00:30:04,630 --> 00:30:01,679
the ultimate brew of fringe

703
00:30:07,909 --> 00:30:04,640
introducing the fade to black blend from

704
00:30:10,710 --> 00:30:07,919
river moon coffee yes river moon's

705
00:30:13,510 --> 00:30:10,720
darkest customized roast was created for

706
00:30:16,149 --> 00:30:13,520
the love of fade to black

707
00:30:18,710 --> 00:30:16,159
the alchemy of masterful roasting and

708
00:30:22,310 --> 00:30:18,720
smoking the beans is in every sip of

709
00:30:25,269 --> 00:30:22,320
this full-bodied dark java i need my

710
00:30:27,510 --> 00:30:25,279
coffee doc deep with distinct

711
00:30:30,310 --> 00:30:27,520
bittersweet chocolate highlights just

712
00:30:32,870 --> 00:30:30,320
like the bunker leaning further into the

713
00:30:35,990 --> 00:30:32,880

darkness of the roast is fade to black

714

00:30:38,149 --> 00:30:36,000

blend from river moon coffee just click

715

00:30:41,830 --> 00:30:38,159

on the banner at jimmychurchradio.com

716

00:30:43,990 --> 00:30:41,840

and use the promo code f2b blend for 15

717

00:30:46,950 --> 00:30:44,000

off of your order today

718

00:30:48,710 --> 00:30:46,960

go back lee teppy

719

00:30:51,590 --> 00:30:48,720

this is jimmy church of fade to black

720

00:30:53,909 --> 00:30:51,600

and you can get our podcast for just two

721

00:30:56,230 --> 00:30:53,919

dollars per month all you have to do is

722

00:30:58,710 --> 00:30:56,240

click on the podcast banner over at

723

00:31:00,549 --> 00:30:58,720

jimmychurchradio.com

724

00:31:02,470 --> 00:31:00,559

hey folks guess what the number one

725

00:31:05,990 --> 00:31:02,480

phrase that life change t receives by

726

00:31:09,029 --> 00:31:06,000

email you ready we love this tea we love

727

00:31:11,510 --> 00:31:09,039

this tea time after time week after week

728

00:31:14,630 --> 00:31:11,520

we love this tea life change tea gives

729

00:31:17,190 --> 00:31:14,640

you more energy a beautiful cleansing

730

00:31:19,269 --> 00:31:17,200

and fulfills its slogan perfectly the

731

00:31:21,430 --> 00:31:19,279

tea that makes you go so if you want to

732

00:31:24,149 --> 00:31:21,440

be on your health game log on to get the

733

00:31:26,389 --> 00:31:24,159

tea.com and order life change super

734

00:31:28,630 --> 00:31:26,399

strength tea packages come in a one

735

00:31:31,110 --> 00:31:28,640

month supply and when you brew this

736

00:31:33,190 --> 00:31:31,120

stuff wait until you see the results

737

00:31:35,590 --> 00:31:33,200

aren't we all about the results and with

738

00:31:37,430 --> 00:31:35,600

a lot of people's health struggling we

739

00:31:40,310 --> 00:31:37,440

can use a little bit of help doctors

740

00:31:41,269 --> 00:31:40,320

will tell you disease starts in the gut

741

00:31:44,230 --> 00:31:41,279

so

742

00:31:48,149 --> 00:31:44,240

log on to get the tea.com that's get the

743

00:31:51,990 --> 00:31:48,159

tea.com be our next email saying i love

744

00:31:55,269 --> 00:31:52,000

this tea i mean i love this tea get the

745

00:31:58,070 --> 00:31:55,279

tea at get the tea.com helping america

746

00:32:02,070 --> 00:31:58,080

one teabag at a time nine out of ten

747

00:32:05,830 --> 00:32:04,470

fade to black

748

00:32:08,470 --> 00:32:05,840

is not

749

00:32:11,549 --> 00:32:08,480

your father's radio show

750

00:32:16,950 --> 00:32:11,559

on the game changer radio network and

751
00:32:21,830 --> 00:32:19,110
do you want to lose weight but have no

752
00:32:23,750 --> 00:32:21,840
idea where to begin the fast start diet

753
00:32:26,149 --> 00:32:23,760
a three-day weight loss plan is the

754
00:32:28,310 --> 00:32:26,159
answer three days of nutritionally

755
00:32:31,190 --> 00:32:28,320
balanced calorie restricted meals

756
00:32:33,909 --> 00:32:31,200
delivered right to your door no shopping

757
00:32:36,310 --> 00:32:33,919
no measuring and no cooking everything

758
00:32:37,990 --> 00:32:36,320
is prepared for you and ready to eat at

759
00:32:40,230 --> 00:32:38,000
home or on the go

760
00:32:42,149 --> 00:32:40,240
the fast start diet has all the amazing

761
00:32:44,549 --> 00:32:42,159
benefits of intermittent fasting without

762
00:32:46,310 --> 00:32:44,559
starving we've helped thousands of

763
00:32:48,549 --> 00:32:46,320

people who have struggled to reach their

764

00:32:50,950 --> 00:32:48,559

weight loss goals isn't it time we

765

00:32:53,909 --> 00:32:50,960

helped you with the fast start diet

766

00:32:56,590 --> 00:32:53,919

you'll lose weight and feel great fine

767

00:32:58,870 --> 00:32:56,600

fast start diet on amazon or go to

768

00:33:01,909 --> 00:32:58,880

faststartdiet.com and use promo code

769

00:33:04,389 --> 00:33:01,919

talk to get 10 off your first box and as

770

00:33:06,950 --> 00:33:04,399

a special bonus fast start will include

771

00:33:09,430 --> 00:33:06,960

their number one rated lipo 3 appetite

772

00:33:11,509 --> 00:33:09,440

suppressant spray free with your order

773

00:33:14,470 --> 00:33:11,519

this is jimmy church and whatever your

774

00:33:17,430 --> 00:33:14,480

diet plans are do what i did go to

775

00:33:19,430 --> 00:33:17,440

faststartdiet.com

776

00:33:24,070 --> 00:33:19,440

hi this is rob reiner from anvil and

777

00:33:43,509 --> 00:33:26,590

what's up i'm chris what up this is kyle

778

00:33:49,190 --> 00:33:46,470

all right welcome back bay to black

779

00:33:50,549 --> 00:33:49,200

tonight isaac arthur is here

780

00:33:53,990 --> 00:33:50,559

tomorrow night

781

00:33:55,029 --> 00:33:54,000

carolyn ford einstein ancient crystal

782

00:33:58,230 --> 00:33:55,039

skull

783

00:33:59,990 --> 00:33:58,240

wednesday night david wilcock he is back

784

00:34:01,909 --> 00:34:00,000

thursday night's fader night teresa and

785

00:34:04,310 --> 00:34:01,919

eris of course is going to be here

786

00:34:05,590 --> 00:34:04,320

followed by open lines all night long

787

00:34:08,869 --> 00:34:05,600

tonight

788

00:34:11,349 --> 00:34:08,879

it's all about isaac isaac arthur

789

00:34:13,750 --> 00:34:11,359

he's the host of science and futurism

790

00:34:16,310 --> 00:34:13,760

with isaac arthur on youtube it's got

791

00:34:17,990 --> 00:34:16,320

over 300 000 subscribers right now

792

00:34:20,310 --> 00:34:18,000

probably more than that

793

00:34:22,629 --> 00:34:20,320

and nearly 200 episodes covering topics

794

00:34:24,710 --> 00:34:22,639

like colonizing the solar system

795

00:34:27,030 --> 00:34:24,720

interstellar travel the fermi paradox

796

00:34:29,349 --> 00:34:27,040

artificial intelligence and other topics

797

00:34:32,069 --> 00:34:29,359

representing possible future paths and

798

00:34:34,149 --> 00:34:32,079

challenges for humanity isaac received

799

00:34:36,869 --> 00:34:34,159

his degree in physics from kent state

800

00:34:39,349 --> 00:34:36,879

university graduating top of his class

801
00:34:41,349 --> 00:34:39,359
at the age of 20 and remained there for

802
00:34:43,669 --> 00:34:41,359
graduate studies before joining the us

803
00:34:45,589 --> 00:34:43,679
army and serving in iraq he also worked

804
00:34:47,990 --> 00:34:45,599
as a civilian researcher at the air

805
00:34:50,869 --> 00:34:48,000
force institute of technology in dayton

806
00:34:53,349 --> 00:34:50,879
ohio after the military he returned to

807
00:34:56,550 --> 00:34:53,359
his home and serves as the chairman of

808
00:34:58,790 --> 00:34:56,560
the board of elections for his area when

809
00:35:01,270 --> 00:34:58,800
he's not working on his channel and of

810
00:35:01,910 --> 00:35:01,280
course his website is isaacarthur.net

811
00:35:03,670 --> 00:35:01,920
the links are over at

812
00:35:04,870 --> 00:35:03,680
jimmychurchradio.com

813
00:35:07,589 --> 00:35:04,880

i would like to welcome for the first

814

00:35:09,349 --> 00:35:07,599

time to fade to black isaac arthur isaac

815

00:35:10,870 --> 00:35:09,359

good evening how are you

816

00:35:13,030 --> 00:35:10,880

doing great jimmy thanks for having me

817

00:35:15,430 --> 00:35:13,040

on oh it's uh it's been a long time

818

00:35:18,069 --> 00:35:15,440

coming but we've got you here and before

819

00:35:20,230 --> 00:35:18,079

we get started isaac you get the first

820

00:35:22,870 --> 00:35:20,240

time guest disclaimer

821

00:35:25,190 --> 00:35:22,880

yeah you ready for it what's that

822

00:35:26,550 --> 00:35:25,200

yeah the first time guest disclaimer

823

00:35:28,870 --> 00:35:26,560

which is

824

00:35:30,710 --> 00:35:28,880

this isaac is just you and i sitting on

825

00:35:32,710 --> 00:35:30,720

my couch having a conversation as

826

00:35:34,150 --> 00:35:32,720

friends and where the conversation

827

00:35:36,710 --> 00:35:34,160

starts it starts and where it ends it

828

00:35:38,950 --> 00:35:36,720

ends but we're going to end his friends

829

00:35:41,510 --> 00:35:38,960

see simple you ready

830

00:35:42,950 --> 00:35:41,520

sounds great let's go let's do it

831

00:35:44,390 --> 00:35:42,960

you know okay

832

00:35:46,630 --> 00:35:44,400

i actually

833

00:35:48,390 --> 00:35:46,640

want to start here and if i can catch

834

00:35:50,630 --> 00:35:48,400

you off guard if i'm going to do it

835

00:35:52,550 --> 00:35:50,640

anywhere it might be right now

836

00:35:55,190 --> 00:35:52,560

which is which is this

837

00:35:57,270 --> 00:35:55,200

you've got uh fantastic writing you've

838

00:36:00,470 --> 00:35:57,280

got a great team behind you

839

00:36:02,150 --> 00:36:00,480

the presentations are awesome uh and all

840

00:36:03,750 --> 00:36:02,160

of that and

841

00:36:06,470 --> 00:36:03,760

okay and we're going to be discussing

842

00:36:09,270 --> 00:36:06,480

that tonight but what about you you talk

843

00:36:12,470 --> 00:36:09,280

about et and aliens

844

00:36:14,310 --> 00:36:12,480

so much and present this information but

845

00:36:15,910 --> 00:36:14,320

have you seen something strange in the

846

00:36:18,550 --> 00:36:15,920

sky

847

00:36:19,910 --> 00:36:18,560

oh um well actually yeah but uh in every

848

00:36:21,430 --> 00:36:19,920

case i've had it happen with me

849

00:36:23,750 --> 00:36:21,440

personally and again i can only speak to

850

00:36:25,510 --> 00:36:23,760

my own you know what i've personally

851

00:36:26,870 --> 00:36:25,520

seen i've been there for a couple of

852

00:36:28,310 --> 00:36:26,880

times where someone has seen something

853

00:36:29,190 --> 00:36:28,320

but it was always one of those cases

854

00:36:30,390 --> 00:36:29,200

where

855

00:36:32,390 --> 00:36:30,400

i don't think that's what you think it

856

00:36:34,950 --> 00:36:32,400

is because you know it's got navigation

857

00:36:36,470 --> 00:36:34,960

lights on it so you know right i live

858

00:36:37,750 --> 00:36:36,480

near enough airports where sometimes

859

00:36:39,190 --> 00:36:37,760

folks will be surprised and see one

860

00:36:40,870 --> 00:36:39,200

turnover hand and say

861

00:36:42,550 --> 00:36:40,880

that can't be you know that can't be a

862

00:36:44,470 --> 00:36:42,560

normal aircraft it's it's turning too

863

00:36:45,750 --> 00:36:44,480

fast say that's a cessna doing a normal

864

00:36:47,829 --> 00:36:45,760

landing man

865

00:36:50,150 --> 00:36:47,839

but um you know we've all been exposed

866

00:36:52,150 --> 00:36:50,160

to a lot of weird events and uh

867

00:36:55,030 --> 00:36:52,160

you know you can't say for sure what

868

00:36:57,430 --> 00:36:55,040

they were um sometimes you can

869

00:36:59,829 --> 00:36:57,440

but uh i think it gives us all you know

870

00:37:01,430 --> 00:36:59,839

life's a long strange thing it'd be a

871

00:37:03,589 --> 00:37:01,440

boring life you never collected anything

872

00:37:05,030 --> 00:37:03,599

that was out of the ordinary

873

00:37:06,950 --> 00:37:05,040

and we just try to figure out what that

874

00:37:09,589 --> 00:37:06,960

is you know that's that's fundamentally

875

00:37:11,430 --> 00:37:09,599

the human condition find weird things

876

00:37:13,349 --> 00:37:11,440

figure out what they mean

877

00:37:15,510 --> 00:37:13,359

one night uh

878

00:37:17,349 --> 00:37:15,520

you know the invitation is open but one

879

00:37:19,670 --> 00:37:17,359

night you should uh

880

00:37:21,910 --> 00:37:19,680

come out and hang out with us

881

00:37:23,750 --> 00:37:21,920

with our night vision and we'll have a

882

00:37:27,190 --> 00:37:23,760

couple hundred people there

883

00:37:30,069 --> 00:37:27,200

and and just watch and when you see

884

00:37:31,750 --> 00:37:30,079

things in the sky now look

885

00:37:33,190 --> 00:37:31,760

obviously you're gonna see a lot of

886

00:37:35,510 --> 00:37:33,200

satellites you're gonna see a lot of

887

00:37:37,829 --> 00:37:35,520

things that are completely terrestrial

888

00:37:40,310 --> 00:37:37,839

man-made and explainable but then

889

00:37:42,950 --> 00:37:40,320

there's the other stuff right

890

00:37:44,950 --> 00:37:42,960

just like wait a minute here

891

00:37:47,990 --> 00:37:44,960

what is that

892

00:37:49,270 --> 00:37:48,000

and it's an epiphany when it happens and

893

00:37:51,589 --> 00:37:49,280

i think that

894

00:37:53,829 --> 00:37:51,599

uh for you for what you do it would

895

00:37:55,670 --> 00:37:53,839

answer a lot of questions for you and

896

00:37:57,430 --> 00:37:55,680

then open up the other doors that maybe

897

00:37:58,870 --> 00:37:57,440

you don't want opened

898

00:38:01,190 --> 00:37:58,880

would you be

899

00:38:02,870 --> 00:38:01,200

ready for an epiphany like that

900

00:38:04,470 --> 00:38:02,880

i'd like to think so but you never know

901
00:38:06,069 --> 00:38:04,480
on these things but i say with um i

902
00:38:07,270 --> 00:38:06,079
never like to count myself as a skeptic

903
00:38:09,589 --> 00:38:07,280
just because so many people who call

904
00:38:11,829 --> 00:38:09,599
themselves skeptics these days are

905
00:38:14,150 --> 00:38:11,839
really just cynics in disguise but you

906
00:38:15,510 --> 00:38:14,160
always approach everything with doubt

907
00:38:16,230 --> 00:38:15,520
and you try to reason your way through

908
00:38:17,829 --> 00:38:16,240
it

909
00:38:19,750 --> 00:38:17,839
and that includes meaning having to

910
00:38:21,349 --> 00:38:19,760
reassess what your views are if it turns

911
00:38:22,950 --> 00:38:21,359
out that you're wrong and it could be

912
00:38:24,310 --> 00:38:22,960
possible you know that's

913
00:38:25,829 --> 00:38:24,320

that's science for you we've had to

914

00:38:28,630 --> 00:38:25,839

change our views quite a few times over

915

00:38:29,990 --> 00:38:28,640

the centuries and uh

916

00:38:31,430 --> 00:38:30,000

you know then again eyewitness

917

00:38:32,710 --> 00:38:31,440

observations you know it's it's one of

918

00:38:34,470 --> 00:38:32,720

those things where you can't always

919

00:38:35,589 --> 00:38:34,480

trust your own eyes either sometimes

920

00:38:37,030 --> 00:38:35,599

you'll see something you'll be sure

921

00:38:38,950 --> 00:38:37,040

that's exactly what it is but then when

922

00:38:40,470 --> 00:38:38,960

you take it apart afterwards you find

923

00:38:42,390 --> 00:38:40,480

out that you were tricking yourself too

924

00:38:44,230 --> 00:38:42,400

so you don't know until you go out there

925

00:38:47,349 --> 00:38:44,240

and see it and document and reason your

926
00:38:48,870 --> 00:38:47,359
way through it right right and as a as a

927
00:38:51,990 --> 00:38:48,880
physicist or i don't know if you

928
00:38:53,589 --> 00:38:52,000
classify yourself as physicist uh you've

929
00:38:55,109 --> 00:38:53,599
discussed this before but certainly

930
00:38:57,990 --> 00:38:55,119
you've got your degree

931
00:38:59,270 --> 00:38:58,000
i want you to imagine this for a second

932
00:39:01,109 --> 00:38:59,280
i'm going to

933
00:39:04,790 --> 00:39:01,119
be very brief

934
00:39:07,190 --> 00:39:04,800
but i'm standing with 200 people on on

935
00:39:08,470 --> 00:39:07,200
the edge of a cliff right at night in

936
00:39:12,069 --> 00:39:08,480
the desert

937
00:39:13,510 --> 00:39:12,079
and off to my left about a mile away

938
00:39:17,510 --> 00:39:13,520

maybe

939

00:39:21,030 --> 00:39:17,520

thousand feet

940

00:39:22,710 --> 00:39:21,040

about a mile away is a giant green

941

00:39:24,630 --> 00:39:22,720

glowing ball

942

00:39:27,670 --> 00:39:24,640

and it's traveling at a pretty good clip

943

00:39:29,990 --> 00:39:27,680

and it comes out from the side of this

944

00:39:32,790 --> 00:39:30,000

mountain now everything

945

00:39:34,390 --> 00:39:32,800

is on videotape the canadian cbc they

946

00:39:36,870 --> 00:39:34,400

are their document shooting a

947

00:39:37,670 --> 00:39:36,880

documentary so there's multiple cameras

948

00:39:41,670 --> 00:39:37,680

there

949

00:39:42,950 --> 00:39:41,680

is what happens isaac now wrap your mind

950

00:39:45,670 --> 00:39:42,960

around this

951
00:39:48,630 --> 00:39:45,680
over a five minute period this thing

952
00:39:49,670 --> 00:39:48,640
shoots across the desert floor

953
00:39:52,310 --> 00:39:49,680
right

954
00:39:55,030 --> 00:39:52,320
and then slowly starts to ascend

955
00:39:57,270 --> 00:39:55,040
and it starts to take off i'm tracking

956
00:39:59,030 --> 00:39:57,280
it i've got night vision you can see it

957
00:40:02,150 --> 00:39:59,040
clearly with uh

958
00:40:03,829 --> 00:40:02,160
uh the naked eye and i can see

959
00:40:06,230 --> 00:40:03,839
it reflecting

960
00:40:08,230 --> 00:40:06,240
it looks like a green chrome christmas

961
00:40:10,310 --> 00:40:08,240
ornament that's what it looks like right

962
00:40:12,069 --> 00:40:10,320
and it's it's reflecting and the lasers

963
00:40:14,230 --> 00:40:12,079

are bouncing off of it

964

00:40:17,109 --> 00:40:14,240

and it starts to ascend and over a

965

00:40:19,750 --> 00:40:17,119

five-minute period it goes straight up

966

00:40:22,630 --> 00:40:19,760

from the from the ground

967

00:40:24,390 --> 00:40:22,640

straight up and turns into

968

00:40:27,270 --> 00:40:24,400

a star

969

00:40:29,910 --> 00:40:27,280

stops straight up above us

970

00:40:31,430 --> 00:40:29,920

and sits there and then now it's just a

971

00:40:32,950 --> 00:40:31,440

star in the sky

972

00:40:36,069 --> 00:40:32,960

and then

973

00:40:38,710 --> 00:40:36,079

90 degree angle shoots off to the left

974

00:40:41,349 --> 00:40:38,720

and disappears into space

975

00:40:44,150 --> 00:40:41,359

now when i tell you something like that

976
00:40:46,470 --> 00:40:44,160
that's about as fantastical as it gets

977
00:40:47,990 --> 00:40:46,480
right it's like wait a minute hold on

978
00:40:51,030 --> 00:40:48,000
but it happened

979
00:40:53,829 --> 00:40:51,040
and i can't explain that i i do not know

980
00:40:56,390 --> 00:40:53,839
what i saw i'm not saying e.t

981
00:40:58,230 --> 00:40:56,400
i'm just describing you the event with

982
00:40:59,430 --> 00:40:58,240
the other 200 people that were there

983
00:41:01,589 --> 00:40:59,440
witnessing it

984
00:41:02,790 --> 00:41:01,599
now as if as somebody that's trained in

985
00:41:05,430 --> 00:41:02,800
physics

986
00:41:07,109 --> 00:41:05,440
what do you think i saw

987
00:41:09,190 --> 00:41:07,119
oh that's i mean again without actually

988
00:41:10,790 --> 00:41:09,200

seeing it and this is one of the things

989

00:41:13,030 --> 00:41:10,800

the eyeball is not a great measurement

990

00:41:14,550 --> 00:41:13,040

device something can look stationary at

991

00:41:16,470 --> 00:41:14,560

a great distance when it's actually just

992

00:41:18,390 --> 00:41:16,480

kind of finishing out its ark and

993

00:41:20,069 --> 00:41:18,400

starting to fall back down again

994

00:41:21,190 --> 00:41:20,079

um you need to get out there with

995

00:41:23,030 --> 00:41:21,200

instruments where you can actually

996

00:41:24,630 --> 00:41:23,040

measure very precisely how is this

997

00:41:26,550 --> 00:41:24,640

moving how far away is it you know

998

00:41:28,230 --> 00:41:26,560

triangulating its actual position

999

00:41:29,589 --> 00:41:28,240

so you know for sure is the stationary

1000

00:41:30,550 --> 00:41:29,599

or is just moving slowly in different

1001

00:41:32,230 --> 00:41:30,560

direction

1002

00:41:34,550 --> 00:41:32,240

and then for instance if we looked at

1003

00:41:37,109 --> 00:41:34,560

and we said right here we can say beyond

1004

00:41:39,030 --> 00:41:37,119

a doubt that this accelerated at 100 g's

1005

00:41:40,790 --> 00:41:39,040

for a moment then we say there's nobody

1006

00:41:43,109 --> 00:41:40,800

on board that it's an unmanned whatever

1007

00:41:45,430 --> 00:41:43,119

it is is unmanned or maybe not human at

1008

00:41:48,309 --> 00:41:45,440

least um right and then we could say

1009

00:41:49,510 --> 00:41:48,319

well that's not a man vessel so assuming

1010

00:41:51,430 --> 00:41:49,520

for the moment that it's something we

1011

00:41:53,910 --> 00:41:51,440

made maybe it's a drone maybe it's a

1012

00:41:55,270 --> 00:41:53,920

missile and um of course the the

1013

00:41:57,349 --> 00:41:55,280

inevitable problem with a lot of the

1014

00:41:58,870 --> 00:41:57,359

military hardware that's secret is that

1015

00:42:00,870 --> 00:41:58,880

it's it's secret because it's military

1016

00:42:02,390 --> 00:42:00,880

hardware we'd expect it to do weird

1017

00:42:03,910 --> 00:42:02,400

things because if it wasn't they

1018

00:42:05,109 --> 00:42:03,920

wouldn't feel that obliged to keep it

1019

00:42:08,470 --> 00:42:05,119

secret

1020

00:42:10,069 --> 00:42:08,480

so what something like that could be um

1021

00:42:11,190 --> 00:42:10,079

yeah i can throw out all your number of

1022

00:42:12,550 --> 00:42:11,200

thoughts about what it could be but it's

1023

00:42:15,109 --> 00:42:12,560

gonna be the same ones everyone else has

1024

00:42:16,550 --> 00:42:15,119

probably come up with um

1025

00:42:17,990 --> 00:42:16,560

and i would say

1026

00:42:19,589 --> 00:42:18,000

you know that's

1027

00:42:21,510 --> 00:42:19,599

not something i can really offer any new

1028

00:42:23,910 --> 00:42:21,520

insight into you know if you study it

1029

00:42:25,750 --> 00:42:23,920

you get the exact sun it's trajectories

1030

00:42:27,430 --> 00:42:25,760

it's speeds and i mean the real exact

1031

00:42:28,870 --> 00:42:27,440

not the eyeball estimates people make

1032

00:42:31,030 --> 00:42:28,880

where they say i think that's turning

1033

00:42:32,470 --> 00:42:31,040

too fast um

1034

00:42:34,069 --> 00:42:32,480

then you can actually start to say what

1035

00:42:35,430 --> 00:42:34,079

it can and can't be in terms of its

1036

00:42:37,190 --> 00:42:35,440

characteristics

1037

00:42:39,270 --> 00:42:37,200

and we can rule some stuff out from that

1038

00:42:41,190 --> 00:42:39,280

like i was saying if it's going too fast

1039

00:42:42,150 --> 00:42:41,200

on its acceleration we know it's not

1040

00:42:44,069 --> 00:42:42,160

manned

1041

00:42:46,390 --> 00:42:44,079

um or someone's come up with some really

1042

00:42:48,550 --> 00:42:46,400

cool way to avoid uh acceleration damage

1043

00:42:51,190 --> 00:42:48,560

on people which would be great

1044

00:42:53,270 --> 00:42:51,200

and uh the implications of what it is

1045

00:42:54,470 --> 00:42:53,280

are different you know uh i can't speak

1046

00:42:56,870 --> 00:42:54,480

to the engineering and stuff like that

1047

00:42:58,390 --> 00:42:56,880

i'm not an aerospace engineer but if you

1048

00:43:01,270 --> 00:42:58,400

suddenly had a technology that allowed

1049

00:43:04,150 --> 00:43:01,280

you to accelerate 100 g's with a person

1050

00:43:06,550 --> 00:43:04,160

that has huge uh impact on things like

1051
00:43:07,829 --> 00:43:06,560
military hardware of course but also on

1052
00:43:09,910 --> 00:43:07,839
space flight

1053
00:43:12,150 --> 00:43:09,920
since a lot of the devices we'd like to

1054
00:43:14,230 --> 00:43:12,160
use to do space travel with would tend

1055
00:43:16,550 --> 00:43:14,240
to involve very high acceleration rates

1056
00:43:18,069 --> 00:43:16,560
and we're a little constrained by not

1057
00:43:19,430 --> 00:43:18,079
wanting to accelerate too fast in many

1058
00:43:21,670 --> 00:43:19,440
occasions

1059
00:43:22,790 --> 00:43:21,680
now i wanted to ask you

1060
00:43:25,510 --> 00:43:22,800
um

1061
00:43:27,750 --> 00:43:25,520
this is there

1062
00:43:31,190 --> 00:43:27,760
you discuss faster than light quite a

1063
00:43:33,430 --> 00:43:31,200

bit and what i find fascinating with the

1064

00:43:36,790 --> 00:43:33,440

conversations of

1065

00:43:39,030 --> 00:43:36,800

of ftl these days is that it is now part

1066

00:43:42,309 --> 00:43:39,040

of the conversation

1067

00:43:44,630 --> 00:43:42,319

where it used to be the speed of light

1068

00:43:45,589 --> 00:43:44,640

is it nothing can go faster that you

1069

00:43:49,349 --> 00:43:45,599

know that

1070

00:43:52,550 --> 00:43:49,359

is there anything in einstein's special

1071

00:43:55,510 --> 00:43:52,560

relativity that said that nothing could

1072

00:43:56,309 --> 00:43:55,520

travel faster than the speed of light

1073

00:43:57,589 --> 00:43:56,319

um

1074

00:43:58,950 --> 00:43:57,599

that's kind of depends on how you look

1075

00:44:00,710 --> 00:43:58,960

at it if you take something like that

1076
00:44:02,470 --> 00:44:00,720
could be a warp drive for instance we

1077
00:44:05,030 --> 00:44:02,480
would usually say that's fast and light

1078
00:44:07,670 --> 00:44:05,040
but technically it's not it's going to

1079
00:44:09,349 --> 00:44:07,680
move you from point a to point b faster

1080
00:44:11,270 --> 00:44:09,359
but it's actually doing that by cutting

1081
00:44:13,430 --> 00:44:11,280
down the space in between the points so

1082
00:44:15,430 --> 00:44:13,440
it's not actually exceeding light speed

1083
00:44:17,510 --> 00:44:15,440
same something like a wormhole jumping

1084
00:44:18,950 --> 00:44:17,520
into hyperspace if that exists those are

1085
00:44:20,309 --> 00:44:18,960
getting around it

1086
00:44:23,190 --> 00:44:20,319
we don't think there's any way to

1087
00:44:24,950 --> 00:44:23,200
actually move any sort of classic way

1088
00:44:28,230 --> 00:44:24,960

faster the speed of light or even at the

1089

00:44:29,910 --> 00:44:28,240

speed of light and nothing's budged that

1090

00:44:31,829 --> 00:44:29,920

you have some options things like

1091

00:44:33,829 --> 00:44:31,839

tachyons that might be able to move

1092

00:44:35,829 --> 00:44:33,839

faster the speed of light too

1093

00:44:37,750 --> 00:44:35,839

but you've got the the problem of that

1094

00:44:39,990 --> 00:44:37,760

asymptotic limit where as you get closer

1095

00:44:41,270 --> 00:44:40,000

and closer it takes more and more energy

1096

00:44:42,950 --> 00:44:41,280

and you've also got the problem that on

1097

00:44:44,870 --> 00:44:42,960

the other side of that

1098

00:44:46,470 --> 00:44:44,880

you've you've got it going backwards in

1099

00:44:48,790 --> 00:44:46,480

time we'll say negative time or

1100

00:44:52,470 --> 00:44:48,800

imaginary time in case like that

1101

00:44:54,470 --> 00:44:52,480

and um which is fine on on paper but uh

1102

00:44:57,109 --> 00:44:54,480

we have this this issue already where we

1103

00:44:58,630 --> 00:44:57,119

say if we've got fashion like travel

1104

00:45:00,150 --> 00:44:58,640

then we have to worry about people from

1105

00:45:01,910 --> 00:45:00,160

outside the observable universe coming

1106

00:45:03,990 --> 00:45:01,920

to visit us too it's not just who's in

1107

00:45:06,630 --> 00:45:04,000

our galaxy or who's in the local volume

1108

00:45:09,270 --> 00:45:06,640

of space right um if you throw time

1109

00:45:10,790 --> 00:45:09,280

travel into that too or throw into you

1110

00:45:11,750 --> 00:45:10,800

know travel to other dimensions out at

1111

00:45:13,270 --> 00:45:11,760

earth

1112

00:45:14,870 --> 00:45:13,280

then you've got to deal with people

1113

00:45:15,829 --> 00:45:14,880

showing up from your own future to say

1114

00:45:17,589 --> 00:45:15,839

hello

1115

00:45:19,270 --> 00:45:17,599

and uh these are one of those things

1116

00:45:20,550 --> 00:45:19,280

where you can't really regulate that if

1117

00:45:22,230 --> 00:45:20,560

you're some you know high-tech

1118

00:45:24,390 --> 00:45:22,240

government following the future

1119

00:45:26,390 --> 00:45:24,400

because you can't uh you can prevent

1120

00:45:28,230 --> 00:45:26,400

people doing it regularly but you can't

1121

00:45:29,990 --> 00:45:28,240

really prevent them from doing it ever

1122

00:45:32,069 --> 00:45:30,000

and you only ever have to do it once you

1123

00:45:34,230 --> 00:45:32,079

know right so it was back in time and

1124

00:45:35,589 --> 00:45:34,240

they changed history just one time

1125

00:45:39,190 --> 00:45:35,599

that's all it takes

1126

00:45:41,750 --> 00:45:39,200

and when when i hear you discuss this um

1127

00:45:43,349 --> 00:45:41,760

it's one thing to talk about time travel

1128

00:45:45,670 --> 00:45:43,359

at the speed of light and clearly

1129

00:45:46,470 --> 00:45:45,680

einstein uh

1130

00:45:49,270 --> 00:45:46,480

you know

1131

00:45:50,870 --> 00:45:49,280

documented this possibility i understand

1132

00:45:53,589 --> 00:45:50,880

that and i think that we all do that's a

1133

00:45:55,670 --> 00:45:53,599

real form of time travel if we could you

1134

00:45:56,950 --> 00:45:55,680

know uh jump on a spaceship and travel

1135

00:45:58,630 --> 00:45:56,960

from earth

1136

00:46:00,230 --> 00:45:58,640

achieve a certain speed turn around and

1137

00:46:02,309 --> 00:46:00,240

come back while we're time travelers

1138

00:46:05,430 --> 00:46:02,319

it's not a time machine we're just time

1139

00:46:07,270 --> 00:46:05,440

traveling i get that part but if we go

1140

00:46:10,069 --> 00:46:07,280

full ftl

1141

00:46:12,470 --> 00:46:10,079

and you and i are on the bridge right

1142

00:46:15,510 --> 00:46:12,480

of our faster than like craft

1143

00:46:17,750 --> 00:46:15,520

and we we cross that threshold what

1144

00:46:20,870 --> 00:46:17,760

happens to you and i do we

1145

00:46:23,030 --> 00:46:20,880

actually reverse in age i mean do we

1146

00:46:25,109 --> 00:46:23,040

become infants

1147

00:46:28,550 --> 00:46:25,119

we shouldn't and i was thinking of uh

1148

00:46:30,309 --> 00:46:28,560

2001 the rubric film

1149

00:46:32,390 --> 00:46:30,319

right right right normally whatever

1150

00:46:34,150 --> 00:46:32,400

you're doing has no effect on your frame

1151

00:46:35,670 --> 00:46:34,160

of reference where you're at uh it's

1152

00:46:37,910 --> 00:46:35,680

everybody else around you that's having

1153

00:46:39,829 --> 00:46:37,920

the issue so you just travel back in

1154

00:46:41,109 --> 00:46:39,839

time but you always want to put caveat

1155

00:46:43,829 --> 00:46:41,119

on that because

1156

00:46:46,390 --> 00:46:43,839

we only can do this on paper by assuming

1157

00:46:48,470 --> 00:46:46,400

imaginary numbers actually exist and

1158

00:46:50,790 --> 00:46:48,480

they're called imaginary for a reason

1159

00:46:52,870 --> 00:46:50,800

um so we start there's no experimental

1160

00:46:54,630 --> 00:46:52,880

evidence about what happens as to time

1161

00:46:55,589 --> 00:46:54,640

slowing down there's tons it's it's not

1162

00:46:57,829 --> 00:46:55,599

even something that we have to do the

1163

00:46:59,829 --> 00:46:57,839

spaceship for every student physics lab

1164

00:47:01,990 --> 00:46:59,839

has to slow something down right every

1165

00:47:03,349 --> 00:47:02,000

time we observe a muon we can see that

1166

00:47:05,349 --> 00:47:03,359

in practice

1167

00:47:07,589 --> 00:47:05,359

we slow time down on particles all the

1168

00:47:09,270 --> 00:47:07,599

time every super clutter does that

1169

00:47:10,790 --> 00:47:09,280

but we've never actually done anything

1170

00:47:12,390 --> 00:47:10,800

where we'll be going faster than or

1171

00:47:13,750 --> 00:47:12,400

actually at the speed of light where

1172

00:47:15,349 --> 00:47:13,760

time would stop

1173

00:47:16,950 --> 00:47:15,359

so we can't really say for sure what

1174

00:47:18,550 --> 00:47:16,960

that effect is going to be we have kind

1175

00:47:19,510 --> 00:47:18,560

of logical way through it unless we get

1176

00:47:21,349 --> 00:47:19,520

the uh

1177

00:47:23,109 --> 00:47:21,359

doctor who or the terminator kind of

1178

00:47:25,030 --> 00:47:23,119

strange time logic because it doesn't

1179

00:47:26,470 --> 00:47:25,040

seem to really ever quite work out well

1180

00:47:28,230 --> 00:47:26,480

when you think about it

1181

00:47:30,870 --> 00:47:28,240

now though there's the the way around

1182

00:47:33,030 --> 00:47:30,880

that is arguably the multiverse theory

1183

00:47:35,270 --> 00:47:33,040

which says that pretty much every

1184

00:47:37,270 --> 00:47:35,280

scenario that could possibly happen is

1185

00:47:38,470 --> 00:47:37,280

happening in another universe

1186

00:47:40,150 --> 00:47:38,480

and that

1187

00:47:42,069 --> 00:47:40,160

your your area of time the pathway

1188

00:47:43,910 --> 00:47:42,079

you're taking through time is really

1189

00:47:45,990 --> 00:47:43,920

more navigating back and forth between

1190

00:47:47,750 --> 00:47:46,000

every last picture of the universe and

1191

00:47:50,390 --> 00:47:47,760

every possible combination

1192

00:47:52,550 --> 00:47:50,400

and um in a case like that

1193

00:47:54,550 --> 00:47:52,560

you wouldn't really be time traveling uh

1194

00:47:56,150 --> 00:47:54,560

but you know it would feel like it it

1195

00:47:57,589 --> 00:47:56,160

would seem like it it would be the exact

1196

00:47:59,030 --> 00:47:57,599

same to you

1197

00:48:01,430 --> 00:47:59,040

and um

1198

00:48:04,150 --> 00:48:01,440

well what happens okay there's there's

1199

00:48:04,950 --> 00:48:04,160

two things that i i need my mind clear

1200

00:48:08,150 --> 00:48:04,960

on

1201
00:48:09,990 --> 00:48:08,160
if something happened at the speed of

1202
00:48:12,470 --> 00:48:10,000
light and i'm talking about a physical

1203
00:48:16,069 --> 00:48:12,480
object not a light beam right but a

1204
00:48:17,190 --> 00:48:16,079
physical object what happens to

1205
00:48:19,670 --> 00:48:17,200
space

1206
00:48:20,870 --> 00:48:19,680
you know does it collapse on itself do

1207
00:48:23,430 --> 00:48:20,880
do we go

1208
00:48:26,549 --> 00:48:23,440
do things dissolve is there something

1209
00:48:28,069 --> 00:48:26,559
that would occur in the world of physics

1210
00:48:29,829 --> 00:48:28,079
very much does collapse on itself

1211
00:48:31,349 --> 00:48:29,839
actually the universe

1212
00:48:33,589 --> 00:48:31,359
because that's the asymptotic limit

1213
00:48:35,430 --> 00:48:33,599

that's the hidden infinity or zeros war

1214

00:48:37,109 --> 00:48:35,440

right um the closer you get there the

1215

00:48:40,069 --> 00:48:37,119

more space whatever direction you're

1216

00:48:42,470 --> 00:48:40,079

traveling is shrinking right and as you

1217

00:48:44,470 --> 00:48:42,480

get right there at that distance it's

1218

00:48:45,750 --> 00:48:44,480

going to turn into a two-dimensional

1219

00:48:49,030 --> 00:48:45,760

disk

1220

00:48:51,030 --> 00:48:49,040

um and uh you would be seeing everything

1221

00:48:52,549 --> 00:48:51,040

in front of you flattened out uh people

1222

00:48:55,430 --> 00:48:52,559

looking at you would see you planned out

1223

00:48:56,710 --> 00:48:55,440

but they'd also see time stop for you

1224

00:48:58,390 --> 00:48:56,720

and that's another one of the problems

1225

00:48:59,990 --> 00:48:58,400

you can't really have an event take

1226

00:49:01,270 --> 00:49:00,000

place at the speed of light with

1227

00:49:03,430 --> 00:49:01,280

anything that's got matter because

1228

00:49:05,750 --> 00:49:03,440

there's no time being experienced

1229

00:49:07,990 --> 00:49:05,760

to have an event occur yeah

1230

00:49:09,109 --> 00:49:08,000

i get it it reminds me a little bit you

1231

00:49:11,109 --> 00:49:09,119

can laugh

1232

00:49:12,710 --> 00:49:11,119

um in the movie spaceballs right where

1233

00:49:15,349 --> 00:49:12,720

they go past the speed of light to

1234

00:49:16,390 --> 00:49:15,359

ludicrous speed then they go to plaid

1235

00:49:19,190 --> 00:49:16,400

right

1236

00:49:21,430 --> 00:49:19,200

you know what happens beyond that now

1237

00:49:23,670 --> 00:49:21,440

this is my second question you and i

1238

00:49:27,270 --> 00:49:23,680

again we're on the bridge right we're

1239

00:49:30,230 --> 00:49:27,280

piloting and let's say we're just in

1240

00:49:32,470 --> 00:49:30,240

cruise mode we're doing hundred thousand

1241

00:49:34,470 --> 00:49:32,480

miles an hour right we're at a we're at

1242

00:49:37,270 --> 00:49:34,480

a decent clip and we're actually really

1243

00:49:38,309 --> 00:49:37,280

slow yeah that's what i'm saying but

1244

00:49:41,030 --> 00:49:38,319

but

1245

00:49:43,670 --> 00:49:41,040

then we turn on our high beams to look

1246

00:49:46,870 --> 00:49:43,680

out in front of us or we fire a laser

1247

00:49:50,870 --> 00:49:46,880

out in front of our ship

1248

00:49:52,390 --> 00:49:50,880

is that laser or our speed of light

1249

00:49:54,870 --> 00:49:52,400

high beams

1250

00:49:57,030 --> 00:49:54,880

is that are they now traveling faster

1251

00:49:59,109 --> 00:49:57,040

than the speed of light because of the

1252

00:50:01,270 --> 00:49:59,119

momentum of our ship already traveling

1253

00:50:02,790 --> 00:50:01,280

at say a hundred thousand miles an hour

1254

00:50:05,270 --> 00:50:02,800

no and this is the thing that actually

1255

00:50:07,589 --> 00:50:05,280

got us special relativity um over here

1256

00:50:09,349 --> 00:50:07,599

in cleveland uh back around the turn

1257

00:50:11,750 --> 00:50:09,359

last century we had the microsoft morley

1258

00:50:13,349 --> 00:50:11,760

experiments prior to that we'd always

1259

00:50:15,190 --> 00:50:13,359

assumed that

1260

00:50:16,390 --> 00:50:15,200

anything that's moving if i if i'm on a

1261

00:50:18,230 --> 00:50:16,400

train for instance i've always used the

1262

00:50:20,390 --> 00:50:18,240

train analogies for special relativity

1263

00:50:22,309 --> 00:50:20,400

and i throw a ball that ball was moving

1264

00:50:24,710 --> 00:50:22,319

with my speed plus the train speed plus

1265

00:50:26,870 --> 00:50:24,720

the speed of the autonomy right light

1266

00:50:29,349 --> 00:50:26,880

seems to move and this is we don't know

1267

00:50:30,549 --> 00:50:29,359

why right it was the thing that caused

1268

00:50:31,990 --> 00:50:30,559

the big problem that was solved by

1269

00:50:33,430 --> 00:50:32,000

relativity anyway

1270

00:50:35,030 --> 00:50:33,440

it will move at the same speed

1271

00:50:36,790 --> 00:50:35,040

regardless of how fast you're going

1272

00:50:38,549 --> 00:50:36,800

everyone sees the light moving at the

1273

00:50:40,230 --> 00:50:38,559

exact same speed

1274

00:50:41,510 --> 00:50:40,240

and they established that you know

1275

00:50:42,710 --> 00:50:41,520

through the microsmaller experiments and

1276
00:50:44,549 --> 00:50:42,720
everything they could do they just kept

1277
00:50:45,589 --> 00:50:44,559
coming back to the same speed it was

1278
00:50:47,030 --> 00:50:45,599
weird

1279
00:50:49,589 --> 00:50:47,040
and so the entirety of special

1280
00:50:50,470 --> 00:50:49,599
relativity is built around that specific

1281
00:50:51,349 --> 00:50:50,480
fact

1282
00:50:54,069 --> 00:50:51,359
that

1283
00:50:55,430 --> 00:50:54,079
light will always seem to be moving to

1284
00:50:57,109 --> 00:50:55,440
everyone who's observing it regardless

1285
00:50:59,190 --> 00:50:57,119
of how fast they were going

1286
00:51:00,549 --> 00:50:59,200
at the same speed

1287
00:51:02,710 --> 00:51:00,559
different direction you know obviously

1288
00:51:04,950 --> 00:51:02,720

if we shoot a laser at an angle but

1289

00:51:06,790 --> 00:51:04,960

it's just moving at that speed

1290

00:51:08,870 --> 00:51:06,800

um as we're getting faster as we're

1291

00:51:10,390 --> 00:51:08,880

getting close to speed of light

1292

00:51:11,829 --> 00:51:10,400

it's going to seem to be moving away

1293

00:51:13,270 --> 00:51:11,839

from us at that same speed but anybody

1294

00:51:15,109 --> 00:51:13,280

else who's looking at it is going to see

1295

00:51:17,030 --> 00:51:15,119

it doing that too

1296

00:51:18,950 --> 00:51:17,040

and that's where the time dilation comes

1297

00:51:20,630 --> 00:51:18,960

in now if we actually hit the speed of

1298

00:51:22,150 --> 00:51:20,640

light for the moment and then we emitted

1299

00:51:24,390 --> 00:51:22,160

a laser beam we couldn't do that because

1300

00:51:26,630 --> 00:51:24,400

in time stop but if we if we could

1301
00:51:27,589 --> 00:51:26,640
that light would seem to not go anywhere

1302
00:51:29,430 --> 00:51:27,599
because

1303
00:51:31,510 --> 00:51:29,440
we are now moving at the speed of light

1304
00:51:33,190 --> 00:51:31,520
too um

1305
00:51:35,270 --> 00:51:33,200
so it that should be the exception where

1306
00:51:35,750 --> 00:51:35,280
it doesn't

1307
00:51:36,950 --> 00:51:35,760
so happen

1308
00:51:38,710 --> 00:51:36,960
you're saying

1309
00:51:40,549 --> 00:51:38,720
would seem to get wider though or we

1310
00:51:42,309 --> 00:51:40,559
would red shift away from us but a blue

1311
00:51:45,349 --> 00:51:42,319
shift towards us we caught back up with

1312
00:51:49,030 --> 00:51:45,359
it right right right the blue red shift

1313
00:51:51,030 --> 00:51:49,040

so if you and i again were on the bridge

1314

00:51:54,230 --> 00:51:51,040

and we're approaching the speed of light

1315

00:51:55,589 --> 00:51:54,240

let's say we're there and i flick on my

1316

00:51:57,670 --> 00:51:55,599

flashlight

1317

00:51:59,670 --> 00:51:57,680

then the light would only come out an

1318

00:52:01,510 --> 00:51:59,680

inch in front of it you know what i mean

1319

00:52:02,870 --> 00:52:01,520

that's it we're there we're at the speed

1320

00:52:04,470 --> 00:52:02,880

of light

1321

00:52:06,309 --> 00:52:04,480

as we just get real close there if we

1322

00:52:07,910 --> 00:52:06,319

flick the thing on right before we hit

1323

00:52:10,069 --> 00:52:07,920

there and it has just enough time to

1324

00:52:11,589 --> 00:52:10,079

travel you know a meter or so it should

1325

00:52:12,710 --> 00:52:11,599

seem to freeze in front of us now of

1326
00:52:14,950 --> 00:52:12,720
course we wouldn't be able to actually

1327
00:52:17,190 --> 00:52:14,960
see it freezing because we absorb light

1328
00:52:19,030 --> 00:52:17,200
by seeing it hit us but uh it would have

1329
00:52:21,670 --> 00:52:19,040
frozen in place in front of us right

1330
00:52:22,870 --> 00:52:21,680
when we hit the speed itself but again

1331
00:52:24,150 --> 00:52:22,880
that's the same problem it's one of

1332
00:52:26,069 --> 00:52:24,160
those cases where you really should

1333
00:52:28,630 --> 00:52:26,079
never be able to do that so

1334
00:52:31,109 --> 00:52:28,640
it gets a little iffy talking about what

1335
00:52:33,190 --> 00:52:31,119
should definitely happen because

1336
00:52:34,230 --> 00:52:33,200
it's not really a case that you could do

1337
00:52:35,670 --> 00:52:34,240
anyway

1338
00:52:38,150 --> 00:52:35,680

um

1339

00:52:39,910 --> 00:52:38,160

to you it seems like to a laser beam if

1340

00:52:41,829 --> 00:52:39,920

i shoot a laser beam out and i'm on each

1341

00:52:43,910 --> 00:52:41,839

of those photons they come out

1342

00:52:45,510 --> 00:52:43,920

the you know photon a movie at the front

1343

00:52:47,990 --> 00:52:45,520

and then you got photon b right behind

1344

00:52:49,030 --> 00:52:48,000

it you should see photon a still in

1345

00:52:50,549 --> 00:52:49,040

front of it the whole time it's

1346

00:52:52,470 --> 00:52:50,559

traveling at the same distance they're

1347

00:52:53,349 --> 00:52:52,480

both moving at the same speed

1348

00:52:55,109 --> 00:52:53,359

um

1349

00:52:56,950 --> 00:52:55,119

but you can't actually observe anything

1350

00:52:59,430 --> 00:52:56,960

from these because there's no time

1351
00:53:01,430 --> 00:52:59,440
passing for them a photon experiences no

1352
00:53:03,589 --> 00:53:01,440
time you know anything moving the speed

1353
00:53:05,190 --> 00:53:03,599
of light like a neutrino probably moves

1354
00:53:07,030 --> 00:53:05,200
the speed of light they experience no

1355
00:53:08,790 --> 00:53:07,040
time neutrinos might move just a little

1356
00:53:10,870 --> 00:53:08,800
slower than light speed whenever quite

1357
00:53:11,910 --> 00:53:10,880
positive it's real close

1358
00:53:13,670 --> 00:53:11,920
um

1359
00:53:15,589 --> 00:53:13,680
and or for that metal the speed of light

1360
00:53:17,349 --> 00:53:15,599
might be just a hair higher than light

1361
00:53:19,109 --> 00:53:17,359
actually travels if it turned out that

1362
00:53:21,430 --> 00:53:19,119
photons had just a little tiny amount of

1363
00:53:22,870 --> 00:53:21,440

mass right and we it's one of those

1364

00:53:24,950 --> 00:53:22,880

things we can't eliminate the

1365

00:53:26,470 --> 00:53:24,960

possibility same as we can never say if

1366

00:53:27,430 --> 00:53:26,480

anything is completely infinite or not

1367

00:53:29,270 --> 00:53:27,440

you know if you've got a rope that's

1368

00:53:31,430 --> 00:53:29,280

infinitely long you go by counting that

1369

00:53:33,190 --> 00:53:31,440

by pulling on it or walking next to it

1370

00:53:34,870 --> 00:53:33,200

you can establish how long it is but you

1371

00:53:36,470 --> 00:53:34,880

can never say for sure that it's not

1372

00:53:37,910 --> 00:53:36,480

longer until you get to the end you know

1373

00:53:38,870 --> 00:53:37,920

if it's infinite you can ever prove it's

1374

00:53:40,390 --> 00:53:38,880

infinite

1375

00:53:41,589 --> 00:53:40,400

uh and it's kind of the same thing here

1376

00:53:43,910 --> 00:53:41,599

you can never

1377

00:53:46,630 --> 00:53:43,920

prove that a photon has absolutely no

1378

00:53:48,150 --> 00:53:46,640

mass maybe we can infer it though and we

1379

00:53:49,990 --> 00:53:48,160

can never prove that it has no time at

1380

00:53:51,349 --> 00:53:50,000

all but we can kind of afford we can say

1381

00:53:52,710 --> 00:53:51,359

it definitely doesn't have more than

1382

00:53:54,950 --> 00:53:52,720

this amount

1383

00:53:56,230 --> 00:53:54,960

um and so sometimes what we say it

1384

00:53:57,829 --> 00:53:56,240

shouldn't call it the speed of light but

1385

00:53:59,750 --> 00:53:57,839

the speed of information because that

1386

00:54:01,030 --> 00:53:59,760

one we're pretty confident about right

1387

00:54:02,549 --> 00:54:01,040

light just happens to be the first thing

1388

00:54:04,150 --> 00:54:02,559

we found that moved to that speed and

1389

00:54:05,990 --> 00:54:04,160

it's it's the speed that

1390

00:54:08,150 --> 00:54:06,000

no mass moves at basically if you have

1391

00:54:10,549 --> 00:54:08,160

no mass that's how fast you go

1392

00:54:12,549 --> 00:54:10,559

uh and the reason why that is starts

1393

00:54:15,270 --> 00:54:12,559

getting a little complicated with

1394

00:54:16,790 --> 00:54:15,280

minkowski space and other things but uh

1395

00:54:19,030 --> 00:54:16,800

it was a we'll bypass that if you don't

1396

00:54:21,190 --> 00:54:19,040

mind well when we come back after the

1397

00:54:23,190 --> 00:54:21,200

break i want to continue this because i

1398

00:54:25,829 --> 00:54:23,200

it's one of the most fascinating aspects

1399

00:54:28,870 --> 00:54:25,839

of all of this because if we are

1400

00:54:31,589 --> 00:54:28,880

going to visit the stars and and other

1401

00:54:32,870 --> 00:54:31,599

uh planets or if we are getting visited

1402

00:54:34,309 --> 00:54:32,880

all of these questions have to be

1403

00:54:35,829 --> 00:54:34,319

answered and thought about so we'll

1404

00:54:38,069 --> 00:54:35,839

we'll continue this but i wanted to ask

1405

00:54:39,670 --> 00:54:38,079

you this before the break we've got uh

1406

00:54:43,510 --> 00:54:39,680

four minutes

1407

00:54:46,150 --> 00:54:43,520

it when a ship is out there even our own

1408

00:54:48,630 --> 00:54:46,160

uh uh you know voyager or whatever

1409

00:54:50,870 --> 00:54:48,640

pioneer our own things that we're

1410

00:54:53,190 --> 00:54:50,880

shooting but if if we're out there

1411

00:54:57,510 --> 00:54:53,200

traveling at these great speeds

1412

00:55:02,230 --> 00:54:57,520

and we encounter uh a small

1413

00:55:05,589 --> 00:55:02,240

um asteroid or meteorite and and

1414

00:55:06,950 --> 00:55:05,599

wouldn't the impact at those speeds be

1415

00:55:09,510 --> 00:55:06,960

ginormous

1416

00:55:10,950 --> 00:55:09,520

oh yeah no it's it's it's even at like a

1417

00:55:12,710 --> 00:55:10,960

tenth the speed of light anything you

1418

00:55:14,790 --> 00:55:12,720

hit is going off like a nuclear bomb

1419

00:55:17,430 --> 00:55:14,800

with the same mass would so how do we

1420

00:55:19,750 --> 00:55:17,440

how do we avoid that

1421

00:55:22,549 --> 00:55:19,760

and and i understand the laser aspect

1422

00:55:24,549 --> 00:55:22,559

and and defensive positioning and and

1423

00:55:27,990 --> 00:55:24,559

radar and scanning out

1424

00:55:30,150 --> 00:55:28,000

but i would think at those speeds

1425

00:55:33,109 --> 00:55:30,160

the calculations and the logistics would

1426

00:55:35,829 --> 00:55:33,119

just be off the charts but but if we did

1427

00:55:37,190 --> 00:55:35,839

make contact it would be over

1428

00:55:39,030 --> 00:55:37,200

mm-hmm

1429

00:55:40,790 --> 00:55:39,040

it's the thing about moving that quickly

1430

00:55:42,309 --> 00:55:40,800

and some other reasons why we say you

1431

00:55:43,990 --> 00:55:42,319

even if you could go faster than light

1432

00:55:45,510 --> 00:55:44,000

you maybe wouldn't want to because you

1433

00:55:47,190 --> 00:55:45,520

can't even get a return signal at that

1434

00:55:49,270 --> 00:55:47,200

point right right you're running up on

1435

00:55:51,030 --> 00:55:49,280

things like this uh like if you're going

1436

00:55:52,870 --> 00:55:51,040

fast and light everything in front of

1437

00:55:54,230 --> 00:55:52,880

you looks dead white

1438

00:55:55,349 --> 00:55:54,240

because everything's sped up so much

1439

00:55:56,630 --> 00:55:55,359

it's blue shifting so much and

1440

00:55:58,549 --> 00:55:56,640

everything behind you looks like a black

1441

00:56:02,150 --> 00:55:58,559

hole right no like which is up to you

1442

00:56:04,230 --> 00:56:02,160

right um trying to actually do detection

1443

00:56:05,589 --> 00:56:04,240

on things like that is quite tricky even

1444

00:56:07,990 --> 00:56:05,599

when you're stoking up to about half the

1445

00:56:09,829 --> 00:56:08,000

speed of light anything you run into is

1446

00:56:11,349 --> 00:56:09,839

like hitting an anti-matter bomb a

1447

00:56:13,190 --> 00:56:11,359

single coffee cup is going to hit you

1448

00:56:14,390 --> 00:56:13,200

like the hiroshima device right right

1449

00:56:15,270 --> 00:56:14,400

right um

1450

00:56:16,710 --> 00:56:15,280

and

1451

00:56:18,069 --> 00:56:16,720

you have to make sure that doesn't

1452

00:56:19,750 --> 00:56:18,079

happen you know

1453

00:56:21,349 --> 00:56:19,760

you you can absorb a particle or two

1454

00:56:22,630 --> 00:56:21,359

getting hit by a relativistic particle

1455

00:56:24,549 --> 00:56:22,640

you know they say if you hit a single

1456

00:56:26,630 --> 00:56:24,559

hydrogen atom no not unless you're

1457

00:56:28,230 --> 00:56:26,640

moving at you know a lorentz factor of

1458

00:56:30,789 --> 00:56:28,240

like a hundred you know which you really

1459

00:56:33,030 --> 00:56:30,799

have no reason never do um

1460

00:56:34,789 --> 00:56:33,040

but any particle any grain of sand is

1461

00:56:35,910 --> 00:56:34,799

going to do a lot of damage

1462

00:56:37,030 --> 00:56:35,920

um

1463

00:56:38,470 --> 00:56:37,040

and so you have to be constantly

1464

00:56:39,829 --> 00:56:38,480

scanning around for that and considering

1465

00:56:41,589 --> 00:56:39,839

how fast you're moving you're talking

1466

00:56:43,829 --> 00:56:41,599

about team to scan area the size of our

1467

00:56:46,309 --> 00:56:43,839

solar system like out to pluto

1468

00:56:48,309 --> 00:56:46,319

to spot something the size of a pebble

1469

00:56:50,150 --> 00:56:48,319

right and that gets worse and worse the

1470

00:56:52,230 --> 00:56:50,160

faster you go

1471

00:56:54,470 --> 00:56:52,240

and there are many ways you can tackle

1472

00:56:56,150 --> 00:56:54,480

that but it does start to say

1473

00:56:59,030 --> 00:56:56,160

maybe we don't want to be going that

1474

00:57:01,750 --> 00:56:59,040

fast even if we could maybe a little bit

1475

00:57:03,829 --> 00:57:01,760

slower is the wiser course of action

1476
00:57:05,910 --> 00:57:03,839
um and so i usually tend to assume you

1477
00:57:07,430 --> 00:57:05,920
wouldn't go much faster than about 20

1478
00:57:09,030 --> 00:57:07,440
percent of light speed

1479
00:57:11,190 --> 00:57:09,040
unless you actually start creating a

1480
00:57:13,349 --> 00:57:11,200
highway system through space not a

1481
00:57:14,870 --> 00:57:13,359
classic one obviously a way you're

1482
00:57:16,870 --> 00:57:14,880
sweeping all that matter out of the way

1483
00:57:18,870 --> 00:57:16,880
constantly you've got your sensor grids

1484
00:57:20,390 --> 00:57:18,880
along the way that are spotting even a

1485
00:57:22,150 --> 00:57:20,400
grain of dust and just vaporizing a

1486
00:57:24,069 --> 00:57:22,160
thing you clear it out you make a

1487
00:57:26,549 --> 00:57:24,079
hyperspace bypass it will

1488
00:57:28,230 --> 00:57:26,559

now you can start looking at traveling

1489

00:57:29,670 --> 00:57:28,240

close to speed of light

1490

00:57:30,789 --> 00:57:29,680

and you don't necessarily have to be

1491

00:57:32,549 --> 00:57:30,799

carrying propellant with you because you

1492

00:57:34,470 --> 00:57:32,559

could be using lasers to bounce the

1493

00:57:35,990 --> 00:57:34,480

ships around to high speeds

1494

00:57:37,589 --> 00:57:36,000

that's one way you could do that that

1495

00:57:38,950 --> 00:57:37,599

doesn't get you new solar systems that

1496

00:57:40,789 --> 00:57:38,960

lets you get to systems that you've

1497

00:57:42,309 --> 00:57:40,799

already colonized and you know back and

1498

00:57:44,230 --> 00:57:42,319

forth between them

1499

00:57:45,510 --> 00:57:44,240

so same as going to the oregon trail

1500

00:57:46,710 --> 00:57:45,520

takes you a year to get out to oregon

1501
00:57:47,990 --> 00:57:46,720
nowadays you can drive out there in a

1502
00:57:50,230 --> 00:57:48,000
couple days

1503
00:57:52,230 --> 00:57:50,240
so you always have a slow expansion

1504
00:57:53,990 --> 00:57:52,240
front as you're exploring but you

1505
00:57:55,349 --> 00:57:54,000
probably can get away with traveling

1506
00:57:57,030 --> 00:57:55,359
pretty close to the speed of light back

1507
00:57:59,430 --> 00:57:57,040
and forth between solar systems it's

1508
00:58:02,309 --> 00:57:59,440
just trying to find the bestest safest

1509
00:58:04,710 --> 00:58:02,319
way to do it yeah i'm picturing uh

1510
00:58:07,030 --> 00:58:04,720
because when i've heard you discuss this

1511
00:58:10,150 --> 00:58:07,040
this shows you where my mind is i was

1512
00:58:12,390 --> 00:58:10,160
picturing interstellar highway street

1513
00:58:15,030 --> 00:58:12,400

cleaners

1514

00:58:16,150 --> 00:58:15,040

right to clear the path

1515

00:58:17,349 --> 00:58:16,160

and then of course the idea would be

1516

00:58:19,030 --> 00:58:17,359

that they'd be using they wouldn't be

1517

00:58:20,789 --> 00:58:19,040

using a classic boom but they'd be using

1518

00:58:21,670 --> 00:58:20,799

a laser button

1519

00:58:23,190 --> 00:58:21,680

with

1520

00:58:25,829 --> 00:58:23,200

they sweep all the gas and dust out of

1521

00:58:27,270 --> 00:58:25,839

the way but it would have to be that way

1522

00:58:30,630 --> 00:58:27,280

because if you're just going out there

1523

00:58:33,589 --> 00:58:30,640

willy-nilly uh space is big and it's

1524

00:58:35,349 --> 00:58:33,599

vast but it only takes like you said a

1525

00:58:37,990 --> 00:58:35,359

little micro meteorite the size of a

1526
00:58:40,150 --> 00:58:38,000
grain of sand at that speed would cause

1527
00:58:41,589 --> 00:58:40,160
you a lot of trouble

1528
00:58:43,109 --> 00:58:41,599
so you either want to go slow or you

1529
00:58:45,349 --> 00:58:43,119
want to make sure you've got a really

1530
00:58:46,950 --> 00:58:45,359
clear system in front of you and this is

1531
00:58:48,950 --> 00:58:46,960
something we deal with you know if i'm

1532
00:58:50,230 --> 00:58:48,960
walking around my house or on the front

1533
00:58:51,750 --> 00:58:50,240
lawn i don't have to worry about a

1534
00:58:53,990 --> 00:58:51,760
little rock if i'm driving down the

1535
00:58:55,670 --> 00:58:54,000
freeway i can do a lot of damage some

1536
00:58:57,270 --> 00:58:55,680
dropping outside of a bridge or even

1537
00:58:59,430 --> 00:58:57,280
just hitting something like a bottle on

1538
00:59:01,270 --> 00:58:59,440

the road can cause problems

1539

00:59:04,069 --> 00:59:01,280

let's take a break right here isaac

1540

00:59:05,750 --> 00:59:04,079

fantastic start to this evening in this

1541

00:59:06,990 --> 00:59:05,760

conversation our guest tonight isaac

1542

00:59:11,589 --> 00:59:07,000

arthur

1543

00:59:13,670 --> 00:59:11,599

course his youtube channel is is right

1544

00:59:15,349 --> 00:59:13,680

there as well it's fade to black i'm

1545

00:59:19,820 --> 00:59:15,359

your host jimmy church i'll be right

1546

00:59:43,270 --> 00:59:19,830

back after this short break stay with us

1547

00:59:48,069 --> 00:59:45,510

this is fade to black with jimmy church

1548

00:59:52,789 --> 00:59:48,079

on the game changer radio network and

1549

00:59:55,270 --> 00:59:52,799

kgra the global radio alliance

1550

00:59:56,309 --> 00:59:55,280

this is kgra digital broadcasting

1551
01:00:05,430 --> 00:59:56,319
station

1552
01:00:12,789 --> 01:00:08,789
come join us for the 2019 conscious life

1553
01:00:15,190 --> 01:00:12,799
expo in los angeles at the lax hilton

1554
01:00:17,670 --> 01:00:15,200
this year we are celebrating the 50th

1555
01:00:20,150 --> 01:00:17,680
anniversary of chariots of the gods with

1556
01:00:21,750 --> 01:00:20,160
eric von daniken and i'll be hosting the

1557
01:00:23,349 --> 01:00:21,760
panel with eric

1558
01:00:26,309 --> 01:00:23,359
linda molten howe

1559
01:00:27,510 --> 01:00:26,319
jason martell billy carson and david

1560
01:00:30,230 --> 01:00:27,520
wilcock

1561
01:00:32,710 --> 01:00:30,240
join george nori nassim haramain robert

1562
01:00:35,270 --> 01:00:32,720
shock daniel brinkley grant cameron

1563
01:00:37,109 --> 01:00:35,280

julia mosbridge teresa yaneras and

1564

01:00:40,230 --> 01:00:37,119

another 50 speakers who will be

1565

01:00:42,030 --> 01:00:40,240

presenting at the 2019 conscious life

1566

01:00:44,150 --> 01:00:42,040

expo just go to

1567

01:00:46,309 --> 01:00:44,160

consciouslifeexpo.com for tickets and a

1568

01:00:48,990 --> 01:00:46,319

full conference schedule or

1569

01:00:50,870 --> 01:00:49,000

click on the cle banner at

1570

01:00:52,750 --> 01:00:50,880

jimmychurchradio.com

1571

01:00:56,950 --> 01:00:52,760

go backly taffy

1572

01:01:01,750 --> 01:00:59,349

folks this is very important information

1573

01:01:04,630 --> 01:01:01,760

what's to be said about cbd

1574

01:01:08,950 --> 01:01:04,640

ancient life oil.com our cbd is made

1575

01:01:11,510 --> 01:01:08,960

from hemp and has .003 thc which means

1576

01:01:13,750 --> 01:01:11,520

this wonderful product won't get you

1577

01:01:16,230 --> 01:01:13,760

high no matter what amount you take what

1578

01:01:19,270 --> 01:01:16,240

does cbd do for the body my hands are

1579

01:01:21,510 --> 01:01:19,280

tight but you can google cbd benefits

1580

01:01:23,670 --> 01:01:21,520

and be astounded when you're finished

1581

01:01:26,230 --> 01:01:23,680

reading you'll want to log on to ancient

1582

01:01:28,950 --> 01:01:26,240

life oil dot com that's ancient life oil

1583

01:01:31,430 --> 01:01:28,960

dot com and purchase life is good when

1584

01:01:33,589 --> 01:01:31,440

you feel good people are tired of pain

1585

01:01:35,510 --> 01:01:33,599

people are asking for non-gmo organic

1586

01:01:38,230 --> 01:01:35,520

products to help them with

1587

01:01:40,470 --> 01:01:38,240

you fill in the blank legal in 49 states

1588

01:01:42,789 --> 01:01:40,480

and again our cbd is made from hemp

1589

01:01:45,589 --> 01:01:42,799

ancient life oil is about helping people

1590

01:01:48,390 --> 01:01:45,599

one by one by one if you wonder how good

1591

01:01:51,589 --> 01:01:48,400

the product is the ceo takes it every

1592

01:01:52,510 --> 01:01:51,599

day without miss ancient life oil.com

1593

01:01:56,710 --> 01:01:52,520

that's

1594

01:02:02,390 --> 01:01:58,390

you're listening to my main man jimmy

1595

01:02:06,230 --> 01:02:04,309

hi this is ray sobs here repping the

1596

01:02:09,349 --> 01:02:06,240

planet and you're listening to my good

1597

01:02:11,910 --> 01:02:09,359

friend jimmy church fade to black on the

1598

01:02:15,510 --> 01:02:11,920

game changer network and the kgra

1599

01:02:17,670 --> 01:02:15,520

digital broadcast station

1600

01:02:19,990 --> 01:02:17,680

this is toby kebble you're listening to

1601

01:02:22,950 --> 01:02:20,000

jimmychurchradio.com

1602

01:02:25,030 --> 01:02:22,960

hurt me jimmy i'm only little hey i'm

1603

01:02:30,230 --> 01:02:25,040

adrian grenier and this is ari gold

1604

01:02:34,710 --> 01:02:32,630

hey i'm adrian grenier and i'm ari gold

1605

01:02:37,910 --> 01:02:34,720

we're the honey brothers and you're

1606

01:02:39,990 --> 01:02:37,920

listening to jimmy church a revolution

1607

01:02:42,470 --> 01:02:40,000

reclaim your active lifestyle with

1608

01:02:44,549 --> 01:02:42,480

angioprim angioprim is the original

1609

01:02:46,630 --> 01:02:44,559

liquid oral chelation supplement

1610

01:02:48,710 --> 01:02:46,640

chelation helps remove toxins heavy

1611

01:02:50,710 --> 01:02:48,720

metals and cholesterol in your veins and

1612

01:02:52,309 --> 01:02:50,720

arteries that can cause blockages

1613

01:02:54,470 --> 01:02:52,319

scientific research proves the active

1614

01:02:56,549 --> 01:02:54,480

ingredient in angioprim has superior

1615

01:02:58,789 --> 01:02:56,559

oral chelation action that helps promote

1616

01:03:00,950 --> 01:02:58,799

cardiovascular health find out more go

1617

01:03:02,870 --> 01:03:00,960

to angioprim.com talk to a trained

1618

01:03:07,750 --> 01:03:02,880

consultant by calling angioprim

1619

01:03:11,430 --> 01:03:09,430

this is jimmy church of fade to black

1620

01:03:13,750 --> 01:03:11,440

and you can become an official fate or

1621

01:03:17,430 --> 01:03:13,760

not by just going to our membership

1622

01:03:19,349 --> 01:03:17,440

section at jimmy jimmychurchradio.com

1623

01:03:21,670 --> 01:03:19,359

hey it's grace can we talk about

1624

01:03:24,390 --> 01:03:21,680

something serious for a minute your age

1625

01:03:26,789 --> 01:03:24,400

getting old has its perks but remember

1626
01:03:28,870 --> 01:03:26,799
being a few years younger you know your

1627
01:03:30,710 --> 01:03:28,880
hair was thicker you didn't have so many

1628
01:03:32,789 --> 01:03:30,720
wrinkles that extra weight wasn't

1629
01:03:34,710 --> 01:03:32,799
haunting you and you just felt better

1630
01:03:37,510 --> 01:03:34,720
well we can't turn back the clocks and

1631
01:03:39,750 --> 01:03:37,520
go back 10 or 15 years but you can start

1632
01:03:42,549 --> 01:03:39,760
feeling and looking 10 or 15 years

1633
01:03:44,549 --> 01:03:42,559
younger with nature's youth rsf it's

1634
01:03:46,309 --> 01:03:44,559
doctor formulated daily supplement that

1635
01:03:48,390 --> 01:03:46,319
helps your body maintain its peak

1636
01:03:50,789 --> 01:03:48,400
performance and fight the aging process

1637
01:03:52,870 --> 01:03:50,799
imagine sleeping better looking better

1638
01:03:55,430 --> 01:03:52,880

and feeling better see how nature's

1639

01:03:58,029 --> 01:03:55,440

youth rsf has helped thousands of people

1640

01:04:00,150 --> 01:03:58,039

just like you at nature's youth com

1641

01:04:01,670 --> 01:04:00,160

naturesyouth.com imagine how it will

1642

01:04:03,910 --> 01:04:01,680

feel when your family and friends are

1643

01:04:06,470 --> 01:04:03,920

asking you what you did to look so good

1644

01:04:08,390 --> 01:04:06,480

your secret will be nature's youth rsf

1645

01:04:10,470 --> 01:04:08,400

it's time to start looking better and

1646

01:04:13,190 --> 01:04:10,480

feeling better learn more and order your

1647

01:04:14,109 --> 01:04:13,200

nature's youth rsf at naturesyouth.com

1648

01:04:20,230 --> 01:04:14,119

that's

1649

01:04:22,549 --> 01:04:20,240

hello this is serena wright taylor from

1650

01:04:24,950 --> 01:04:22,559

conscious life expo and you're listening

1651
01:04:27,270 --> 01:04:24,960
to fade to black with jimmy church who

1652
01:04:30,870 --> 01:04:27,280
holds the lucky pony record for the best

1653
01:04:32,710 --> 01:04:30,880
astrological chart since 1963. true

1654
01:04:34,390 --> 01:04:32,720
story

1655
01:04:36,069 --> 01:04:34,400
this is micah hanks of the ghrelian

1656
01:04:38,390 --> 01:04:36,079
report and you're listening to jimmy

1657
01:04:40,309 --> 01:04:38,400
church on fade to black across the globe

1658
01:04:43,690 --> 01:04:40,319
on the game changer radio network and

1659
01:04:47,700 --> 01:04:43,700
the one and only kgra radio the planet

1660
01:04:48,020 --> 01:04:47,710
[Music]

1661
01:05:04,069 --> 01:04:48,030
[Applause]

1662
01:05:05,910 --> 01:05:04,079
[Music]

1663
01:05:07,589 --> 01:05:05,920

all right welcome back fade to black i

1664

01:05:11,349 --> 01:05:07,599

am your host jimmy church tonight our

1665

01:05:14,309 --> 01:05:11,359

guest is isaac arthur he is here

1666

01:05:15,910 --> 01:05:14,319

tomorrow night carolyn ford einstein

1667

01:05:18,150 --> 01:05:15,920

that's tomorrow night

1668

01:05:20,390 --> 01:05:18,160

wednesday night david wilcock is back

1669

01:05:22,390 --> 01:05:20,400

with us to talk about 2019 and we're

1670

01:05:24,549 --> 01:05:22,400

going to look forward thursday night is

1671

01:05:26,549 --> 01:05:24,559

open lines all night long tonight it's

1672

01:05:29,109 --> 01:05:26,559

isaac arthur and isaac

1673

01:05:32,150 --> 01:05:29,119

this is one of the most fascinating

1674

01:05:34,710 --> 01:05:32,160

aspects of the era that you and i live

1675

01:05:38,230 --> 01:05:34,720

in right now and it's the knowledge

1676

01:05:41,270 --> 01:05:38,240

of our universe that is coming in it's

1677

01:05:44,230 --> 01:05:41,280

the data is is getting out of control

1678

01:05:46,230 --> 01:05:44,240

and watching uh cosmologists and and

1679

01:05:48,150 --> 01:05:46,240

astrophysicists out there

1680

01:05:51,109 --> 01:05:48,160

have to start to look at these harsh

1681

01:05:52,950 --> 01:05:51,119

numbers and where things are going like

1682

01:05:54,950 --> 01:05:52,960

dark energy right that's something that

1683

01:05:57,829 --> 01:05:54,960

was never discussed before

1684

01:06:00,470 --> 01:05:57,839

now we're confronted uh with this and

1685

01:06:03,270 --> 01:06:00,480

the expansion of the universe but

1686

01:06:06,069 --> 01:06:03,280

there's another fascinating thing for me

1687

01:06:09,029 --> 01:06:06,079

and that is the discovery of exoplanets

1688

01:06:11,109 --> 01:06:09,039

and where now in our own milky way

1689

01:06:13,190 --> 01:06:11,119

where we thought oh there could be a

1690

01:06:15,750 --> 01:06:13,200

couple maybe there's more

1691

01:06:18,710 --> 01:06:15,760

how unique are we to the conversation

1692

01:06:22,069 --> 01:06:18,720

today is our milky way could have a

1693

01:06:24,069 --> 01:06:22,079

hundred billion planets in it this is

1694

01:06:27,029 --> 01:06:24,079

more than that yeah probably more right

1695

01:06:30,069 --> 01:06:27,039

it's an extraordinary number that we

1696

01:06:31,510 --> 01:06:30,079

never even contemplated 20 years ago

1697

01:06:34,150 --> 01:06:31,520

right this is

1698

01:06:36,710 --> 01:06:34,160

these are exciting times but

1699

01:06:38,150 --> 01:06:36,720

now let's take that data and take that

1700

01:06:40,309 --> 01:06:38,160

knowledge and go in the opposite

1701

01:06:41,270 --> 01:06:40,319

direction we're talking about speed of

1702

01:06:43,829 --> 01:06:41,280

light

1703

01:06:45,510 --> 01:06:43,839

and if et is out there visiting and i

1704

01:06:46,789 --> 01:06:45,520

believe that they are and they're coming

1705

01:06:49,750 --> 01:06:46,799

at us

1706

01:06:52,470 --> 01:06:49,760

how do you pump the brakes on a ship

1707

01:06:55,349 --> 01:06:52,480

that is moving at that speed i mean

1708

01:06:56,630 --> 01:06:55,359

how long does it take to slow down

1709

01:06:58,309 --> 01:06:56,640

well i think we were talking earlier

1710

01:07:00,150 --> 01:06:58,319

about how fast somebody could accelerate

1711

01:07:02,230 --> 01:07:00,160

or decelerate and that that's actually a

1712

01:07:04,950 --> 01:07:02,240

really important one because

1713

01:07:07,190 --> 01:07:04,960

uh by good coincidence if you accelerate

1714

01:07:09,349 --> 01:07:07,200

at 1g your normal earth gravity for a

1715

01:07:10,789 --> 01:07:09,359

year you will get up to about light

1716

01:07:12,870 --> 01:07:10,799

speed you won't quite get there because

1717

01:07:14,870 --> 01:07:12,880

you never quite get there but

1718

01:07:16,230 --> 01:07:14,880

if you want to get up to 10 of light

1719

01:07:17,670 --> 01:07:16,240

speeds you need to be accelerating for a

1720

01:07:19,670 --> 01:07:17,680

month and when you want to go down from

1721

01:07:21,510 --> 01:07:19,680

that it's going to take you a month too

1722

01:07:23,670 --> 01:07:21,520

uh if you're going at near the speed of

1723

01:07:25,589 --> 01:07:23,680

light uh and again it's even going to be

1724

01:07:27,270 --> 01:07:25,599

way worse for something like ftl

1725

01:07:28,789 --> 01:07:27,280

probably things like the warp drive get

1726

01:07:32,390 --> 01:07:28,799

around that entirely

1727

01:07:33,990 --> 01:07:32,400

you slam the brakes very slowly yeah so

1728

01:07:35,910 --> 01:07:34,000

um and that actually becomes the issue

1729

01:07:37,670 --> 01:07:35,920

is if you have access to effectively

1730

01:07:39,670 --> 01:07:37,680

infinite energy to be accelerating these

1731

01:07:41,589 --> 01:07:39,680

ships those kind of speeds

1732

01:07:44,150 --> 01:07:41,599

you still have to find some way to

1733

01:07:45,750 --> 01:07:44,160

handle a very fast acceleration or

1734

01:07:46,870 --> 01:07:45,760

you're going to experience a lot of time

1735

01:07:48,950 --> 01:07:46,880

personally

1736

01:07:49,910 --> 01:07:48,960

and ideally you'd prefer not to you

1737

01:07:52,150 --> 01:07:49,920

might get around that with something

1738

01:07:54,230 --> 01:07:52,160

like cryogenic

1739

01:07:56,789 --> 01:07:54,240

cryogenic sleep but um

1740

01:07:58,549 --> 01:07:56,799

or some other type of stasis but you

1741

01:08:00,390 --> 01:07:58,559

have to be able to slow down you have to

1742

01:08:02,069 --> 01:08:00,400

be able to speed up and it's going to

1743

01:08:04,150 --> 01:08:02,079

take a lot of time to do that when

1744

01:08:05,990 --> 01:08:04,160

you're going really fast you and you

1745

01:08:07,990 --> 01:08:06,000

have to re-expand that energy too so you

1746

01:08:09,349 --> 01:08:08,000

can't make a lot of stopovers to pick up

1747

01:08:11,990 --> 01:08:09,359

like hitchhikers while you're on your

1748

01:08:13,510 --> 01:08:12,000

way you go once you start like moving

1749

01:08:15,029 --> 01:08:13,520

once you're up to speed you're pretty

1750

01:08:16,709 --> 01:08:15,039

much locked into that course until you

1751

01:08:18,149 --> 01:08:16,719

get to your destination

1752

01:08:20,390 --> 01:08:18,159

um unless you have a vast amount of

1753

01:08:23,349 --> 01:08:20,400

resource fuel and if you did go faster

1754

01:08:26,229 --> 01:08:24,950

some things like the warp drive or

1755

01:08:27,749 --> 01:08:26,239

wormhole if we could ever get them

1756

01:08:28,950 --> 01:08:27,759

walking and i have to be honest i don't

1757

01:08:31,030 --> 01:08:28,960

think that we will

1758

01:08:33,829 --> 01:08:31,040

um these usually get around that

1759

01:08:35,430 --> 01:08:33,839

acceleration issue uh with the wormhole

1760

01:08:37,590 --> 01:08:35,440

you're really not traveling through

1761

01:08:38,950 --> 01:08:37,600

space although the implication that it's

1762

01:08:41,189 --> 01:08:38,960

one of those gauges your step you like

1763

01:08:42,390 --> 01:08:41,199

in stargate they're not quite right

1764

01:08:44,149 --> 01:08:42,400

with something like the warp drive

1765

01:08:46,229 --> 01:08:44,159

though you're not actually moving you're

1766

01:08:47,189 --> 01:08:46,239

just moving the space on either side of

1767

01:08:48,470 --> 01:08:47,199

you so

1768

01:08:50,950 --> 01:08:48,480

there you don't have to accelerate at

1769

01:08:52,630 --> 01:08:50,960

all though that comes with some problems

1770

01:08:53,749 --> 01:08:52,640

too we think if you're heading towards

1771

01:08:55,110 --> 01:08:53,759

planet with one of these things on

1772

01:08:57,189 --> 01:08:55,120

you're very likely to when you

1773

01:08:58,950 --> 01:08:57,199

decelerate blow up the system you're

1774

01:09:01,269 --> 01:08:58,960

arriving at so

1775

01:09:04,950 --> 01:09:01,279

i know and now

1776

01:09:06,870 --> 01:09:04,960

okay let's we need to stay on this uh

1777

01:09:08,229 --> 01:09:06,880

i'm not gonna let it go

1778

01:09:11,349 --> 01:09:08,239

uh there

1779

01:09:13,749 --> 01:09:11,359

is there resistance in space like

1780

01:09:16,870 --> 01:09:13,759

you know obviously we have resistance

1781

01:09:18,149 --> 01:09:16,880

here on on earth and you will always

1782

01:09:20,870 --> 01:09:18,159

slow down

1783

01:09:23,110 --> 01:09:20,880

you need more energy to

1784

01:09:26,229 --> 01:09:23,120

to maintain a speed

1785

01:09:27,510 --> 01:09:26,239

out in space if we achieve whatever it

1786

01:09:29,110 --> 01:09:27,520

is right hundred thousand two hundred

1787

01:09:31,910 --> 01:09:29,120

thousand five hundred thousand miles an

1788

01:09:33,269 --> 01:09:31,920

hour are we able to shut off our engines

1789

01:09:36,309 --> 01:09:33,279

and just

1790

01:09:38,709 --> 01:09:36,319

cruise in that direction or do we

1791

01:09:39,829 --> 01:09:38,719

at that speed uh 500 000 miles an hour

1792

01:09:41,749 --> 01:09:39,839

speed of light is a hundred eight

1793

01:09:44,309 --> 01:09:41,759

thousand miles a second so it's it's a

1794

01:09:45,829 --> 01:09:44,319

lot faster but um at that speed you

1795

01:09:47,189 --> 01:09:45,839

would drift for millions of years for

1796

01:09:48,550 --> 01:09:47,199

you have a noticeable drop in speed but

1797

01:09:50,149 --> 01:09:48,560

if you get close enough to the speed of

1798

01:09:52,309 --> 01:09:50,159

light you actually have to start making

1799

01:09:54,470 --> 01:09:52,319

your ship kind of aerodynamic because

1800

01:09:56,550 --> 01:09:54,480

even though there's very little there

1801
01:09:57,990 --> 01:09:56,560
you're going so fast that you're running

1802
01:09:59,510 --> 01:09:58,000
into it it basically does start to

1803
01:10:01,110 --> 01:09:59,520
create a drag effect

1804
01:10:02,390 --> 01:10:01,120
now that's only going to happen when

1805
01:10:04,870 --> 01:10:02,400
you're talking about like half the speed

1806
01:10:06,390 --> 01:10:04,880
of light or closer but you can slow down

1807
01:10:08,550 --> 01:10:06,400
that way too it is one of the free ways

1808
01:10:10,149 --> 01:10:08,560
to slow down uh but it takes a long time

1809
01:10:13,189 --> 01:10:10,159
is just to extend a big parachute

1810
01:10:14,870 --> 01:10:13,199
basically and let it drag you down uh it

1811
01:10:16,790 --> 01:10:14,880
doesn't work too well lower speeds

1812
01:10:18,070 --> 01:10:16,800
though and things like pioneer voyager

1813
01:10:20,149 --> 01:10:18,080

or those things are never going to

1814

01:10:21,750 --> 01:10:20,159

experience you know any sort of

1815

01:10:23,430 --> 01:10:21,760

significant drag

1816

01:10:25,430 --> 01:10:23,440

uh any more than you or i do walking

1817

01:10:27,750 --> 01:10:25,440

around the house at you know a very slow

1818

01:10:29,189 --> 01:10:27,760

speed compared to a supersonic jet

1819

01:10:30,870 --> 01:10:29,199

um

1820

01:10:31,910 --> 01:10:30,880

you do have that concern and that's

1821

01:10:34,550 --> 01:10:31,920

going to be a concern if you're doing

1822

01:10:36,630 --> 01:10:34,560

ftl in a in a kind of classic star trek

1823

01:10:37,830 --> 01:10:36,640

war travel kind of way and so if you

1824

01:10:39,990 --> 01:10:37,840

want to stay at that speed you have to

1825

01:10:41,590 --> 01:10:40,000

keep pushing and it means using more and

1826
01:10:44,550 --> 01:10:41,600
more fuel to keep up to that speed and

1827
01:10:46,070 --> 01:10:44,560
the faster you go the more that there is

1828
01:10:47,910 --> 01:10:46,080
and again it's one of those reasons why

1829
01:10:50,470 --> 01:10:47,920
you probably don't want to try to be

1830
01:10:52,870 --> 01:10:50,480
going more about half the speed of light

1831
01:10:55,910 --> 01:10:52,880
one of the things that i have talked

1832
01:10:57,669 --> 01:10:55,920
about over and over again on this show

1833
01:11:01,510 --> 01:10:57,679
for years and years

1834
01:11:03,030 --> 01:11:01,520
is arthur c clarke and uh rama

1835
01:11:05,030 --> 01:11:03,040
the entire series of books i don't know

1836
01:11:08,550 --> 01:11:05,040
how many times i have read them

1837
01:11:10,149 --> 01:11:08,560
but i've always contemplated that aspect

1838
01:11:12,630 --> 01:11:10,159

and i always thought that arthur c

1839

01:11:13,590 --> 01:11:12,640

clarke was ahead of the curve maybe

1840

01:11:18,229 --> 01:11:13,600

maybe

1841

01:11:19,830 --> 01:11:18,239

alien rest of the series though the

1842

01:11:22,390 --> 01:11:19,840

first book great the second book pretty

1843

01:11:26,310 --> 01:11:24,070

are you talking about when gentry lee

1844

01:11:28,310 --> 01:11:26,320

came into the picture yes yes and then

1845

01:11:31,430 --> 01:11:28,320

nothing against gentry nothing against

1846

01:11:33,750 --> 01:11:31,440

gentry no i i but you are correct

1847

01:11:37,750 --> 01:11:33,760

um okay so anyway

1848

01:11:39,030 --> 01:11:37,760

is that if uh if something was coming at

1849

01:11:40,950 --> 01:11:39,040

us

1850

01:11:44,149 --> 01:11:40,960

at some great speed

1851

01:11:46,390 --> 01:11:44,159

would we notice something uh would we be

1852

01:11:48,790 --> 01:11:46,400

able to see something that was traveling

1853

01:11:50,550 --> 01:11:48,800

at the speed of light or nearly at the

1854

01:11:51,590 --> 01:11:50,560

speed of light would we be able to pick

1855

01:11:54,070 --> 01:11:51,600

that up

1856

01:11:55,669 --> 01:11:54,080

no well if it's going it's all about how

1857

01:11:57,189 --> 01:11:55,679

fast it's going if it's going at exactly

1858

01:11:59,350 --> 01:11:57,199

the speed of light we'll never see it

1859

01:12:01,430 --> 01:11:59,360

till the moment it arrives right um if

1860

01:12:03,189 --> 01:12:01,440

it's going just a little bit slower we

1861

01:12:05,110 --> 01:12:03,199

will get to see it but probably not a

1862

01:12:07,669 --> 01:12:05,120

lot like if something's a light hour out

1863

01:12:08,550 --> 01:12:07,679

and it's moving at you know 99 the speed

1864

01:12:10,470 --> 01:12:08,560

of light

1865

01:12:13,110 --> 01:12:10,480

you're going to get you know

1866

01:12:14,950 --> 01:12:13,120

maybe 30 seconds of warning time uh but

1867

01:12:16,550 --> 01:12:14,960

and it's already it's right there on you

1868

01:12:19,189 --> 01:12:16,560

by then right

1869

01:12:20,550 --> 01:12:19,199

and uh for you know stellar distances

1870

01:12:21,990 --> 01:12:20,560

that's actually more than enough because

1871

01:12:23,830 --> 01:12:22,000

you've got something that's a light year

1872

01:12:24,709 --> 01:12:23,840

out that's that gives you many days of

1873

01:12:25,990 --> 01:12:24,719

warning

1874

01:12:27,430 --> 01:12:26,000

and it's all about how fast they're

1875

01:12:29,510 --> 01:12:27,440

going if they're going half the speed of

1876

01:12:31,030 --> 01:12:29,520

light then they're 12 light hours out

1877

01:12:32,630 --> 01:12:31,040

you're gonna see them when they're six

1878

01:12:34,470 --> 01:12:32,640

hours out as well

1879

01:12:36,070 --> 01:12:34,480

um so you should always see a ship

1880

01:12:37,110 --> 01:12:36,080

that's slowing down to get to you

1881

01:12:38,870 --> 01:12:37,120

especially because it's going to be

1882

01:12:40,870 --> 01:12:38,880

again slowing down

1883

01:12:43,350 --> 01:12:40,880

but once you get into the ftl zone

1884

01:12:45,590 --> 01:12:43,360

you're not going to you actually see it

1885

01:12:47,430 --> 01:12:45,600

after it's already passed by which is

1886

01:12:50,229 --> 01:12:47,440

the way that arthur c clarke has

1887

01:12:53,590 --> 01:12:50,239

presented it in rama in that it was like

1888

01:12:55,910 --> 01:12:53,600

on top of us slowing down right

1889

01:12:58,630 --> 01:12:55,920

and that we it would be

1890

01:13:01,590 --> 01:12:58,640

like inside of pluto's orbit

1891

01:13:03,510 --> 01:13:01,600

before we would even have a clue right

1892

01:13:04,630 --> 01:13:03,520

of course it's slowing down rapidly at

1893

01:13:06,310 --> 01:13:04,640

that point

1894

01:13:07,910 --> 01:13:06,320

but that that would be it and that's a

1895

01:13:09,750 --> 01:13:07,920

frightening thing to wrap our head

1896

01:13:11,270 --> 01:13:09,760

around

1897

01:13:12,790 --> 01:13:11,280

well it's we always say there's no

1898

01:13:14,070 --> 01:13:12,800

stealth in space but again if you're

1899

01:13:16,630 --> 01:13:14,080

going fast enough you don't need too

1900

01:13:18,630 --> 01:13:16,640

much stealth because you've got that

1901

01:13:21,350 --> 01:13:18,640

that surprise advantage no one sees your

1902

01:13:22,709 --> 01:13:21,360

tea almost there right um of course you

1903

01:13:24,070 --> 01:13:22,719

don't really need that if you want to

1904

01:13:25,750 --> 01:13:24,080

militarily invade some because you're

1905

01:13:28,149 --> 01:13:25,760

going that fast all you have to do is

1906

01:13:29,830 --> 01:13:28,159

not slow down you just throw your trash

1907

01:13:31,750 --> 01:13:29,840

out before you decelerate and let it hit

1908

01:13:33,270 --> 01:13:31,760

the planet you're heading towards and

1909

01:13:35,030 --> 01:13:33,280

you know the earth might only be going

1910

01:13:36,470 --> 01:13:35,040

thirty thousand miles an hour around the

1911

01:13:38,229 --> 01:13:36,480

sun but

1912

01:13:40,149 --> 01:13:38,239

uh that stuff is still moving the speed

1913

01:13:42,550 --> 01:13:40,159

it's going at so same as a spaceship

1914

01:13:44,630 --> 01:13:42,560

hitting your interstellar debris you

1915

01:13:46,070 --> 01:13:44,640

throw a ton of garbage

1916

01:13:47,030 --> 01:13:46,080

let's say a little ton of garbage out

1917

01:13:49,350 --> 01:13:47,040

the front of your ship when you're going

1918

01:13:51,189 --> 01:13:49,360

near light speed it hits that planet in

1919

01:13:52,870 --> 01:13:51,199

front of you and

1920

01:13:54,310 --> 01:13:52,880

you've already got uh all your weapons

1921

01:13:55,669 --> 01:13:54,320

deployed as a war there's nothing no

1922

01:13:57,030 --> 01:13:55,679

need to do anything else the surface of

1923

01:14:00,630 --> 01:13:57,040

that planet on that side is just

1924

01:14:04,550 --> 01:14:02,149

surprise them beyond that when your ship

1925

01:14:05,990 --> 01:14:04,560

arrives uh it's already you hit them

1926

01:14:07,110 --> 01:14:06,000

with a preemptive strike

1927

01:14:09,430 --> 01:14:07,120

now

1928

01:14:11,590 --> 01:14:09,440

when you have started to put this data

1929

01:14:13,750 --> 01:14:11,600

together and by the way uh the people

1930

01:14:15,830 --> 01:14:13,760

that work with you i i think these

1931

01:14:17,270 --> 01:14:15,840

concepts are are fascinating and the

1932

01:14:20,070 --> 01:14:17,280

research is

1933

01:14:22,310 --> 01:14:20,080

is uh just it's it's unbelievable uh

1934

01:14:24,950 --> 01:14:22,320

especially for me to go through

1935

01:14:28,070 --> 01:14:24,960

but when we start to contemplate this

1936

01:14:29,270 --> 01:14:28,080

and when you look at just our own galaxy

1937

01:14:30,229 --> 01:14:29,280

isaac

1938

01:14:34,390 --> 01:14:30,239

how much

1939

01:14:35,750 --> 01:14:34,400

could be out there it doesn't have to be

1940

01:14:39,189 --> 01:14:35,760

advanced

1941

01:14:41,830 --> 01:14:39,199

like at our level right our caveman

1942

01:14:43,910 --> 01:14:41,840

level of advancement how much how much

1943

01:14:44,950 --> 01:14:43,920

life do you think could be in our milky

1944

01:14:47,430 --> 01:14:44,960

way

1945

01:14:49,510 --> 01:14:47,440

uh i would not be too surprised if we

1946

01:14:52,630 --> 01:14:49,520

found other life in the solar system but

1947

01:14:54,870 --> 01:14:52,640

not anything advanced um it would not

1948

01:14:56,550 --> 01:14:54,880

surprise me if we found simple life just

1949

01:14:58,070 --> 01:14:56,560

all over the place like every place it

1950

01:14:59,430 --> 01:14:58,080

could be well we could turn out to be a

1951

01:15:01,510 --> 01:14:59,440

lot earlier than that too we don't

1952

01:15:02,470 --> 01:15:01,520

really have good models for a biogenesis

1953

01:15:04,870 --> 01:15:02,480

yet

1954

01:15:06,790 --> 01:15:04,880

um intelligence that's that's the other

1955

01:15:08,790 --> 01:15:06,800

story when we look at the fermi paradox

1956

01:15:11,270 --> 01:15:08,800

we say that there probably isn't any if

1957

01:15:13,910 --> 01:15:11,280

we if we draw that conclusion then it's

1958

01:15:15,350 --> 01:15:13,920

really technological life that's higher

1959

01:15:17,830 --> 01:15:15,360

you know that's at least a century ahead

1960

01:15:19,910 --> 01:15:17,840

of us right now that we're talking about

1961

01:15:21,990 --> 01:15:19,920

where along the way the stumbling block

1962

01:15:24,630 --> 01:15:22,000

is that really cuts the numbers down

1963

01:15:27,430 --> 01:15:24,640

that is a lot harder to say you know the

1964

01:15:29,189 --> 01:15:27,440

b had fire a million years ago

1965

01:15:31,910 --> 01:15:29,199

um we didn't start using it for pottery

1966

01:15:34,229 --> 01:15:31,920

or metal to about 10 000 years ago

1967

01:15:37,030 --> 01:15:34,239

and uh you can look at even like uh

1968

01:15:38,470 --> 01:15:37,040

during vespasians where uh in the the

1969

01:15:41,669 --> 01:15:38,480

second century roman sorry fourth

1970

01:15:43,189 --> 01:15:41,679

century of rome after uh the place born

1971

01:15:44,630 --> 01:15:43,199

down he didn't want to employ certain

1972

01:15:46,790 --> 01:15:44,640

technologies not because he didn't trust

1973

01:15:47,990 --> 01:15:46,800

them but because he said well how am i

1974

01:15:49,030 --> 01:15:48,000

going to feed my people they have no

1975

01:15:50,550 --> 01:15:49,040

jobs

1976

01:15:52,790 --> 01:15:50,560

um

1977

01:15:54,630 --> 01:15:52,800

you could have a civilization stutter

1978

01:15:55,910 --> 01:15:54,640

you know i think prior to about the 16th

1979

01:15:57,750 --> 01:15:55,920

century

1980

01:15:59,510 --> 01:15:57,760

there's no given that technology is

1981

01:16:00,790 --> 01:15:59,520

going to keep advancing there isn't even

1982

01:16:02,709 --> 01:16:00,800

now but i'd say we're pretty much

1983

01:16:04,470 --> 01:16:02,719

addicted to the the pathway of more

1984

01:16:06,149 --> 01:16:04,480

technology and research

1985

01:16:08,070 --> 01:16:06,159

you know we were around for a million

1986

01:16:10,070 --> 01:16:08,080

years with brains decently on par with

1987

01:16:12,630 --> 01:16:10,080

what we have now and really didn't make

1988

01:16:14,550 --> 01:16:12,640

much technological progress so it could

1989

01:16:17,430 --> 01:16:14,560

be the entire galaxy is full up of

1990

01:16:20,070 --> 01:16:17,440

civilizations that are neolithic i would

1991

01:16:21,510 --> 01:16:20,080

tend to bet not but i don't have any any

1992

01:16:22,950 --> 01:16:21,520

evidence that that's just you know my

1993

01:16:25,510 --> 01:16:22,960

intuition says

1994

01:16:27,350 --> 01:16:25,520

that intelligent life of the uh caveman

1995

01:16:29,990 --> 01:16:27,360

level for instance is probably pretty

1996

01:16:32,070 --> 01:16:30,000

decently rare it might be more common

1997

01:16:33,669 --> 01:16:32,080

than stuff at all level

1998

01:16:35,430 --> 01:16:33,679

um but

1999

01:16:37,270 --> 01:16:35,440

i would tend to think that it's still

2000

01:16:40,149 --> 01:16:37,280

pretty rare

2001

01:16:41,110 --> 01:16:40,159

with uh our son

2002

01:16:42,790 --> 01:16:41,120

is

2003

01:16:44,070 --> 01:16:42,800

uh we're blessed with something that's

2004

01:16:45,669 --> 01:16:44,080

very stable

2005

01:16:48,550 --> 01:16:45,679

yes yeah and that is something to always

2006

01:16:50,470 --> 01:16:48,560

keep in mind on things like this very

2007

01:16:53,590 --> 01:16:50,480

stable

2008

01:16:55,189 --> 01:16:53,600

any variance in anything with our sun

2009

01:16:57,910 --> 01:16:55,199

and we're not you and i are not talking

2010

01:16:58,870 --> 01:16:57,920

right now right it's really that simple

2011

01:17:01,030 --> 01:16:58,880

isn't it

2012

01:17:02,870 --> 01:17:01,040

well we could probably survive

2013

01:17:04,790 --> 01:17:02,880

if the sun was more active like a lot of

2014

01:17:06,390 --> 01:17:04,800

stars in our class i don't know ah we're

2015

01:17:07,990 --> 01:17:06,400

not a freak anomaly we're just on the

2016

01:17:11,110 --> 01:17:08,000

little bit of an outlier

2017

01:17:13,030 --> 01:17:11,120

um if the sun got less stable something

2018

01:17:15,189 --> 01:17:13,040

more extreme than a mondo minimum or the

2019

01:17:16,390 --> 01:17:15,199

reverse where it was really fluctuating

2020

01:17:18,550 --> 01:17:16,400

all over the place

2021

01:17:21,590 --> 01:17:18,560

in a case like that we'd probably still

2022

01:17:22,390 --> 01:17:21,600

survive now unless it was very extreme

2023

01:17:24,149 --> 01:17:22,400

but

2024

01:17:25,830 --> 01:17:24,159

you know a long-term effect like that

2025

01:17:28,149 --> 01:17:25,840

could boil the atmosphere off a planet

2026

01:17:29,669 --> 01:17:28,159

pretty easily and stars are only ever

2027

01:17:31,430 --> 01:17:29,679

getting hotter they they start off

2028

01:17:33,669 --> 01:17:31,440

cooler than they are but after a billion

2029

01:17:35,430 --> 01:17:33,679

years or so and they just keep getting

2030

01:17:37,430 --> 01:17:35,440

hotter as they slowly work their way up

2031

01:17:38,709 --> 01:17:37,440

to that that uh subgiant and then red

2032

01:17:40,950 --> 01:17:38,719

giant stage

2033

01:17:42,390 --> 01:17:40,960

and that shifts the habitable zone for

2034

01:17:44,630 --> 01:17:42,400

solar system

2035

01:17:47,669 --> 01:17:44,640

and we could have a lot of systems where

2036

01:17:50,070 --> 01:17:47,679

it started off inhabited and uh then the

2037

01:17:52,229 --> 01:17:50,080

atmosphere got stripped off and all that

2038

01:17:54,229 --> 01:17:52,239

life went away not necessarily advanced

2039

01:17:56,229 --> 01:17:54,239

life like us we we could survive a slow

2040

01:17:57,030 --> 01:17:56,239

incremental uh heating of the sun right

2041

01:17:59,350 --> 01:17:57,040

now

2042

01:18:01,189 --> 01:17:59,360

but obviously basic microbial life or

2043

01:18:02,870 --> 01:18:01,199

you know uh basic mammals could not they

2044

01:18:04,390 --> 01:18:02,880

don't have technology

2045

01:18:06,390 --> 01:18:04,400

and similarly you could have plants that

2046

01:18:07,910 --> 01:18:06,400

got seeded later on as that sun warmed

2047

01:18:10,470 --> 01:18:07,920

up and then that warm zone that

2048

01:18:12,709 --> 01:18:10,480

habitable zone uh expanded

2049

01:18:14,790 --> 01:18:12,719

and something like that could be uh we

2050

01:18:17,590 --> 01:18:14,800

always talk about filters for uh what

2051
01:18:19,030 --> 01:18:17,600
can get you to uh to high advanced life

2052
01:18:20,550 --> 01:18:19,040
that could be one of those filters

2053
01:18:23,030 --> 01:18:20,560
things that end up skimming a lot of

2054
01:18:25,590 --> 01:18:23,040
people out of the uh of the equation

2055
01:18:26,950 --> 01:18:25,600
is that a lot of planets only a habitable

2056
01:18:28,950 --> 01:18:26,960
temporarily

2057
01:18:30,550 --> 01:18:28,960
um and they are not habitable long

2058
01:18:31,750 --> 01:18:30,560
enough for anything in advance to to

2059
01:18:33,830 --> 01:18:31,760
show up

2060
01:18:35,750 --> 01:18:33,840
and this is the big problem with this is

2061
01:18:37,910 --> 01:18:35,760
only guesswork we have to draw logical

2062
01:18:40,550 --> 01:18:37,920
inferences because we still have so

2063
01:18:42,149 --> 01:18:40,560

little data we i mean we didn't have any

2064

01:18:43,189 --> 01:18:42,159

plants until about 20 years ago to look

2065

01:18:45,189 --> 01:18:43,199

at but

2066

01:18:46,470 --> 01:18:45,199

even now with five thousand that sounds

2067

01:18:48,950 --> 01:18:46,480

like a lot but there's probably a

2068

01:18:51,270 --> 01:18:48,960

trillion planets out there at least

2069

01:18:53,350 --> 01:18:51,280

and uh most of those plants we found

2070

01:18:55,030 --> 01:18:53,360

those are the easy ones to spot they're

2071

01:18:56,550 --> 01:18:55,040

the really big ones or the ones really

2072

01:18:57,510 --> 01:18:56,560

close to their sun that aren't habitable

2073

01:18:59,350 --> 01:18:57,520

anyway

2074

01:19:01,590 --> 01:18:59,360

so that pool of five thousand six

2075

01:19:04,470 --> 01:19:01,600

thousand how many extra plants it is now

2076

01:19:06,390 --> 01:19:04,480

includes almost nothing that is actually

2077

01:19:07,910 --> 01:19:06,400

earth-like not because those plants are

2078

01:19:10,149 --> 01:19:07,920

rare they probably aren't but because

2079

01:19:12,310 --> 01:19:10,159

they're the harder ones to see

2080

01:19:14,390 --> 01:19:12,320

and when we have thousands of those that

2081

01:19:16,310 --> 01:19:14,400

we can actually see decently do some

2082

01:19:17,830 --> 01:19:16,320

real spectroscopy on

2083

01:19:19,669 --> 01:19:17,840

then we might be able to start talking

2084

01:19:21,270 --> 01:19:19,679

about the probabilities of this type of

2085

01:19:24,229 --> 01:19:21,280

life you know this level of life

2086

01:19:26,550 --> 01:19:24,239

advancing to uh to microbial life or to

2087

01:19:28,870 --> 01:19:26,560

uh multicellular life or

2088

01:19:30,870 --> 01:19:28,880

complex brains until then we just kind

2089

01:19:33,669 --> 01:19:30,880

of have to guess off our intuition and

2090

01:19:35,990 --> 01:19:33,679

that's never trustworthy of course well

2091

01:19:38,709 --> 01:19:36,000

and i like to look at us you know what

2092

01:19:40,709 --> 01:19:38,719

are we doing here as as humans as

2093

01:19:42,390 --> 01:19:40,719

earthlings we're out there trying to

2094

01:19:44,149 --> 01:19:42,400

figure this thing out too as well we're

2095

01:19:46,470 --> 01:19:44,159

looking for searching for planets and

2096

01:19:48,390 --> 01:19:46,480

and what what could be out there

2097

01:19:51,270 --> 01:19:48,400

et is

2098

01:19:52,790 --> 01:19:51,280

any alien civilization that is out there

2099

01:19:55,750 --> 01:19:52,800

that's the only way to look at it they

2100

01:19:58,070 --> 01:19:55,760

must be doing the exact same thing but

2101

01:19:59,750 --> 01:19:58,080

this is where i think things get

2102

01:20:01,590 --> 01:19:59,760

complicated you just brought it up there

2103

01:20:02,790 --> 01:20:01,600

could be a trillion planets right a

2104

01:20:03,790 --> 01:20:02,800

trillion

2105

01:20:06,630 --> 01:20:03,800

that

2106

01:20:08,790 --> 01:20:06,640

undocumented just you know you can't you

2107

01:20:10,950 --> 01:20:08,800

can't go and map out and figure

2108

01:20:14,070 --> 01:20:10,960

everything give it a name and so forth i

2109

01:20:17,590 --> 01:20:14,080

mean it's just a tremendous amount but

2110

01:20:21,110 --> 01:20:17,600

how many of those alien civilizations

2111

01:20:23,990 --> 01:20:21,120

know about earth because we're one of a

2112

01:20:25,350 --> 01:20:24,000

trillion planets right it's the opposite

2113

01:20:26,950 --> 01:20:25,360

field of view

2114

01:20:29,430 --> 01:20:26,960

right we're just one of a trillion

2115

01:20:31,110 --> 01:20:29,440

planets

2116

01:20:33,669 --> 01:20:31,120

do you see where i'm going with this

2117

01:20:35,510 --> 01:20:33,679

because my next question is alien uh

2118

01:20:38,709 --> 01:20:35,520

ancient aliens right

2119

01:20:41,030 --> 01:20:38,719

how many how many know about us

2120

01:20:42,870 --> 01:20:41,040

if they if they if if we assume for the

2121

01:20:44,310 --> 01:20:42,880

moment that technology more or less goes

2122

01:20:46,070 --> 01:20:44,320

the direction we're thinking and that

2123

01:20:47,510 --> 01:20:46,080

civilization more or less goes the way

2124

01:20:49,510 --> 01:20:47,520

that we're thinking where we expand

2125

01:20:51,590 --> 01:20:49,520

outward not just to other stars but

2126
01:20:53,430 --> 01:20:51,600
around our own star into what we usually

2127
01:20:55,270 --> 01:20:53,440
call a dyson swarm

2128
01:20:56,790 --> 01:20:55,280
at that point in time if you start

2129
01:20:58,390 --> 01:20:56,800
talking about civilizations that have

2130
01:21:00,149 --> 01:20:58,400
access to the equivalent of a billion

2131
01:21:01,990 --> 01:21:00,159
planetary

2132
01:21:03,990 --> 01:21:02,000
plants with a living area

2133
01:21:06,310 --> 01:21:04,000
um they should actually be able to look

2134
01:21:07,910 --> 01:21:06,320
at every last star in the galaxy

2135
01:21:09,830 --> 01:21:07,920
simultaneously

2136
01:21:10,870 --> 01:21:09,840
uh with much greater detail than we have

2137
01:21:12,709 --> 01:21:10,880
now

2138
01:21:14,229 --> 01:21:12,719

without it actually being like a major

2139

01:21:15,750 --> 01:21:14,239

budgetary item you know it'll be one of

2140

01:21:18,470 --> 01:21:15,760

those things where the local space

2141

01:21:21,189 --> 01:21:18,480

congress only has the you know it's like

2142

01:21:24,390 --> 01:21:21,199

budgeting one observatory um

2143

01:21:25,590 --> 01:21:24,400

and at that point if they were around uh

2144

01:21:26,790 --> 01:21:25,600

when light from our planet would have

2145

01:21:28,310 --> 01:21:26,800

reached theirs

2146

01:21:29,510 --> 01:21:28,320

they should see us they should know

2147

01:21:31,590 --> 01:21:29,520

where they are they don't have to wait

2148

01:21:32,870 --> 01:21:31,600

to listen to our radio signals they

2149

01:21:34,630 --> 01:21:32,880

should have been able to scope us out by

2150

01:21:35,990 --> 01:21:34,640

our atmosphere for instance

2151
01:21:38,390 --> 01:21:36,000
and they could have been sending flyby

2152
01:21:39,510 --> 01:21:38,400
probes take photos and we say well

2153
01:21:42,149 --> 01:21:39,520
you might not be able to from the

2154
01:21:43,910 --> 01:21:42,159
atmosphere radio is certainly a giveaway

2155
01:21:45,830 --> 01:21:43,920
but so something like the great wall or

2156
01:21:47,430 --> 01:21:45,840
the pyramids it's somebody builds you

2157
01:21:49,189 --> 01:21:47,440
know we often talk about aliens in terms

2158
01:21:50,950 --> 01:21:49,199
of pyramids and uh

2159
01:21:52,550 --> 01:21:50,960
you know a pyramid would be one of the

2160
01:21:54,390 --> 01:21:52,560
most obvious things you could see from

2161
01:21:55,830 --> 01:21:54,400
space you couldn't see it from far off

2162
01:21:57,669 --> 01:21:55,840
and you can't even see the moon landing

2163
01:21:59,510 --> 01:21:57,679

sites from earth and hubble

2164

01:22:01,189 --> 01:21:59,520

but if you're in orbit around the planet

2165

01:22:02,790 --> 01:22:01,199

if you're gonna fly by with a satellite

2166

01:22:05,430 --> 01:22:02,800

you're gonna spot something like that it

2167

01:22:07,590 --> 01:22:05,440

sticks out like a sore thumb right and

2168

01:22:08,709 --> 01:22:07,600

you know you can't look at the a pyramid

2169

01:22:11,590 --> 01:22:08,719

see on the ground and say well i think

2170

01:22:12,870 --> 01:22:11,600

that's natural they're going to know

2171

01:22:14,870 --> 01:22:12,880

that there's something down there that's

2172

01:22:16,149 --> 01:22:14,880

intelligent and i'd be surprised they

2173

01:22:17,430 --> 01:22:16,159

even had to wait that long because they

2174

01:22:19,590 --> 01:22:17,440

ought to be able to pick things up from

2175

01:22:21,430 --> 01:22:19,600

like that from just things like fire

2176

01:22:23,669 --> 01:22:21,440

that individual bonfire is not likely to

2177

01:22:25,110 --> 01:22:23,679

get scoped out but you start picking out

2178

01:22:26,709 --> 01:22:25,120

you know

2179

01:22:28,149 --> 01:22:26,719

little tracing indicates inside you look

2180

01:22:29,990 --> 01:22:28,159

a bit closer on something like why are

2181

01:22:31,750 --> 01:22:30,000

all these tiny little fires all over

2182

01:22:32,470 --> 01:22:31,760

these horse you know

2183

01:22:34,390 --> 01:22:32,480

so

2184

01:22:35,350 --> 01:22:34,400

they should already have known about us

2185

01:22:37,270 --> 01:22:35,360

um

2186

01:22:38,950 --> 01:22:37,280

if they themselves were around obviously

2187

01:22:41,430 --> 01:22:38,960

they can't discover us until they are

2188

01:22:43,270 --> 01:22:41,440

there um but they should have known

2189

01:22:46,229 --> 01:22:43,280

about us a long time ago already if they

2190

01:22:48,390 --> 01:22:46,239

were there so we shouldn't be a new

2191

01:22:49,910 --> 01:22:48,400

thing to them per se

2192

01:22:50,870 --> 01:22:49,920

and um

2193

01:22:52,470 --> 01:22:50,880

you know whenever we talk about them

2194

01:22:54,550 --> 01:22:52,480

visiting us we always have to ask what's

2195

01:22:56,550 --> 01:22:54,560

their motivation no it's not raw

2196

01:22:58,950 --> 01:22:56,560

materials nobody's out there carving up

2197

01:23:00,470 --> 01:22:58,960

every last asteroid and planet right uh

2198

01:23:02,629 --> 01:23:00,480

and you can even suck material out of

2199

01:23:03,750 --> 01:23:02,639

suns they've got way more than what we

2200

01:23:06,709 --> 01:23:03,760

have here

2201

01:23:08,070 --> 01:23:06,719

um and um

2202

01:23:09,270 --> 01:23:08,080

so they're not interested in raw

2203

01:23:11,669 --> 01:23:09,280

materials they have to be interested in

2204

01:23:13,189 --> 01:23:11,679

what what does earth have and it's got

2205

01:23:14,310 --> 01:23:13,199

really interesting floor and fauna those

2206

01:23:16,390 --> 01:23:14,320

are probably gonna be you know for all

2207

01:23:18,149 --> 01:23:16,400

the billions of words out there even the

2208

01:23:21,110 --> 01:23:18,159

very last one of them has ecosystems

2209

01:23:23,430 --> 01:23:21,120

which is unlikely um those are all still

2210

01:23:24,950 --> 01:23:23,440

going to be fairly unique it is huge

2211

01:23:26,950 --> 01:23:24,960

that numbers is still small compared to

2212

01:23:28,950 --> 01:23:26,960

the number of combinations so they might

2213

01:23:30,629 --> 01:23:28,960

be coming here to take samples and of

2214

01:23:32,310 --> 01:23:30,639

course earth culture would probably be

2215

01:23:34,070 --> 01:23:32,320

very interesting to them too

2216

01:23:35,990 --> 01:23:34,080

and the funniest thing because i was

2217

01:23:37,990 --> 01:23:36,000

writing this up recently is looking at a

2218

01:23:39,510 --> 01:23:38,000

motivation to come and visit us if

2219

01:23:41,750 --> 01:23:39,520

you're one of those civilizations that's

2220

01:23:43,830 --> 01:23:41,760

into the prime directive star trek style

2221

01:23:45,669 --> 01:23:43,840

zoo hypothesis thing of of shielding

2222

01:23:47,990 --> 01:23:45,679

plants off while they're primitive

2223

01:23:49,590 --> 01:23:48,000

that implies you find those cultures

2224

01:23:52,070 --> 01:23:49,600

really fascinating which means you

2225

01:23:54,229 --> 01:23:52,080

probably have a black market in

2226

01:23:55,990 --> 01:23:54,239

like stolen memorabilia

2227

01:23:57,910 --> 01:23:56,000

and if it's like any sort of uh

2228

01:23:59,430 --> 01:23:57,920

regulatory effort we do

2229

01:24:07,350 --> 01:23:59,440

you've probably got people breaking

2230

01:24:12,310 --> 01:24:10,550

that is fascinating that is fascinating

2231

01:24:14,950 --> 01:24:12,320

yeah i've got a i've got a first

2232

01:24:15,830 --> 01:24:14,960

printing of rama by arthur c clark no

2233

01:24:17,830 --> 01:24:15,840

way

2234

01:24:19,270 --> 01:24:17,840

yeah yeah that's uh that's a pretty

2235

01:24:20,229 --> 01:24:19,280

interesting way to look at it and the

2236

01:24:26,390 --> 01:24:20,239

other

2237

01:24:28,550 --> 01:24:26,400

what would make earth unique uh there's

2238

01:24:31,910 --> 01:24:28,560

all the gold in the universe out there

2239

01:24:35,110 --> 01:24:31,920

that you know which you know water

2240

01:24:37,430 --> 01:24:35,120

well hydrogen is is is not an issue in

2241

01:24:39,030 --> 01:24:37,440

the universe you know it is the third

2242

01:24:40,709 --> 01:24:39,040

most common material after hydrogen

2243

01:24:42,950 --> 01:24:40,719

helium there are quasars that pump out

2244

01:24:45,510 --> 01:24:42,960

entire planetary masses of water from

2245

01:24:47,910 --> 01:24:45,520

themselves that's right so what would

2246

01:24:50,229 --> 01:24:47,920

make us unique well we got good weed

2247

01:24:52,709 --> 01:24:50,239

we've got a great atmosphere it's

2248

01:24:54,950 --> 01:24:52,719

certainly uh

2249

01:24:55,990 --> 01:24:54,960

climate wise it would be a good place to

2250

01:24:58,470 --> 01:24:56,000

hang out

2251

01:25:01,669 --> 01:24:58,480

but i think you're right just coming by

2252

01:25:03,990 --> 01:25:01,679

and getting samples and going out and

2253

01:25:06,310 --> 01:25:04,000

and growing your own plants or things

2254

01:25:09,110 --> 01:25:06,320

that would be unique here

2255

01:25:12,790 --> 01:25:09,120

is is something to travel to earth for

2256

01:25:15,110 --> 01:25:12,800

hence visitation and probes and and and

2257

01:25:17,590 --> 01:25:15,120

so forth not necessarily to take over

2258

01:25:19,990 --> 01:25:17,600

the planet or to conquer us

2259

01:25:23,189 --> 01:25:20,000

yeah no and the the more important they

2260

01:25:24,870 --> 01:25:23,199

place a value on on you know that

2261

01:25:27,270 --> 01:25:24,880

that sort of thing the individual

2262

01:25:28,709 --> 01:25:27,280

uniqueness of life or culture the more

2263

01:25:31,189 --> 01:25:28,719

likely they are to want to shield that

2264

01:25:32,790 --> 01:25:31,199

from outside influence for a while and

2265

01:25:34,870 --> 01:25:32,800

the more you have a motivation for

2266

01:25:37,189 --> 01:25:34,880

people to want to sneak in and do that

2267

01:25:38,310 --> 01:25:37,199

right and uh so you know it we always

2268

01:25:39,990 --> 01:25:38,320

try to look i'm not saying that's what's

2269

01:25:41,750 --> 01:25:40,000

happening of course but you always want

2270

01:25:43,990 --> 01:25:41,760

to look at what the motivations are and

2271

01:25:46,629 --> 01:25:44,000

what they would do if that was the case

2272

01:25:48,390 --> 01:25:46,639

and uh you know if i was trying to

2273

01:25:50,229 --> 01:25:48,400

abduct people to get dna samples they

2274

01:25:52,149 --> 01:25:50,239

could have got those dna samples a long

2275

01:25:53,990 --> 01:25:52,159

time ago we haven't changed that much

2276

01:25:56,310 --> 01:25:54,000

and they could also just you know abduct

2277

01:25:57,510 --> 01:25:56,320

a mailbox instead there's you know a

2278

01:25:58,870 --> 01:25:57,520

thousand letters by people who have

2279

01:26:01,750 --> 01:25:58,880

touched those that's all the dna you

2280

01:26:03,350 --> 01:26:01,760

need right right right and when we come

2281

01:26:06,149 --> 01:26:03,360

back uh we're going to take a break but

2282

01:26:09,510 --> 01:26:06,159

i do want to talk about we the the whole

2283

01:26:13,189 --> 01:26:09,520

independence day aspect of this

2284

01:26:14,950 --> 01:26:13,199

of of an invasion is something that does

2285

01:26:16,550 --> 01:26:14,960

need to be discussed and you do it

2286

01:26:18,149 --> 01:26:16,560

really really well so when we come back

2287

01:26:20,149 --> 01:26:18,159

we're going to do that and also i

2288

01:26:23,590 --> 01:26:20,159

encourage everybody out there

2289

01:26:25,030 --> 01:26:23,600

if you haven't visited uh isaac's uh

2290

01:26:27,430 --> 01:26:25,040

youtube channel

2291

01:26:29,990 --> 01:26:27,440

start with the fermi paradox compendium

2292

01:26:32,629 --> 01:26:30,000

but then after you do that go straight

2293

01:26:34,870 --> 01:26:32,639

to stupid aliens because that is one of

2294

01:26:37,669 --> 01:26:34,880

the best presentations

2295

01:26:39,669 --> 01:26:37,679

uh i've ever heard to silence a lot of

2296

01:26:41,990 --> 01:26:39,679

people including myself so let's take a

2297

01:26:44,950 --> 01:26:42,000

break right here isaac and when we come

2298

01:26:47,750 --> 01:26:44,960

back we'll pick up where we left off but

2299

01:26:49,030 --> 01:26:47,760

we've got to go to why haven't we been

2300

01:26:51,030 --> 01:26:49,040

invaded

2301

01:26:52,790 --> 01:26:51,040

it's one of the best conversations uh

2302

01:26:54,870 --> 01:26:52,800

that one can have with isaac arthur

2303

01:26:58,510 --> 01:26:54,880

we're gonna do that next stay with us

2304

01:27:04,220 --> 01:26:58,520

this is fade to black

2305

01:27:04,230 --> 01:27:14,790

[Music]

2306

01:27:21,030 --> 01:27:17,990

way out here we listen to jimmy church

2307

01:27:22,870 --> 01:27:21,040

you're listening to fade to black

2308

01:27:25,590 --> 01:27:22,880

always on the edge of the hottest

2309

01:27:31,510 --> 01:27:25,600

alternative talk jimmy church with fade

2310

01:27:31,520 --> 01:27:44,950

[Applause]

2311

01:27:50,790 --> 01:27:48,870

hurricanes earthquakes wildfires this

2312

01:27:53,270 --> 01:27:50,800

year we've experienced more than our

2313

01:27:55,510 --> 01:27:53,280

fair share this is jimmy church of fade

2314

01:27:57,510 --> 01:27:55,520

to black and last month i decided to

2315

01:28:00,070 --> 01:27:57,520

make sure my family does not have to

2316

01:28:03,110 --> 01:28:00,080

worry about food should we get caught in

2317

01:28:05,510 --> 01:28:03,120

a real emergency situation introducing

2318

01:28:07,430 --> 01:28:05,520

humana a healthy storable product that

2319

01:28:09,270 --> 01:28:07,440

tastes so good that you'll want to eat

2320

01:28:11,669 --> 01:28:09,280

it every day instead of just during

2321

01:28:13,910 --> 01:28:11,679

those times of duress all new mana

2322

01:28:17,270 --> 01:28:13,920

products have a 25 year shelf life are

2323

01:28:19,750 --> 01:28:17,280

msg and gmo free no preservatives and

2324

01:28:21,669 --> 01:28:19,760

are made in america with the new mana

2325

01:28:23,270 --> 01:28:21,679

pack in your home you'll be able to

2326

01:28:25,030 --> 01:28:23,280

sleep at night knowing that you've

2327

01:28:27,830 --> 01:28:25,040

protected your family

2328

01:28:30,550 --> 01:28:27,840

not only have i tasted and tested i own

2329

01:28:32,870 --> 01:28:30,560

it now you can too just click on the new

2330

01:28:35,110 --> 01:28:32,880

mana banner on jimmychurchradio.com and

2331

01:28:37,430 --> 01:28:35,120

use the promo code jimmy when you order

2332

01:28:39,910 --> 01:28:37,440

in addition to a discount we'll send you

2333

01:28:43,030 --> 01:28:39,920

an autographed fade to black t-shirt

2334

01:28:45,110 --> 01:28:43,040

seriously go back lee tappy

2335

01:28:47,750 --> 01:28:45,120

do you want to be an official fate or

2336

01:28:49,990 --> 01:28:47,760

not of course you do this is jimmy

2337

01:28:51,270 --> 01:28:50,000

churchill fade to black just go to our

2338

01:28:54,470 --> 01:28:51,280

membership section at

2339

01:29:00,950 --> 01:28:58,510

so you love talk radio then you'll love

2340

01:29:03,830 --> 01:29:00,960

talkstreamlive.com talk stream live is

2341

01:29:05,990 --> 01:29:03,840

always on 24 7 with the best streaming

2342

01:29:08,229 --> 01:29:06,000

talk shows find your favorite talkers

2343

01:29:10,870 --> 01:29:08,239

and discover some new ones it's free

2344

01:29:12,870 --> 01:29:10,880

readily available online or on mobile

2345

01:29:14,950 --> 01:29:12,880

with any smartphone or tablet finding

2346

01:29:17,510 --> 01:29:14,960

your favorite talk shows all in one

2347

01:29:18,430 --> 01:29:17,520

place has gotten a whole lot easier just

2348

01:29:20,550 --> 01:29:18,440

go to

2349

01:29:22,870 --> 01:29:20,560

talkstreamlive.com be sure to download

2350

01:29:25,750 --> 01:29:22,880

the free apps from google play or the

2351

01:29:29,030 --> 01:29:25,760

itunes app store

2352

01:29:30,900 --> 01:29:29,040

you listen to us and we listen to you

2353

01:29:35,310 --> 01:29:30,910

and so does the cia

2354

01:29:37,990 --> 01:29:35,320

[Music]

2355

01:29:40,070 --> 01:29:38,000

kgraradio.com if you have hard water the

2356

01:29:41,669 --> 01:29:40,080

lime scale not only leaves white spots

2357

01:29:43,590 --> 01:29:41,679

it clogs pipes and breaks down

2358

01:29:45,750 --> 01:29:43,600

appliances costing you hundreds of

2359

01:29:47,669 --> 01:29:45,760

dollars in energy and wear eliminate

2360

01:29:49,830 --> 01:29:47,679

lime scale and other water issues like

2361

01:29:51,910 --> 01:29:49,840

brown staining and bad odors with hydro

2362

01:29:54,070 --> 01:29:51,920

care water products available from wave

2363

01:29:56,070 --> 01:29:54,080

home solutions waves affordable water

2364

01:29:57,990 --> 01:29:56,080

systems don't use salts or chemicals

2365

01:30:00,470 --> 01:29:58,000

you'll love the way your water tastes

2366

01:30:01,750 --> 01:30:00,480

smells and looks satisfaction guaranteed

2367

01:30:03,830 --> 01:30:01,760

for more information go to

2368

01:30:09,110 --> 01:30:03,840

bestwater123.com

2369

01:30:11,910 --> 01:30:09,120

are you intrigued by paranormal talk

2370

01:30:14,629 --> 01:30:11,920

radio you love the new paranormal radio

2371

01:30:16,390 --> 01:30:14,639

app from talk stream live

2372

01:30:19,189 --> 01:30:16,400

you'll find a great selection of talk

2373

01:30:21,910 --> 01:30:19,199

shows covering ufos ghosts strange

2374

01:30:24,149 --> 01:30:21,920

phenomena and much more download the

2375

01:30:26,149 --> 01:30:24,159

paranormal radio app now and start

2376

01:30:28,390 --> 01:30:26,159

listening to the very best in paranormal

2377

01:30:30,149 --> 01:30:28,400

talk entertainment including the network

2378

01:30:33,430 --> 01:30:30,159

you're listening to right now the

2379

01:30:37,590 --> 01:30:33,440

paranormal radio app free in google play

2380

01:30:44,470 --> 01:30:39,669

you are listening to fade to black with

2381

01:30:49,910 --> 01:30:46,950

hi i'm reece vance you're listening to

2382

01:30:52,709 --> 01:30:49,920

jimmy church this is revolution the

2383

01:30:55,990 --> 01:30:52,719

revolution will not be televised the

2384

01:31:00,720 --> 01:30:56,000

revolution is on radio

2385

01:31:38,629 --> 01:31:35,350

[Music]

2386

01:31:41,910 --> 01:31:40,470

welcome back fade to black i am your

2387

01:31:44,709 --> 01:31:41,920

host jimmy church you can follow me on

2388

01:31:45,910 --> 01:31:44,719

twitter at j church radio you can follow

2389

01:31:49,270 --> 01:31:45,920

isaac

2390

01:31:52,310 --> 01:31:49,280

you know what let me let me jump in

2391

01:31:53,750 --> 01:31:52,320

really quick isaac is it isaac a arthur

2392

01:31:58,709 --> 01:31:53,760

on twitter

2393

01:31:59,990 --> 01:31:58,719

i i use whichever ones are free at the

2394

01:32:02,470 --> 01:32:00,000

time when you're logging into those

2395

01:32:04,629 --> 01:32:02,480

things there's usually some other isaac

2396

01:32:07,669 --> 01:32:04,639

um let me double check yeah it is isaac

2397

01:32:09,430 --> 01:32:07,679

a arthur underscore between the a's

2398

01:32:11,430 --> 01:32:09,440

there you go there's a lot of other

2399

01:32:13,510 --> 01:32:11,440

isaac arthurs out there you need the a

2400

01:32:15,669 --> 01:32:13,520

in the middle to separate you from the

2401

01:32:17,430 --> 01:32:15,679

uh imposters it's

2402

01:32:18,790 --> 01:32:17,440

actually always someone's there there's

2403

01:32:20,470 --> 01:32:18,800

another isaac arthur he actually looks a

2404

01:32:22,310 --> 01:32:20,480

little bit like me does craft design

2405

01:32:25,030 --> 01:32:22,320

beers on youtube but they're actually

2406

01:32:26,709 --> 01:32:25,040

good videos

2407

01:32:28,629 --> 01:32:26,719

that's a good guy to get to know right

2408

01:32:30,310 --> 01:32:28,639

there that's always meant to look them

2409

01:32:32,709 --> 01:32:30,320

up at some point yeah that's a that's

2410

01:32:33,590 --> 01:32:32,719

your show sponsor if i've ever heard one

2411

01:32:35,590 --> 01:32:33,600

so

2412

01:32:37,189 --> 01:32:35,600

look that's the big question uh that we

2413

01:32:38,550 --> 01:32:37,199

started to touch upon right before the

2414

01:32:42,470 --> 01:32:38,560

break is

2415

01:32:44,149 --> 01:32:42,480

if uh the our galaxy and the universe is

2416

01:32:46,070 --> 01:32:44,159

teeming with life and there's advanced

2417

01:32:47,750 --> 01:32:46,080

civilizations out there ten thousand a

2418

01:32:50,550 --> 01:32:47,760

billion years a million years more

2419

01:32:52,070 --> 01:32:50,560

advanced than us then they must be

2420

01:32:54,870 --> 01:32:52,080

having our eye

2421

01:32:57,030 --> 01:32:54,880

on planet earth why haven't they invaded

2422

01:33:00,629 --> 01:32:57,040

and enslaved us

2423

01:33:02,870 --> 01:33:00,639

well um okay i posed two things one

2424

01:33:05,669 --> 01:33:02,880

they would be enlightened beings and

2425

01:33:06,629 --> 01:33:05,679

have moved past uh you know

2426

01:33:09,510 --> 01:33:06,639

death

2427

01:33:11,669 --> 01:33:09,520

but then there's the other side uh that

2428

01:33:13,990 --> 01:33:11,679

maybe they're just not interested and

2429

01:33:17,270 --> 01:33:14,000

there's nothing here for

2430

01:33:20,070 --> 01:33:17,280

for them to enslave and get a benefit

2431

01:33:23,590 --> 01:33:20,080

from but that's the question why haven't

2432

01:33:24,950 --> 01:33:23,600

we been taken over well i mean we've got

2433

01:33:26,629 --> 01:33:24,960

different ways we can look at it i tend

2434

01:33:28,070 --> 01:33:26,639

to assume that the reason we haven't

2435

01:33:30,310 --> 01:33:28,080

been is because nobody is out there able

2436

01:33:33,030 --> 01:33:30,320

to do it yet um but

2437

01:33:34,149 --> 01:33:33,040

if they were you we hear this um oh they

2438

01:33:36,229 --> 01:33:34,159

wouldn't be interested in us they'd be

2439

01:33:38,149 --> 01:33:36,239

so far beyond us and that one never

2440

01:33:39,510 --> 01:33:38,159

holds water to me i could imagine

2441

01:33:40,950 --> 01:33:39,520

there'd be a lot of people out there who

2442

01:33:43,110 --> 01:33:40,960

didn't find this interesting but there

2443

01:33:45,990 --> 01:33:43,120

are people who devote their entire lives

2444

01:33:47,270 --> 01:33:46,000

to studying plants or insects right why

2445

01:33:48,709 --> 01:33:47,280

wouldn't they you know suddenly we could

2446

01:33:51,669 --> 01:33:48,719

talk to them we would everybody talks to

2447

01:33:53,430 --> 01:33:51,679

cats and dogs so i don't like the idea

2448

01:33:55,990 --> 01:33:53,440

that they're just going to find us

2449

01:33:57,750 --> 01:33:56,000

boring as say people visit kansas and

2450

01:33:59,510 --> 01:33:57,760

oklahoma all the time and spy them being

2451

01:34:00,629 --> 01:33:59,520

proverbially boring

2452

01:34:02,390 --> 01:34:00,639

um

2453

01:34:03,910 --> 01:34:02,400

now the they would have invaded us that

2454

01:34:04,790 --> 01:34:03,920

one's actually a little bit easier to

2455

01:34:06,870 --> 01:34:04,800

cover

2456

01:34:08,870 --> 01:34:06,880

because the first thing is if if we're

2457

01:34:10,629 --> 01:34:08,880

out there and they're out there either

2458

01:34:11,910 --> 01:34:10,639

we're the first species they ever met

2459

01:34:14,149 --> 01:34:11,920

and they're going to be kind of curious

2460

01:34:15,990 --> 01:34:14,159

about us or they're all over the place

2461

01:34:18,149 --> 01:34:16,000

and if they're all over the place

2462

01:34:20,310 --> 01:34:18,159

then you have to say well if they invade

2463

01:34:21,270 --> 01:34:20,320

us what is everybody else doing

2464

01:34:22,470 --> 01:34:21,280

you know

2465

01:34:24,629 --> 01:34:22,480

we're not going to have some close

2466

01:34:27,110 --> 01:34:24,639

neighbor who's the only one who's there

2467

01:34:28,790 --> 01:34:27,120

either it's just us or it's just us and

2468

01:34:30,550 --> 01:34:28,800

them and we are a bit of a puzzle that

2469

01:34:31,910 --> 01:34:30,560

they are kind of interested in because

2470

01:34:32,950 --> 01:34:31,920

it's the first alien life they've ever

2471

01:34:35,510 --> 01:34:32,960

met either

2472

01:34:37,110 --> 01:34:35,520

um or there's species all over the place

2473

01:34:38,870 --> 01:34:37,120

some which are probably really old and

2474

01:34:40,629 --> 01:34:38,880

powerful and might take offense if

2475

01:34:42,870 --> 01:34:40,639

somebody's just starts blowing up other

2476

01:34:45,110 --> 01:34:42,880

people's plans or enslaving people

2477

01:34:46,470 --> 01:34:45,120

um but then of course there's the other

2478

01:34:48,950 --> 01:34:46,480

motive is

2479

01:34:51,030 --> 01:34:48,960

what is the actual motive to invade to

2480

01:34:53,270 --> 01:34:51,040

study sure i can see that one easy

2481

01:34:55,189 --> 01:34:53,280

enough but they don't need us for slave

2482

01:34:56,950 --> 01:34:55,199

labor they've they've almost got to have

2483

01:34:59,590 --> 01:34:56,960

better robots than we do now you know

2484

01:35:00,470 --> 01:34:59,600

and we don't need it anymore either

2485

01:35:02,550 --> 01:35:00,480

one of the biggest problems about

2486

01:35:04,950 --> 01:35:02,560

getting rid of slavery in the uh in the

2487

01:35:07,270 --> 01:35:04,960

19th century was that many places were

2488

01:35:08,229 --> 01:35:07,280

still dependent on basically forced

2489

01:35:10,550 --> 01:35:08,239

labor

2490

01:35:12,390 --> 01:35:10,560

and it got a lot easier to ban that as

2491

01:35:15,669 --> 01:35:12,400

we got better automation

2492

01:35:17,669 --> 01:35:15,679

what value do we have as label or as

2493

01:35:19,110 --> 01:35:17,679

slaves we really don't have any

2494

01:35:20,310 --> 01:35:19,120

um

2495

01:35:21,590 --> 01:35:20,320

and uh you know they're not going to

2496

01:35:23,350 --> 01:35:21,600

want to grow us for food because they

2497

01:35:25,110 --> 01:35:23,360

could clone us and you know presumably

2498

01:35:26,629 --> 01:35:25,120

they don't actually have to kill people

2499

01:35:28,950 --> 01:35:26,639

to get meat from them

2500

01:35:31,189 --> 01:35:28,960

so there's not an obvious motivation to

2501

01:35:33,030 --> 01:35:31,199

invade us to take us over in the classic

2502

01:35:35,110 --> 01:35:33,040

sense the ward and you know that's just

2503

01:35:36,629 --> 01:35:35,120

potentially causing them problems why

2504

01:35:39,350 --> 01:35:36,639

don't most countries invade places

2505

01:35:41,350 --> 01:35:39,360

nowadays the climate the situation

2506

01:35:44,310 --> 01:35:41,360

doesn't really make that

2507

01:35:45,830 --> 01:35:44,320

you know viable either or to do it or to

2508

01:35:48,390 --> 01:35:45,840

want to do it

2509

01:35:49,990 --> 01:35:48,400

and that's that's very technology based

2510

01:35:51,590 --> 01:35:50,000

every culture every race is going to be

2511

01:35:54,310 --> 01:35:51,600

a lot different in their outlook so you

2512

01:35:57,110 --> 01:35:54,320

might have some that were fine with that

2513

01:35:59,030 --> 01:35:57,120

but if we assume on the mediocrity

2514

01:36:00,310 --> 01:35:59,040

principle that we are fairly normal and

2515

01:36:03,110 --> 01:36:00,320

we kind of have to make that assumption

2516

01:36:05,030 --> 01:36:03,120

because we only got one case to look at

2517

01:36:06,470 --> 01:36:05,040

then you'd kind of guess there'd be

2518

01:36:08,390 --> 01:36:06,480

people who would be very offended by

2519

01:36:10,070 --> 01:36:08,400

that who might you know take militant

2520

01:36:11,270 --> 01:36:10,080

issue to somebody going around invading

2521

01:36:13,189 --> 01:36:11,280

planets

2522

01:36:16,149 --> 01:36:13,199

and again there's no real motivation to

2523

01:36:18,070 --> 01:36:16,159

do it for sort of obvious benefits uh

2524

01:36:19,430 --> 01:36:18,080

but again using the they're all

2525

01:36:21,189 --> 01:36:19,440

collectors and they want to steal a

2526

01:36:22,870 --> 01:36:21,199

comic book for example

2527

01:36:24,390 --> 01:36:22,880

they might have people sticking claims

2528

01:36:26,790 --> 01:36:24,400

to it because they want

2529

01:36:27,990 --> 01:36:26,800

those cultural artifacts and so it would

2530

01:36:29,910 --> 01:36:28,000

be kind of amusing you could have a

2531

01:36:31,590 --> 01:36:29,920

hidden invasion where some

2532

01:36:32,470 --> 01:36:31,600

you know nation out there some space

2533

01:36:35,270 --> 01:36:32,480

nation

2534

01:36:36,870 --> 01:36:35,280

invaded a planet seizes their own uh

2535

01:36:38,950 --> 01:36:36,880

violently protects it from other people

2536

01:36:42,149 --> 01:36:38,960

coming by and

2537

01:36:44,470 --> 01:36:42,159

you know steals away uh wikipedia or the

2538

01:36:46,229 --> 01:36:44,480

you know best 100 films whatever to sell

2539

01:36:49,109 --> 01:36:46,239

on the market as a war

2540

01:36:51,750 --> 01:36:49,119

um and so it kind of depends what do we

2541

01:36:54,070 --> 01:36:51,760

mean by invasion the classic military

2542

01:36:56,149 --> 01:36:54,080

invasion your independence day scenarios

2543

01:36:57,830 --> 01:36:56,159

those don't really walk uh and of course

2544

01:36:59,189 --> 01:36:57,840

they also be very short too you're just

2545

01:37:00,470 --> 01:36:59,199

not going to win if they decide to

2546

01:37:02,390 --> 01:37:00,480

invade that way and they just want us

2547

01:37:04,550 --> 01:37:02,400

all dead because you don't have to land

2548

01:37:06,229 --> 01:37:04,560

a fleet to uh to kill everybody you just

2549

01:37:07,910 --> 01:37:06,239

as you say you don't you have to stop at

2550

01:37:09,750 --> 01:37:07,920

the planet you just dump your trash out

2551
01:37:12,629 --> 01:37:09,760
before you arrive and just go around the

2552
01:37:14,709 --> 01:37:12,639
planet and kill everybody

2553
01:37:16,310 --> 01:37:14,719
but the okay so

2554
01:37:17,590 --> 01:37:16,320
now

2555
01:37:20,229 --> 01:37:17,600
the

2556
01:37:22,229 --> 01:37:20,239
this is where for me

2557
01:37:24,790 --> 01:37:22,239
i look at us and i think that we're

2558
01:37:27,350 --> 01:37:24,800
growing up isaac we're maturing in fact

2559
01:37:28,629 --> 01:37:27,360
you just mentioned that in in a strange

2560
01:37:31,990 --> 01:37:28,639
way about

2561
01:37:33,350 --> 01:37:32,000
invading another country even that is

2562
01:37:35,750 --> 01:37:33,360
less and less

2563
01:37:37,910 --> 01:37:35,760

likely as the days move forward for a

2564

01:37:40,070 --> 01:37:37,920

lot of different reasons but another

2565

01:37:42,629 --> 01:37:40,080

reason is that we are maturing hopefully

2566

01:37:45,830 --> 01:37:42,639

one day we won't have guns

2567

01:37:46,709 --> 01:37:45,840

but an intelligent civilization out

2568

01:37:49,109 --> 01:37:46,719

there

2569

01:37:52,310 --> 01:37:49,119

would develop in the same direction and

2570

01:37:53,510 --> 01:37:52,320

maybe would have to move away from a

2571

01:37:56,070 --> 01:37:53,520

warring

2572

01:37:58,390 --> 01:37:56,080

a faction that is out there trying to

2573

01:38:00,229 --> 01:37:58,400

conquer because there are other

2574

01:38:02,629 --> 01:38:00,239

civilizations out there too as well that

2575

01:38:05,910 --> 01:38:02,639

they're in communication with i would

2576

01:38:08,550 --> 01:38:05,920

think and that this is the way of the

2577

01:38:09,510 --> 01:38:08,560

universe in the way of the galaxy and

2578

01:38:12,470 --> 01:38:09,520

that

2579

01:38:15,430 --> 01:38:12,480

battling and killing isn't part of an

2580

01:38:17,109 --> 01:38:15,440

enlightened civilization

2581

01:38:18,629 --> 01:38:17,119

i mean i think that's that's probably

2582

01:38:20,870 --> 01:38:18,639

where certainly what i'd like to be true

2583

01:38:22,550 --> 01:38:20,880

is that you know as species get more

2584

01:38:23,510 --> 01:38:22,560

technology they get more mature and

2585

01:38:25,109 --> 01:38:23,520

ethical

2586

01:38:27,430 --> 01:38:25,119

but i you know you really can't take

2587

01:38:29,189 --> 01:38:27,440

that too much for given because their

2588

01:38:30,870 --> 01:38:29,199

idea of what's ethical and all idea i

2589

01:38:32,390 --> 01:38:30,880

mean you go back and read a book from

2590

01:38:34,790 --> 01:38:32,400

the beginning of the 20th century i was

2591

01:38:36,470 --> 01:38:34,800

thinking about h.p lovecraft uh love his

2592

01:38:39,109 --> 01:38:36,480

work one of the first guys to really

2593

01:38:40,229 --> 01:38:39,119

explore the idea of a vast and huge

2594

01:38:42,790 --> 01:38:40,239

universe

2595

01:38:44,310 --> 01:38:42,800

um but man was a racist through and

2596

01:38:45,510 --> 01:38:44,320

through and a lot of people from that

2597

01:38:47,830 --> 01:38:45,520

year of war

2598

01:38:49,750 --> 01:38:47,840

and somebody writing in the 22nd century

2599

01:38:50,790 --> 01:38:49,760

might tend to think we're all barbarians

2600

01:38:52,950 --> 01:38:50,800

too

2601
01:38:54,550 --> 01:38:52,960
and uh they might have a completely

2602
01:38:56,550 --> 01:38:54,560
different scale for how they evaluate

2603
01:38:58,070 --> 01:38:56,560
that try to predict future ethics it's

2604
01:38:59,590 --> 01:38:58,080
usually not going to go over to you know

2605
01:39:01,430 --> 01:38:59,600
too successfully

2606
01:39:03,590 --> 01:39:01,440
so we could have aliens out there who

2607
01:39:05,750 --> 01:39:03,600
hold views that we just find absolutely

2608
01:39:07,189 --> 01:39:05,760
loathsome um

2609
01:39:09,189 --> 01:39:07,199
and uh

2610
01:39:11,030 --> 01:39:09,199
i i think though that you do tend to

2611
01:39:13,109 --> 01:39:11,040
probably have to go away from overt

2612
01:39:14,070 --> 01:39:13,119
violence mass skill destruction just

2613
01:39:16,310 --> 01:39:14,080

because

2614

01:39:18,229 --> 01:39:16,320

it's so much easier to blow things up

2615

01:39:20,310 --> 01:39:18,239

than to make them and any technological

2616

01:39:22,390 --> 01:39:20,320

civilization is going to have had to

2617

01:39:23,750 --> 01:39:22,400

confront that that problem

2618

01:39:26,470 --> 01:39:23,760

so regardless whether or not they have

2619

01:39:30,070 --> 01:39:26,480

to be very war-like or not they probably

2620

01:39:31,350 --> 01:39:30,080

don't blow stuff up a lot just because

2621

01:39:33,350 --> 01:39:31,360

that's not going to be the most

2622

01:39:35,750 --> 01:39:33,360

effective way from their perspective to

2623

01:39:37,990 --> 01:39:35,760

go about you know winning things it's

2624

01:39:41,030 --> 01:39:38,000

too too much of an exchange of nukes

2625

01:39:42,390 --> 01:39:41,040

everywhere or anti-matter devices or you

2626

01:39:44,790 --> 01:39:42,400

know scorching a laser from another

2627

01:39:46,550 --> 01:39:44,800

solar system with a niko dyson beam

2628

01:39:47,590 --> 01:39:46,560

that sort of practice

2629

01:39:49,189 --> 01:39:47,600

is

2630

01:39:50,790 --> 01:39:49,199

much too much of a scorched earth

2631

01:39:53,270 --> 01:39:50,800

literally policy

2632

01:39:54,950 --> 01:39:53,280

and so hopefully we don't see that much

2633

01:39:57,109 --> 01:39:54,960

of that sort of behavior in the future

2634

01:39:58,790 --> 01:39:57,119

from us or them or whoever

2635

01:40:00,310 --> 01:39:58,800

uh but we can't really rule it out

2636

01:40:02,950 --> 01:40:00,320

either there could be species out there

2637

01:40:05,830 --> 01:40:02,960

that are just openly genocidal

2638

01:40:08,709 --> 01:40:05,840

this is the uh 50th anniversary of

2639

01:40:09,990 --> 01:40:08,719

chariots of the gods and i it's hard for

2640

01:40:11,910 --> 01:40:10,000

me to

2641

01:40:16,149 --> 01:40:11,920

wrap my head around that it's been 50

2642

01:40:20,229 --> 01:40:16,159

years but it has this is uh 2019

2643

01:40:22,709 --> 01:40:20,239

and the impact that eric had on popular

2644

01:40:24,310 --> 01:40:22,719

culture and the concept of this which

2645

01:40:26,550 --> 01:40:24,320

you brought up h.p lovecraft he

2646

01:40:29,910 --> 01:40:26,560

certainly wrote about this uh

2647

01:40:31,750 --> 01:40:29,920

these theories a hundred years ago but

2648

01:40:33,189 --> 01:40:31,760

that's where we are today how much

2649

01:40:36,070 --> 01:40:33,199

visitation

2650

01:40:38,870 --> 01:40:36,080

uh do you think has happened in the past

2651
01:40:41,189 --> 01:40:38,880
and even the distant past on this planet

2652
01:40:42,470 --> 01:40:41,199
well i mean again my stated view on it

2653
01:40:45,350 --> 01:40:42,480
is that there's probably no other

2654
01:40:47,109 --> 01:40:45,360
intelligent species in our galaxy yet so

2655
01:40:48,709 --> 01:40:47,119
i would guess not but if there's anybody

2656
01:40:51,109 --> 01:40:48,719
out there who is doing it then i would

2657
01:40:52,229 --> 01:40:51,119
guess tons it's it's just

2658
01:40:54,870 --> 01:40:52,239
you know we'd say one of the issues the

2659
01:40:56,550 --> 01:40:54,880
fermi paradox is not that uh people

2660
01:40:58,310 --> 01:40:56,560
would want to visit earth it's that they

2661
01:41:00,149 --> 01:40:58,320
are so likely to want to visit earth

2662
01:41:01,910 --> 01:41:00,159
that it's almost unbelievable that we

2663
01:41:03,669 --> 01:41:01,920

wouldn't see them all the time and of

2664

01:41:05,430 --> 01:41:03,679

course many people feel that we do

2665

01:41:07,109 --> 01:41:05,440

but if they're out there i would take is

2666

01:41:09,830 --> 01:41:07,119

it almost a given that they have been

2667

01:41:11,750 --> 01:41:09,840

here so many times it's ridiculous

2668

01:41:13,430 --> 01:41:11,760

um and again from my perspective that

2669

01:41:14,709 --> 01:41:13,440

means they're probably not out there but

2670

01:41:16,149 --> 01:41:14,719

if they are

2671

01:41:17,910 --> 01:41:16,159

i just can't imagine why they wouldn't

2672

01:41:19,430 --> 01:41:17,920

have swung by you're not because they'd

2673

01:41:22,070 --> 01:41:19,440

be obsessed with earth but when you're

2674

01:41:23,430 --> 01:41:22,080

talking about massive civilizations of

2675

01:41:24,550 --> 01:41:23,440

who knows how many quintillions of

2676

01:41:25,350 --> 01:41:24,560

members

2677

01:41:27,590 --> 01:41:25,360

um

2678

01:41:30,790 --> 01:41:27,600

somebody is going to have written their

2679

01:41:32,550 --> 01:41:30,800

entire thesis on earth even if almost

2680

01:41:34,629 --> 01:41:32,560

nobody even knows what the plan exists

2681

01:41:36,390 --> 01:41:34,639

right you know you just you specialize

2682

01:41:37,430 --> 01:41:36,400

societies you're going to have people

2683

01:41:38,790 --> 01:41:37,440

who are

2684

01:41:40,709 --> 01:41:38,800

all about earth who probably know more

2685

01:41:43,109 --> 01:41:40,719

about earth than we do and they've made

2686

01:41:44,470 --> 01:41:43,119

their entire life career right

2687

01:41:47,510 --> 01:41:44,480

you'll have fan clubs that might

2688

01:41:49,350 --> 01:41:47,520

outnumber our entire population

2689

01:41:51,510 --> 01:41:49,360

right right and just because their

2690

01:41:52,709 --> 01:41:51,520

civilizations are so huge that even

2691

01:41:55,350 --> 01:41:52,719

though it's a tiny portion that's

2692

01:41:57,830 --> 01:41:55,360

interested it's still a huge number yeah

2693

01:41:59,830 --> 01:41:57,840

just like uh the japanese and the french

2694

01:42:01,990 --> 01:41:59,840

know more about the blues here in the

2695

01:42:03,830 --> 01:42:02,000

united states than we do

2696

01:42:06,950 --> 01:42:03,840

that live here that's a fascinating way

2697

01:42:08,390 --> 01:42:06,960

to look at it and then you um you

2698

01:42:10,149 --> 01:42:08,400

discuss

2699

01:42:11,590 --> 01:42:10,159

in in depth

2700

01:42:13,030 --> 01:42:11,600

many times

2701
01:42:16,070 --> 01:42:13,040
about

2702
01:42:18,709 --> 01:42:16,080
coming here if your focus was on planet

2703
01:42:20,070 --> 01:42:18,719
earth you would spend so much time

2704
01:42:22,550 --> 01:42:20,080
getting here

2705
01:42:24,550 --> 01:42:22,560
that you would know everything about

2706
01:42:26,550 --> 01:42:24,560
the earth our languages and everything

2707
01:42:29,270 --> 01:42:26,560
about us before you even arrived and

2708
01:42:32,149 --> 01:42:29,280
then so you would have an ability to

2709
01:42:33,430 --> 01:42:32,159
to communicate and you would know

2710
01:42:36,950 --> 01:42:33,440
how to build

2711
01:42:38,629 --> 01:42:36,960
a hybrid human to represent

2712
01:42:40,149 --> 01:42:38,639
us here on earth too as well so we

2713
01:42:42,390 --> 01:42:40,159

wouldn't freak out

2714

01:42:44,390 --> 01:42:42,400

on android or i mean you know you you

2715

01:42:46,709 --> 01:42:44,400

you have the options there now it might

2716

01:42:48,310 --> 01:42:46,719

be really hard to mimic human behavior

2717

01:42:49,910 --> 01:42:48,320

you know we so much of what we do is is

2718

01:42:52,310 --> 01:42:49,920

something we've learned our whole life

2719

01:42:53,350 --> 01:42:52,320

and our brains are wired for a lot of it

2720

01:42:54,790 --> 01:42:53,360

but they should be able to cobble

2721

01:42:56,470 --> 01:42:54,800

together something now they might not be

2722

01:42:57,430 --> 01:42:56,480

able to do something that would pass for

2723

01:42:58,950 --> 01:42:57,440

human

2724

01:43:01,270 --> 01:42:58,960

before they actually landed and took

2725

01:43:02,790 --> 01:43:01,280

samples but almost as soon as they

2726

01:43:03,990 --> 01:43:02,800

they're out there exposed to it they

2727

01:43:05,910 --> 01:43:04,000

should be able to replicate something

2728

01:43:07,189 --> 01:43:05,920

like that if they even need to

2729

01:43:09,109 --> 01:43:07,199

um you know we have to say they're

2730

01:43:10,550 --> 01:43:09,119

surveilling us well

2731

01:43:13,109 --> 01:43:10,560

you know we mentioned abducting a

2732

01:43:14,709 --> 01:43:13,119

mailbox oil why not infiltrate an amazon

2733

01:43:16,790 --> 01:43:14,719

warehouse in the middle of night and put

2734

01:43:19,109 --> 01:43:16,800

surveillance tracking gear in every last

2735

01:43:21,030 --> 01:43:19,119

random package

2736

01:43:23,030 --> 01:43:21,040

and that comes your data pool and that's

2737

01:43:24,390 --> 01:43:23,040

a very big one and if you can't mimic

2738

01:43:25,830 --> 01:43:24,400

them after that

2739

01:43:28,229 --> 01:43:25,840

then you probably just can't do it

2740

01:43:30,470 --> 01:43:28,239

period so you'd be stuck just observing

2741

01:43:33,109 --> 01:43:30,480

but it really shouldn't be a problem we

2742

01:43:35,030 --> 01:43:33,119

know we know how to surveil uh we

2743

01:43:37,350 --> 01:43:35,040

obviously we don't really do a lot of uh

2744

01:43:39,270 --> 01:43:37,360

messaging about the few uncontacted tribes

2745

01:43:41,350 --> 01:43:39,280

we have but we could surveil them so

2746

01:43:45,030 --> 01:43:41,360

they wouldn't know it was us you know

2747

01:43:46,709 --> 01:43:45,040

um i would not expect us to uh

2748

01:43:48,470 --> 01:43:46,719

to notice if they were doing it with the

2749

01:43:50,629 --> 01:43:48,480

intention of being secret

2750

01:43:52,870 --> 01:43:50,639

um but uh

2751

01:43:56,470 --> 01:43:52,880

they should have a huge data pool on us

2752

01:43:58,149 --> 01:43:56,480

and uh you know they they have access to

2753

01:43:59,510 --> 01:43:58,159

all of our information nowadays because

2754

01:44:01,350 --> 01:43:59,520

we have the internet

2755

01:44:03,430 --> 01:44:01,360

but uh they have to get down here to

2756

01:44:05,669 --> 01:44:03,440

access that but they shouldn't have any

2757

01:44:07,990 --> 01:44:05,679

problem doing that either you land some

2758

01:44:10,550 --> 01:44:08,000

random place send out some human-looking

2759

01:44:12,870 --> 01:44:10,560

androids to go set up a server form or

2760

01:44:15,109 --> 01:44:12,880

you know a download center and now

2761

01:44:18,149 --> 01:44:15,119

you've got all that information with uh

2762

01:44:20,550 --> 01:44:18,159

fast radio bursts which are you know if

2763

01:44:22,390 --> 01:44:20,560

you're a cosmologist these days or an

2764

01:44:25,430 --> 01:44:22,400

astrophysicist or

2765

01:44:27,109 --> 01:44:25,440

an astronomer fast radio bursts are

2766

01:44:29,510 --> 01:44:27,119

the trend right now to go out and find

2767

01:44:33,189 --> 01:44:29,520

these things along with exoplanets

2768

01:44:34,470 --> 01:44:33,199

the window of our technology here we've

2769

01:44:36,870 --> 01:44:34,480

had radio

2770

01:44:37,910 --> 01:44:36,880

waves emitting from this planet

2771

01:44:40,870 --> 01:44:37,920

for

2772

01:44:43,350 --> 01:44:40,880

about a hundred years but it's now very

2773

01:44:46,149 --> 01:44:43,360

little of what we do right everything is

2774

01:44:48,629 --> 01:44:46,159

is is wired now our communication is

2775

01:44:51,510 --> 01:44:48,639

wired we still have radio waves but it's

2776

01:44:52,790 --> 01:44:51,520

but we are quickly moving away from it

2777

01:44:55,189 --> 01:44:52,800

as we

2778

01:44:57,430 --> 01:44:55,199

advance as a civilization and maybe in a

2779

01:45:00,790 --> 01:44:57,440

hundred years there will be zero

2780

01:45:02,229 --> 01:45:00,800

radio waves being emitted from here is

2781

01:45:04,310 --> 01:45:02,239

one that i i have to always have to put

2782

01:45:05,669 --> 01:45:04,320

a caveat on is because and it depends on

2783

01:45:07,590 --> 01:45:05,679

what you use to transmit if they got

2784

01:45:08,709 --> 01:45:07,600

something ftl then they probably use

2785

01:45:10,229 --> 01:45:08,719

that but

2786

01:45:11,590 --> 01:45:10,239

you know it's hard to read all signals

2787

01:45:12,790 --> 01:45:11,600

nowadays because it can be digitally

2788

01:45:15,510 --> 01:45:12,800

compressed

2789

01:45:16,390 --> 01:45:15,520

but the one thing you're least likely to

2790

01:45:18,950 --> 01:45:16,400

compress

2791

01:45:21,030 --> 01:45:18,960

uh that you want to make loudest too is

2792

01:45:22,950 --> 01:45:21,040

something like your gps system or your

2793

01:45:24,470 --> 01:45:22,960

you know your time and date system right

2794

01:45:25,990 --> 01:45:24,480

and it would not be to me all that weird

2795

01:45:27,430 --> 01:45:26,000

for civilization even when it's been

2796

01:45:30,870 --> 01:45:27,440

around a very long time it has better

2797

01:45:33,109 --> 01:45:30,880

methods to have some really loud beacon

2798

01:45:34,790 --> 01:45:33,119

in the radio spectrum that just shouted

2799

01:45:37,830 --> 01:45:34,800

you're not hello nice to meet you but

2800

01:45:39,270 --> 01:45:37,840

the time is 12 22 p.m over and over

2801

01:45:40,070 --> 01:45:39,280

again you know

2802

01:45:42,149 --> 01:45:40,080

because that's how you get your

2803

01:45:43,910 --> 01:45:42,159

navigational fix and it's that would be

2804

01:45:46,790 --> 01:45:43,920

more accurate than using a neutron star

2805

01:45:49,109 --> 01:45:46,800

for instance so some galactic gps would

2806

01:45:49,990 --> 01:45:49,119

you know probably be kicking around

2807

01:45:51,910 --> 01:45:50,000

um

2808

01:45:53,910 --> 01:45:51,920

and once it's out there you don't care

2809

01:45:55,109 --> 01:45:53,920

if it's moving slow because it you

2810

01:45:57,669 --> 01:45:55,119

actually want people to be able to

2811

01:45:59,750 --> 01:45:57,679

calculate off of how fast it's going

2812

01:46:02,070 --> 01:45:59,760

so they might have something better and

2813

01:46:03,590 --> 01:46:02,080

be using that but just because you have

2814

01:46:06,070 --> 01:46:03,600

something better doesn't assume you stop

2815

01:46:07,350 --> 01:46:06,080

using the old system either we still do

2816

01:46:10,229 --> 01:46:07,360

snail mail

2817

01:46:11,910 --> 01:46:10,239

even though we have email you know and

2818

01:46:13,109 --> 01:46:11,920

a lot of our mediums as we advance new

2819

01:46:15,189 --> 01:46:13,119

ones they always say oh it's going to

2820

01:46:16,870 --> 01:46:15,199

kill off the so video killed the radio

2821

01:46:18,550 --> 01:46:16,880

star well what are we doing right now

2822

01:46:20,950 --> 01:46:18,560

you know

2823

01:46:22,950 --> 01:46:20,960

40 years ago yeah but that's exactly

2824

01:46:25,189 --> 01:46:22,960

right and so

2825

01:46:26,709 --> 01:46:25,199

the fast radio bursts that we are

2826

01:46:29,669 --> 01:46:26,719

picking up now

2827

01:46:31,750 --> 01:46:29,679

if they were uh signals of from an

2828

01:46:35,510 --> 01:46:31,760

ancient civilization

2829

01:46:37,030 --> 01:46:35,520

what segment of their development are we

2830

01:46:38,070 --> 01:46:37,040

detecting here

2831

01:46:39,510 --> 01:46:38,080

right

2832

01:46:40,950 --> 01:46:39,520

yeah it would have to be pretty decently

2833

01:46:42,950 --> 01:46:40,960

far ahead though because just because

2834

01:46:44,870 --> 01:46:42,960

you were playing with an entire sun to

2835

01:46:46,629 --> 01:46:44,880

try to make it bulk out radio signals

2836

01:46:48,390 --> 01:46:46,639

that's that's a lot of manpower and

2837

01:46:50,390 --> 01:46:48,400

resources to be thrown not necessarily

2838

01:46:52,629 --> 01:46:50,400

high tech it's just it's it's like the

2839

01:46:55,030 --> 01:46:52,639

great wall of china it's a project you

2840

01:46:57,990 --> 01:46:55,040

do uh with a lot of people it's not hard

2841

01:46:59,910 --> 01:46:58,000

it's just big you know well and by the

2842

01:47:01,669 --> 01:46:59,920

time that we detect it

2843

01:47:02,550 --> 01:47:01,679

are they still there

2844

01:47:04,870 --> 01:47:02,560

right

2845

01:47:06,629 --> 01:47:04,880

i hope so um i mean they they will

2846

01:47:09,430 --> 01:47:06,639

change if you're looking at a fast radio

2847

01:47:12,070 --> 01:47:09,440

bus from 10 000 light years away

2848

01:47:13,910 --> 01:47:12,080

10 000 years ago i mean we we were a

2849

01:47:15,830 --> 01:47:13,920

fairly advanced civilization already 10

2850

01:47:17,189 --> 01:47:15,840

000 years ago but you know not nothing

2851

01:47:18,149 --> 01:47:17,199

like we are now

2852

01:47:20,390 --> 01:47:18,159

um

2853

01:47:21,990 --> 01:47:20,400

and uh they will have changed a lot and

2854

01:47:23,590 --> 01:47:22,000

hopefully they would still be around

2855

01:47:25,270 --> 01:47:23,600

that's one of those other fermi paradox

2856

01:47:27,910 --> 01:47:25,280

solutions is that you know life is

2857

01:47:29,669 --> 01:47:27,920

common but it kills itself off a lot

2858

01:47:31,830 --> 01:47:29,679

and i think once you actually get into

2859

01:47:33,510 --> 01:47:31,840

space that becomes fairly unlikely just

2860

01:47:35,990 --> 01:47:33,520

because it's like trying to exterminate

2861

01:47:37,510 --> 01:47:36,000

a virus you can get the host easily

2862

01:47:39,189 --> 01:47:37,520

enough you know you go blow up the the

2863

01:47:40,550 --> 01:47:39,199

planet as well kill the person who's got

2864

01:47:42,229 --> 01:47:40,560

it but it's already gone and spread

2865

01:47:44,470 --> 01:47:42,239

other places by then

2866

01:47:46,950 --> 01:47:44,480

and uh and since we're intelligent we'll

2867

01:47:48,390 --> 01:47:46,960

know what not to do over again so

2868

01:47:50,070 --> 01:47:48,400

i think

2869

01:47:51,430 --> 01:47:50,080

once we're off earth with something

2870

01:47:53,510 --> 01:47:51,440

that's actually a sustainable colony

2871

01:47:55,270 --> 01:47:53,520

unlike the moon or mars we can probably

2872

01:47:57,430 --> 01:47:55,280

rule out that civilizations blow

2873

01:47:58,790 --> 01:47:57,440

themselves up a lot or rather they

2874

01:48:00,229 --> 01:47:58,800

exterminate themselves that way i

2875

01:48:02,470 --> 01:48:00,239

imagine they probably do blow themselves

2876

01:48:05,830 --> 01:48:02,480

up a lot but not fatally so

2877

01:48:08,870 --> 01:48:05,840

and with this uh distant the the vast

2878

01:48:12,790 --> 01:48:08,880

distances that we are talking about here

2879

01:48:14,390 --> 01:48:12,800

the the ships that would be used and i

2880

01:48:16,629 --> 01:48:14,400

want to talk about the generational

2881

01:48:19,990 --> 01:48:16,639

craft because that's exactly what arthur

2882

01:48:23,030 --> 01:48:20,000

c clarke presented to as well in rama

2883

01:48:25,990 --> 01:48:23,040

your presentation is spot on but what

2884

01:48:27,669 --> 01:48:26,000

about the flip side of that which like

2885

01:48:28,470 --> 01:48:27,679

if we go to

2886

01:48:31,270 --> 01:48:28,480

uh

2887

01:48:33,350 --> 01:48:31,280

dune for instance where now we are

2888

01:48:36,790 --> 01:48:33,360

folding space and we're not actually

2889

01:48:39,430 --> 01:48:36,800

traveling these vast distances but

2890

01:48:42,550 --> 01:48:39,440

uh we have figured out a way to close

2891

01:48:44,149 --> 01:48:42,560

that gap and and make space travel

2892

01:48:46,149 --> 01:48:44,159

instantaneous

2893

01:48:48,790 --> 01:48:46,159

that actually changes your colonization

2894

01:48:49,990 --> 01:48:48,800

profile completely um i

2895

01:48:52,070 --> 01:48:50,000

frank orbit was never entirely

2896

01:48:53,270 --> 01:48:52,080

consistent about the setting but uh i

2897

01:48:54,790 --> 01:48:53,280

think at one point you mentioned it

2898

01:48:56,149 --> 01:48:54,800

wasn't even sure if the plants and that

2899

01:48:57,990 --> 01:48:56,159

were in the same universe so there might

2900

01:49:00,310 --> 01:48:58,000

be parallel realities

2901

01:49:01,990 --> 01:49:00,320

um you know if you can just forward

2902

01:49:04,149 --> 01:49:02,000

space to a location and it doesn't

2903

01:49:06,149 --> 01:49:04,159

matter how far away it is you don't

2904

01:49:08,550 --> 01:49:06,159

expand outward as a loose sphere you

2905

01:49:10,470 --> 01:49:08,560

might have your second colony in a

2906

01:49:12,390 --> 01:49:10,480

different galaxy you just go for the

2907

01:49:14,149 --> 01:49:12,400

lowest hanging fruit same applies for if

2908

01:49:16,870 --> 01:49:14,159

you're going to copy clones of earth

2909

01:49:19,750 --> 01:49:16,880

that are uninhabited in inaudible

2910

01:49:21,270 --> 01:49:19,760

uh your empire might sprawl all over the

2911

01:49:23,030 --> 01:49:21,280

place and

2912

01:49:24,550 --> 01:49:23,040

in because it's closer to get to the

2913

01:49:28,149 --> 01:49:24,560

surface of another planet as a war than

2914

01:49:30,070 --> 01:49:28,159

to fly the closest star right and um you

2915

01:49:31,590 --> 01:49:30,080

know june being a great example of that

2916

01:49:32,870 --> 01:49:31,600

we don't really know what the the empire

2917

01:49:34,709 --> 01:49:32,880

looks like there though i think they do

2918

01:49:36,070 --> 01:49:34,719

eventually say it's a galactic empire

2919

01:49:37,510 --> 01:49:36,080

which is something i never liked when

2920

01:49:39,910 --> 01:49:37,520

they revised that

2921

01:49:41,350 --> 01:49:39,920

um and two trading plans that are close

2922

01:49:42,629 --> 01:49:41,360

partners might actually be on the side

2923

01:49:43,990 --> 01:49:42,639

of the galaxy with millions of other

2924

01:49:45,669 --> 01:49:44,000

plants in between that were inhabited

2925

01:49:46,550 --> 01:49:45,679

just because that's how the trade routes

2926

01:49:48,950 --> 01:49:46,560

went

2927

01:49:50,390 --> 01:49:48,960

um and then that's you say that's

2928

01:49:51,510 --> 01:49:50,400

probably not possible i don't think

2929

01:49:53,910 --> 01:49:51,520

we're ever going to figure out a way to

2930

01:49:56,629 --> 01:49:53,920

travel faster than light but if we do

2931

01:49:58,229 --> 01:49:56,639

the method for how you do it is going to

2932

01:50:00,070 --> 01:49:58,239

you know going to dominate how you

2933

01:50:00,950 --> 01:50:00,080

actually go about traveling through

2934

01:50:03,109 --> 01:50:00,960

space

2935

01:50:05,750 --> 01:50:03,119

uh the lqi warp drive for instance its

2936

01:50:07,910 --> 01:50:05,760

maximum speed is is i think millions of

2937

01:50:09,430 --> 01:50:07,920

light years a second on paper

2938

01:50:11,669 --> 01:50:09,440

so you know you are traveling to the

2939

01:50:13,430 --> 01:50:11,679

other side of the galaxy

2940

01:50:15,430 --> 01:50:13,440

almost instantly and you're traveling to

2941

01:50:17,910 --> 01:50:15,440

other galaxies very easily

2942

01:50:19,750 --> 01:50:17,920

and so distance no longer has any effect

2943

01:50:21,990 --> 01:50:19,760

you colonize by whichever ones are the

2944

01:50:24,790 --> 01:50:22,000

easiest ones to colonize

2945

01:50:26,470 --> 01:50:24,800

and when we uh when we look at the

2946

01:50:30,229 --> 01:50:26,480

original uh

2947

01:50:33,669 --> 01:50:30,239

uh ufo hypothesis which is

2948

01:50:36,070 --> 01:50:33,679

a nuts and bolts you know physical craft

2949

01:50:38,310 --> 01:50:36,080

traveling these great distances

2950

01:50:40,070 --> 01:50:38,320

and i've always had problems with you

2951

01:50:42,070 --> 01:50:40,080

know a little flying saucer with a

2952

01:50:44,310 --> 01:50:42,080

little e.t in it where do they sleep

2953

01:50:46,070 --> 01:50:44,320

where's the food

2954

01:50:48,950 --> 01:50:46,080

you know and traveling

2955

01:50:50,950 --> 01:50:48,960

unless uh they came from a bigger ship

2956

01:50:53,990 --> 01:50:50,960

number one that we didn't see but the

2957

01:50:56,390 --> 01:50:54,000

other thing is well because it's easy

2958

01:50:58,629 --> 01:50:56,400

they've got something else figured out

2959

01:51:01,750 --> 01:50:58,639

here that we don't have any concept of

2960

01:51:04,470 --> 01:51:01,760

and it's it's way beyond our imagination

2961

01:51:06,950 --> 01:51:04,480

that it's just quite frankly easy

2962

01:51:09,350 --> 01:51:06,960

to travel these great distances

2963

01:51:11,030 --> 01:51:09,360

nobody would imagine you know uh a

2964

01:51:14,470 --> 01:51:11,040

thousand years ago that if you want to

2965

01:51:15,990 --> 01:51:14,480

do a visit to la or to new york city

2966

01:51:18,070 --> 01:51:16,000

that you would just get in a car and

2967

01:51:19,910 --> 01:51:18,080

drive there after an afternoon or an

2968

01:51:22,149 --> 01:51:19,920

evening on the road or hop on an

2969

01:51:23,830 --> 01:51:22,159

airplane and do it uh if you got a big

2970

01:51:25,109 --> 01:51:23,840

mothership it's probably not landing on

2971

01:51:26,470 --> 01:51:25,119

the planet that's just a lot of

2972

01:51:28,390 --> 01:51:26,480

dissipation of heat and it's obviously

2973

01:51:30,550 --> 01:51:28,400

not very covert and so you probably

2974

01:51:32,149 --> 01:51:30,560

would then send down small shuttles and

2975

01:51:33,189 --> 01:51:32,159

those could be very compact because they

2976

01:51:34,709 --> 01:51:33,199

really only need to have room for the

2977

01:51:36,149 --> 01:51:34,719

person in them they probably have very

2978

01:51:37,589 --> 01:51:36,159

good automation that could build

2979

01:51:39,350 --> 01:51:37,599

anything they really needed uh while

2980

01:51:41,189 --> 01:51:39,360

they were down on the ground

2981

01:51:42,550 --> 01:51:41,199

uh you know some very high tech for 3d

2982

01:51:44,550 --> 01:51:42,560

printing so they wouldn't necessarily be

2983

01:51:46,390 --> 01:51:44,560

big spaceships at all indeed a space

2984

01:51:48,550 --> 01:51:46,400

probe might be something the size of a

2985

01:51:49,990 --> 01:51:48,560

paperback that's just full of compressed

2986

01:51:51,750 --> 01:51:50,000

machinery that's going to come out and

2987

01:51:53,510 --> 01:51:51,760

make copies of itself

2988

01:51:55,270 --> 01:51:53,520

um following the blueprint to set up

2989

01:51:58,149 --> 01:51:55,280

some big observatory or whatever it

2990

01:51:59,910 --> 01:51:58,159

chooses to do right and you know you can

2991

01:52:01,510 --> 01:51:59,920

hide those too you know you might say

2992

01:52:02,950 --> 01:52:01,520

well it's building probes on the planet

2993

01:52:04,629 --> 01:52:02,960

but it might be building them just

2994

01:52:06,629 --> 01:52:04,639

underneath the ground or some kind of

2995

01:52:07,990 --> 01:52:06,639

you know vague thin network you can't

2996

01:52:08,870 --> 01:52:08,000

even see

2997

01:52:10,629 --> 01:52:08,880

and

2998

01:52:12,310 --> 01:52:10,639

we don't know how that ftl travel would

2999

01:52:14,550 --> 01:52:12,320

work if it did we can talk about if it

3000

01:52:16,709 --> 01:52:14,560

doesn't but if it did

3001
01:52:18,229 --> 01:52:16,719
they might not need spaceships because

3002
01:52:21,510 --> 01:52:18,239
and i think peter hamilton did this in

3003
01:52:22,950 --> 01:52:21,520
his um uh combo saga they don't they

3004
01:52:24,310 --> 01:52:22,960
travel between planets but they just do

3005
01:52:26,149 --> 01:52:24,320
it from ground to ground same as in

3006
01:52:27,910 --> 01:52:26,159
stargate they set up a train that runs

3007
01:52:31,030 --> 01:52:27,920
through a wormhole on the surface of two

3008
01:52:34,709 --> 01:52:31,040
planets you know ships involved

3009
01:52:37,830 --> 01:52:34,719
exactly and i i've always thought

3010
01:52:41,430 --> 01:52:37,840
that if you if we us

3011
01:52:43,189 --> 01:52:41,440
are going to go out and and discover

3012
01:52:45,669 --> 01:52:43,199
well we're not going to do it with us

3013
01:52:47,990 --> 01:52:45,679

being on board you and i isaac we're

3014

01:52:50,070 --> 01:52:48,000

going to have probes and now and you've

3015

01:52:51,910 --> 01:52:50,080

brought up 3d printing so many in so

3016

01:52:53,669 --> 01:52:51,920

many of your presentations

3017

01:52:58,550 --> 01:52:53,679

that

3018

01:53:01,430 --> 01:52:58,560

would build as you go you would build

3019

01:53:03,750 --> 01:53:01,440

the probes as you go you would go out

3020

01:53:06,950 --> 01:53:03,760

you could go and figure out the entire

3021

01:53:09,589 --> 01:53:06,960

galaxy very quickly by building as you

3022

01:53:11,510 --> 01:53:09,599

go and and that's how the exploration

3023

01:53:14,950 --> 01:53:11,520

would happen and log

3024

01:53:15,990 --> 01:53:14,960

each uh planet and and solar system as

3025

01:53:19,510 --> 01:53:16,000

you went

3026

01:53:21,990 --> 01:53:19,520

by uh 3d printing and building as you

3027

01:53:23,589 --> 01:53:22,000

come across the resources

3028

01:53:25,189 --> 01:53:23,599

and it doesn't take all that much i mean

3029

01:53:26,870 --> 01:53:25,199

we don't know that every source is going

3030

01:53:29,189 --> 01:53:26,880

to have a big plan around it but how

3031

01:53:32,390 --> 01:53:29,199

much material do you need to build a few

3032

01:53:34,229 --> 01:53:32,400

more probes to each stop right and um

3033

01:53:35,669 --> 01:53:34,239

you know you can pack a lot into a probe

3034

01:53:37,589 --> 01:53:35,679

there is a minimum size you can make a

3035

01:53:39,109 --> 01:53:37,599

spaceship because of all the radiation

3036

01:53:41,510 --> 01:53:39,119

collision issues that doesn't let you

3037

01:53:43,750 --> 01:53:41,520

send out something even if you can store

3038

01:53:45,430 --> 01:53:43,760

entire consciousnesses on something the

3039

01:53:46,629 --> 01:53:45,440

size of a uh

3040

01:53:48,550 --> 01:53:46,639

an atom

3041

01:53:50,310 --> 01:53:48,560

you can't build a spaceship that smaller

3042

01:53:52,709 --> 01:53:50,320

it needs to be a decently big or we're

3043

01:53:55,669 --> 01:53:52,719

talking at least the size of a an suv

3044

01:53:57,910 --> 01:53:55,679

right um that's still nothing for matter

3045

01:53:59,669 --> 01:53:57,920

one any one random asteroid not even one

3046

01:54:01,750 --> 01:53:59,679

of the big ones with names

3047

01:54:04,229 --> 01:54:01,760

has enough material in it to build uh

3048

01:54:05,830 --> 01:54:04,239

such probes to go to every single solar

3049

01:54:07,270 --> 01:54:05,840

system in the galaxy

3050

01:54:09,830 --> 01:54:07,280

so you don't really have to invest a lot

3051
01:54:11,910 --> 01:54:09,840
of mass even if you decide you want to

3052
01:54:13,270 --> 01:54:11,920
conserve mass then at the next stop they

3053
01:54:14,149 --> 01:54:13,280
build more

3054
01:54:16,229 --> 01:54:14,159
um

3055
01:54:18,950 --> 01:54:16,239
but those probes don't have to be too

3056
01:54:21,750 --> 01:54:18,960
simple either as an example let's say i

3057
01:54:23,350 --> 01:54:21,760
had scanned copies of a resource team

3058
01:54:25,109 --> 01:54:23,360
the same research team on every probe

3059
01:54:26,070 --> 01:54:25,119
too 100 or so people who are experts to

3060
01:54:27,990 --> 01:54:26,080
everything

3061
01:54:29,189 --> 01:54:28,000
and when a pro provides it finds

3062
01:54:31,830 --> 01:54:29,199
anything interesting

3063
01:54:33,990 --> 01:54:31,840

it builds an android body for that

3064

01:54:35,990 --> 01:54:34,000

expert and that uploads that mind

3065

01:54:37,830 --> 01:54:36,000

available to that android and bam you've

3066

01:54:39,030 --> 01:54:37,840

got your export there on site they don't

3067

01:54:40,790 --> 01:54:39,040

have to travel to make the additional

3068

01:54:42,709 --> 01:54:40,800

trip right

3069

01:54:44,550 --> 01:54:42,719

and they just send the information home

3070

01:54:46,870 --> 01:54:44,560

and that's it and they're constantly

3071

01:54:48,310 --> 01:54:46,880

logging that's it just logging and one

3072

01:54:51,270 --> 01:54:48,320

of the

3073

01:54:54,070 --> 01:54:51,280

uh aspects of when you watch like star

3074

01:54:56,310 --> 01:54:54,080

trek especially the original series or

3075

01:54:57,589 --> 01:54:56,320

you know what orville is is really good

3076

01:54:59,350 --> 01:54:57,599

by the way i don't know if you can check

3077

01:55:00,790 --> 01:54:59,360

that it's really really about the first

3078

01:55:02,070 --> 01:55:00,800

couple episodes i didn't like it then i

3079

01:55:03,589 --> 01:55:02,080

re-watched it and it was great yeah yeah

3080

01:55:05,350 --> 01:55:03,599

yeah that's exactly about lost in space

3081

01:55:07,270 --> 01:55:05,360

too i i didn't like the reboot

3082

01:55:09,430 --> 01:55:07,280

forcefully episodes that grew on

3083

01:55:11,030 --> 01:55:09,440

i i can't wait for the second season of

3084

01:55:13,030 --> 01:55:11,040

loss in space it's going to be great but

3085

01:55:14,950 --> 01:55:13,040

there's one thing that they point out

3086

01:55:15,750 --> 01:55:14,960

over and over again that we lose sight

3087

01:55:18,629 --> 01:55:15,760

of

3088

01:55:22,070 --> 01:55:18,639

the they are discovering planets

3089

01:55:24,390 --> 01:55:22,080

and and stars that weren't logged before

3090

01:55:26,470 --> 01:55:24,400

or weren't named and that would have to

3091

01:55:30,709 --> 01:55:26,480

be the way that it is if we're dealing

3092

01:55:33,669 --> 01:55:30,719

with literally trillions right it's just

3093

01:55:36,390 --> 01:55:33,679

that's all you are uh out there doing is

3094

01:55:37,910 --> 01:55:36,400

discovering new systems

3095

01:55:39,750 --> 01:55:37,920

yeah no and i mean we might be able to

3096

01:55:41,109 --> 01:55:39,760

discover almost all of them here we have

3097

01:55:43,350 --> 01:55:41,119

something called the uh zone of

3098

01:55:45,350 --> 01:55:43,360

avoidance which sounds much cooler than

3099

01:55:46,629 --> 01:55:45,360

it is it's the chunk of the galaxy we

3100

01:55:47,990 --> 01:55:46,639

can't see because the center of the

3101

01:55:49,750 --> 01:55:48,000

galaxy's in the way

3102

01:55:50,950 --> 01:55:49,760

um the second zone avoidance the other

3103

01:55:52,149 --> 01:55:50,960

one is the one right underneath our feet

3104

01:55:53,189 --> 01:55:52,159

from the earth

3105

01:55:54,790 --> 01:55:53,199

um

3106

01:55:56,310 --> 01:55:54,800

but uh

3107

01:55:57,669 --> 01:55:56,320

you know we are going to have to get out

3108

01:56:00,149 --> 01:55:57,679

there and take a quick look at a lot of

3109

01:56:01,109 --> 01:56:00,159

these places much closer up they say

3110

01:56:02,629 --> 01:56:01,119

well you could build a big enough

3111

01:56:04,470 --> 01:56:02,639

telescope and you can build some

3112

01:56:07,189 --> 01:56:04,480

monstrous telescopes in space i mean

3113

01:56:08,709 --> 01:56:07,199

plant-sized thin ones if you want to

3114

01:56:10,390 --> 01:56:08,719

but it's still going to be so much

3115

01:56:11,990 --> 01:56:10,400

easier to send something out there as

3116

01:56:13,990 --> 01:56:12,000

we're saying with like the moon landings

3117

01:56:15,350 --> 01:56:14,000

for instance hubble cannot see the moon

3118

01:56:17,669 --> 01:56:15,360

landing side so there's anything more

3119

01:56:20,070 --> 01:56:17,679

than one blurry pixel

3120

01:56:21,430 --> 01:56:20,080

um and that's our best telescope well

3121

01:56:23,589 --> 01:56:21,440

not anymore but it's one of our best

3122

01:56:24,470 --> 01:56:23,599

telescopes and the moon is really really

3123

01:56:25,589 --> 01:56:24,480

close

3124

01:56:27,109 --> 01:56:25,599

um

3125

01:56:28,470 --> 01:56:27,119

if you want to get good data on these

3126

01:56:30,390 --> 01:56:28,480

places you're going to need to send a

3127

01:56:32,390 --> 01:56:30,400

ship out there and it's either going to

3128

01:56:34,070 --> 01:56:32,400

be flying by at near relativistic speed

3129

01:56:35,189 --> 01:56:34,080

with just enough time to take one photo

3130

01:56:37,990 --> 01:56:35,199

as it were

3131

01:56:39,669 --> 01:56:38,000

or it's going to have to stop slow down

3132

01:56:41,030 --> 01:56:39,679

and look at the place and if you've got

3133

01:56:43,030 --> 01:56:41,040

a probe that's actually stopped and

3134

01:56:44,709 --> 01:56:43,040

slowed down and that's been designed to

3135

01:56:45,510 --> 01:56:44,719

repair itself and it's nice and high

3136

01:56:47,030 --> 01:56:45,520

tech

3137

01:56:48,870 --> 01:56:47,040

you'd kind of expect to go ahead and do

3138

01:56:51,669 --> 01:56:48,880

some kind of landing and produce more

3139

01:56:53,910 --> 01:56:51,679

probes on the spot to take closer looks

3140

01:56:55,830 --> 01:56:53,920

and again if it's borderline artificial

3141

01:56:57,830 --> 01:56:55,840

intelligence why not send along

3142

01:56:59,270 --> 01:56:57,840

scouting teams that way too

3143

01:57:01,270 --> 01:56:59,280

but these automated probes don't really

3144

01:57:02,629 --> 01:57:01,280

get there any faster than you or i will

3145

01:57:04,470 --> 01:57:02,639

they they have an advantage on

3146

01:57:05,750 --> 01:57:04,480

acceleration basically they get the same

3147

01:57:07,830 --> 01:57:05,760

top speed

3148

01:57:09,830 --> 01:57:07,840

so you might just send regular old

3149

01:57:11,270 --> 01:57:09,840

people on a colony ship they it's not

3150

01:57:13,109 --> 01:57:11,280

that hard to build one with that kind of

3151
01:57:15,030 --> 01:57:13,119
technology if you've got that tech you

3152
01:57:16,709 --> 01:57:15,040
can send normal people too

3153
01:57:18,390 --> 01:57:16,719
so you could easily have huge

3154
01:57:20,390 --> 01:57:18,400
exploration missions that went and

3155
01:57:23,830 --> 01:57:20,400
visited these systems and colonized them

3156
01:57:25,750 --> 01:57:23,840
if they was if they were so inclined

3157
01:57:27,430 --> 01:57:25,760
and you're you know you're not gonna

3158
01:57:29,350 --> 01:57:27,440
have a civilization really anymore

3159
01:57:30,870 --> 01:57:29,360
that's a single civilization but same as

3160
01:57:32,950 --> 01:57:30,880
the hunter gatherers spreading from you

3161
01:57:35,030 --> 01:57:32,960
know asia to north america want a single

3162
01:57:37,350 --> 01:57:35,040
civilization they will get spread out

3163
01:57:38,950 --> 01:57:37,360

there and they'll mutate and diverge

3164

01:57:40,470 --> 01:57:38,960

which i'll say with aliens if they if

3165

01:57:42,390 --> 01:57:40,480

they don't exist yet

3166

01:57:43,910 --> 01:57:42,400

wait a million years and they will it

3167

01:57:46,470 --> 01:57:43,920

just they might have originated from

3168

01:57:48,070 --> 01:57:46,480

earth they'll still be alien to us

3169

01:57:50,149 --> 01:57:48,080

because that's a lot of divergence even

3170

01:57:51,830 --> 01:57:50,159

without throwing in uh you know

3171

01:57:53,430 --> 01:57:51,840

artificial routes like cybernetics or

3172

01:57:54,229 --> 01:57:53,440

genetic engineering

3173

01:57:55,510 --> 01:57:54,239

so

3174

01:57:58,149 --> 01:57:55,520

this is just the question is are we the

3175

01:57:59,910 --> 01:57:58,159

first ones there and is everyone if not

3176
01:58:01,510 --> 01:57:59,920
going to act the same way we would or

3177
01:58:03,830 --> 01:58:01,520
close enough that we can predict their

3178
01:58:05,510 --> 01:58:03,840
behavior but there's so many plants out

3179
01:58:07,350 --> 01:58:05,520
there and that's just our galaxy we're

3180
01:58:08,709 --> 01:58:07,360
not limited to our galaxy universe does

3181
01:58:11,430 --> 01:58:08,719
not stop there

3182
01:58:13,030 --> 01:58:11,440
and uh you can keep going after that

3183
01:58:15,669 --> 01:58:13,040
there are stars between the galaxies

3184
01:58:17,589 --> 01:58:15,679
even when you look at the original we've

3185
01:58:20,149 --> 01:58:17,599
got 30 seconds i'll just make a quick

3186
01:58:21,270 --> 01:58:20,159
comment um when you look at the original

3187
01:58:24,310 --> 01:58:21,280
hubble

3188
01:58:26,550 --> 01:58:24,320

uh shots which are just a little tiny

3189

01:58:28,470 --> 01:58:26,560

little piece of everything

3190

01:58:31,030 --> 01:58:28,480

and and you blow that up and everything

3191

01:58:33,270 --> 01:58:31,040

that we thought were stars are galaxies

3192

01:58:35,910 --> 01:58:33,280

and galaxy clusters

3193

01:58:38,070 --> 01:58:35,920

infinite right it's just a great and it

3194

01:58:40,070 --> 01:58:38,080

might actually be infinite you might

3195

01:58:41,589 --> 01:58:40,080

see a certain distance there's nothing

3196

01:58:44,070 --> 01:58:41,599

to indicate the universe ends at that

3197

01:58:46,629 --> 01:58:44,080

area it might be infinite in size it's

3198

01:58:48,870 --> 01:58:46,639

crazy when you think about that because

3199

01:58:51,830 --> 01:58:48,880

each one is a hundred billion two

3200

01:58:53,750 --> 01:58:51,840

hundred billion the the numbers uh and

3201

01:58:57,030 --> 01:58:53,760

those are the what's inside of each

3202

01:58:58,790 --> 01:58:57,040

galaxy and then there are literally

3203

01:59:00,870 --> 01:58:58,800

hundreds of billions maybe even a

3204

01:59:03,430 --> 01:59:00,880

trillion or an infinite amount of

3205

01:59:05,350 --> 01:59:03,440

galaxies it blows my mind absolutely

3206

01:59:08,229 --> 01:59:05,360

blows my mind let's take a break it's

3207

01:59:10,390 --> 01:59:08,239

really big it's really big

3208

01:59:11,990 --> 01:59:10,400

our guest tonight isaac arthur when we

3209

01:59:14,070 --> 01:59:12,000

come back we're going to continue the

3210

01:59:15,990 --> 01:59:14,080

conversation but i want to talk a little

3211

01:59:18,790 --> 01:59:16,000

sci-fi and we're going to do that next

3212

01:59:21,270 --> 01:59:18,800

in gaming there's a method to my madness

3213

01:59:25,030 --> 01:59:21,280

stay with us

3214

01:59:32,629 --> 01:59:26,390

hi everybody this is rob halpert the

3215

01:59:36,149 --> 01:59:35,109

this is kgra digital broadcasting

3216

01:59:39,830 --> 01:59:36,159

station

3217

01:59:41,589 --> 01:59:39,840

salt lake city utah van buren arkansas

3218

01:59:43,589 --> 01:59:41,599

poor water quality is a major health

3219

01:59:45,830 --> 01:59:43,599

issue and it's only getting worse

3220

01:59:47,510 --> 01:59:45,840

municipalities can't keep up standards

3221

01:59:50,470 --> 01:59:47,520

have dropped and pollutants are

3222

01:59:52,229 --> 01:59:50,480

increasing where does it all end it ends

3223

01:59:54,070 --> 01:59:52,239

by keeping the pollutants outside of

3224

01:59:56,470 --> 01:59:54,080

your home with hydrocare's advanced

3225

01:59:58,470 --> 01:59:56,480

systems available at wave home solutions

3226
02:00:00,070 --> 01:59:58,480
no less than the best purification

3227
02:00:01,990 --> 02:00:00,080
materials and processes have been

3228
02:00:03,910 --> 02:00:02,000
developed by hydrocare to provide you

3229
02:00:06,390 --> 02:00:03,920
with healthy clean water for drinking

3230
02:00:08,310 --> 02:00:06,400
cooking and showering hydrocare far

3231
02:00:12,149 --> 02:00:08,320
surpasses the competition in removing

3232
02:00:14,470 --> 02:00:12,159
chlorine odors iron lead chemicals lime

3233
02:00:16,390 --> 02:00:14,480
scale and much more don't settle for

3234
02:00:18,310 --> 02:00:16,400
less when it comes to your water we'll

3235
02:00:20,390 --> 02:00:18,320
take care of the toughest water problems

3236
02:00:23,109 --> 02:00:20,400
for you whether it's from a city or well

3237
02:00:27,510 --> 02:00:23,119
source satisfaction guaranteed for more

3238
02:00:32,149 --> 02:00:27,520

information call 888 997 wave that's 888

3239

02:00:36,460 --> 02:00:32,159

997 wave or go to bestwater123.com

3240

02:00:42,229 --> 02:00:40,310

[Music]

3241

02:00:43,360 --> 02:00:42,239

your contact for current news and

3242

02:00:45,229 --> 02:00:43,370

trending topics

3243

02:00:47,430 --> 02:00:45,239

[Music]

3244

02:00:49,589 --> 02:00:47,440

kgraradio.com does your basement or

3245

02:00:51,430 --> 02:00:49,599

crawlspace have a damp musty smell well

3246

02:00:53,510 --> 02:00:51,440

watch out that's a sign of too much

3247

02:00:55,270 --> 02:00:53,520

moisture and not enough ventilation and

3248

02:00:57,589 --> 02:00:55,280

that can mean increased mold growth in

3249

02:00:59,669 --> 02:00:57,599

the buildup of harmful toxins and gases

3250

02:01:01,990 --> 02:00:59,679

don't bother with a dehumidifier it just

3251
02:01:03,750 --> 02:01:02,000
circulates the same unhealthy air now

3252
02:01:05,510 --> 02:01:03,760
there's a better way to remove these

3253
02:01:07,990 --> 02:01:05,520
dangers and odors it's with the

3254
02:01:09,750 --> 02:01:08,000
computerized wave moisture control unit

3255
02:01:11,350 --> 02:01:09,760
that reduces moisture and expels

3256
02:01:13,350 --> 02:01:11,360
pollutants we replaced our old

3257
02:01:15,669 --> 02:01:13,360
dehumidifier with the wave unit and in

3258
02:01:18,070 --> 02:01:15,679
only three weeks our basement is dry and

3259
02:01:19,990 --> 02:01:18,080
the musty smell is gone wave units

3260
02:01:22,470 --> 02:01:20,000
require no maintenance no buckets of

3261
02:01:24,470 --> 02:01:22,480
water or filters and costs only pennies

3262
02:01:26,229 --> 02:01:24,480
a day to run breathe better live

3263
02:01:30,470 --> 02:01:26,239

healthier with an affordable no

3264

02:01:35,669 --> 02:01:30,480

maintenance wave unit call 888 717 wade

3265

02:01:39,250 --> 02:01:35,679

888 717 wave or visit dryhealthyhome.com

3266

02:01:48,950 --> 02:01:47,109

[Music]

3267

02:01:52,310 --> 02:01:48,960

this is jimmy church of fade to black

3268

02:01:55,510 --> 02:01:52,320

and i only drink fade to black blend

3269

02:01:57,109 --> 02:01:55,520

coffee from river moon just click on the

3270

02:01:58,870 --> 02:01:57,119

river moon coffee banner at

3271

02:02:02,149 --> 02:01:58,880

jimmychurchradio.com

3272

02:02:04,629 --> 02:02:02,159

promo code f2b blend

3273

02:02:07,270 --> 02:02:04,639

so are you tired of being tired well

3274

02:02:08,950 --> 02:02:07,280

then it's time to get the tea hey it's

3275

02:02:11,189 --> 02:02:08,960

lisa here to tell you about this all

3276

02:02:13,109 --> 02:02:11,199

natural all organic tea i've been

3277

02:02:15,990 --> 02:02:13,119

drinking that has had great results for

3278

02:02:18,149 --> 02:02:16,000

over 20 years it's called life change

3279

02:02:20,470 --> 02:02:18,159

tea and it's specially formulated to

3280

02:02:23,430 --> 02:02:20,480

help detoxify and cleanse your kidneys

3281

02:02:25,270 --> 02:02:23,440

liver colon and blood all at once the

3282

02:02:27,589 --> 02:02:25,280

colon is one of the most ignored organs

3283

02:02:29,589 --> 02:02:27,599

in the human body the faster that waste

3284

02:02:31,270 --> 02:02:29,599

is eliminated from the body the less

3285

02:02:33,669 --> 02:02:31,280

time that waste sits in our intestines

3286

02:02:35,669 --> 02:02:33,679

spreading toxins to our bloodstream this

3287

02:02:37,669 --> 02:02:35,679

tea helps cleanse chemicals caused by

3288

02:02:39,990 --> 02:02:37,679

outside intruders from our entire

3289

02:02:42,470 --> 02:02:40,000

digestive system and get this weight

3290

02:02:44,470 --> 02:02:42,480

loss can be a side effect and with

3291

02:02:46,550 --> 02:02:44,480

continued use of the tea you can

3292

02:02:48,950 --> 02:02:46,560

experience clear healthier younger

3293

02:02:50,870 --> 02:02:48,960

looking skin increased energy and a

3294

02:02:53,589 --> 02:02:50,880

happier outlook on life so if you're

3295

02:02:55,990 --> 02:02:53,599

tired of being tired get the life change

3296

02:02:58,870 --> 02:02:56,000

tea at [get the tea.com](http://getthetea.com)

3297

02:03:01,109 --> 02:02:58,880

that's [get the tea.com](http://getthetea.com) and like me

3298

02:03:02,470 --> 02:03:01,119

you'll be glad you did

3299

02:03:04,629 --> 02:03:02,480

did you know that when you're on the

3300

02:03:06,709 --> 02:03:04,639

road with limited data or wi-fi

3301

02:03:08,870 --> 02:03:06,719

available you can still listen to every

3302

02:03:12,149 --> 02:03:08,880

minute of fade to black by just calling

3303

02:03:17,270 --> 02:03:14,950

no smartphone app or internet needed it

3304

02:03:19,990 --> 02:03:17,280

saves your data plan and no extra cost

3305

02:03:23,270 --> 02:03:20,000

if you have unlimited minutes just call

3306

02:03:34,130 --> 02:03:25,510

you can listen to me jimmy church on any

3307

02:03:34,140 --> 02:03:38,870

[Music]

3308

02:03:44,550 --> 02:03:40,790

you wanna know a secret

3309

02:03:45,910 --> 02:03:44,560

i love ponies i really love ponies i'm

3310

02:03:47,750 --> 02:03:45,920

serious

3311

02:03:49,510 --> 02:03:47,760

i couldn't stay sane without pawn

3312

02:03:51,589 --> 02:03:49,520

instabrush

3313

02:03:57,990 --> 02:03:51,599

why fade to black

3314

02:04:02,790 --> 02:04:00,229

this is fade to black with jimmy church

3315

02:04:07,350 --> 02:04:02,800

on the game changer radio network and

3316

02:04:16,709 --> 02:04:07,360

kgra the global radio alliance

3317

02:04:20,550 --> 02:04:18,629

all right welcome back

3318

02:04:22,870 --> 02:04:20,560

fade to black i'm your host jimmy church

3319

02:04:24,550 --> 02:04:22,880

tonight isaac arthur is here

3320

02:04:27,589 --> 02:04:24,560

been waiting for this conversation for a

3321

02:04:29,189 --> 02:04:27,599

very long time and i'm a little uh i'm a

3322

02:04:30,709 --> 02:04:29,199

little overwhelmed

3323

02:04:33,109 --> 02:04:30,719

i need to uh

3324

02:04:35,589 --> 02:04:33,119

i need to ground myself again and i'm

3325

02:04:36,629 --> 02:04:35,599

gonna do it with this isaac this is

3326

02:04:40,870 --> 02:04:36,639

where

3327

02:04:43,109 --> 02:04:40,880

uh my mind loses itself with with all of

3328

02:04:45,830 --> 02:04:43,119

these concepts and it's this

3329

02:04:48,390 --> 02:04:45,840

it's the concept of the hive mind

3330

02:04:52,870 --> 02:04:48,400

and i'm going to take it a step further

3331

02:04:54,950 --> 02:04:52,880

the sci-fi science fiction uh community

3332

02:04:59,990 --> 02:04:54,960

the gaming community

3333

02:05:02,709 --> 02:05:00,000

dwarfs our ufology conspiracy community

3334

02:05:05,589 --> 02:05:02,719

and and each week i speak to literally

3335

02:05:08,790 --> 02:05:05,599

millions of in our community

3336

02:05:09,990 --> 02:05:08,800

and what is out there beyond uh our

3337

02:05:11,030 --> 02:05:10,000

community

3338

02:05:12,950 --> 02:05:11,040

uh

3339

02:05:14,629 --> 02:05:12,960

that doesn't even know about coast to

3340

02:05:15,669 --> 02:05:14,639

coast a.m or fade to black right they

3341

02:05:20,550 --> 02:05:15,679

don't know

3342

02:05:24,149 --> 02:05:20,560

but the conversations of alien tech and

3343

02:05:28,149 --> 02:05:24,159

the the complexities of all of this to

3344

02:05:30,149 --> 02:05:28,159

get a book written or to get a game done

3345

02:05:31,750 --> 02:05:30,159

all of these concepts

3346

02:05:34,390 --> 02:05:31,760

are considered

3347

02:05:36,470 --> 02:05:34,400

and the question of alien life and how

3348

02:05:39,550 --> 02:05:36,480

they get here or how we would travel to

3349

02:05:42,709 --> 02:05:39,560

the stars in this technology is all

3350

02:05:45,510 --> 02:05:42,719

encapsulated in these in these concepts

3351

02:05:49,430 --> 02:05:45,520

and ideas and i i believe that it's a

3352

02:05:51,990 --> 02:05:49,440

hive mind concept that um alien life out

3353

02:05:54,870 --> 02:05:52,000

there is an accepted uh

3354

02:05:57,350 --> 02:05:54,880

an accepted reality and everybody

3355

02:06:00,390 --> 02:05:57,360

studies this and it reflects back into

3356

02:06:02,550 --> 02:06:00,400

your work as well

3357

02:06:05,030 --> 02:06:02,560

i think uh and we always say with a hive

3358

02:06:06,470 --> 02:06:05,040

mind um you say

3359

02:06:07,990 --> 02:06:06,480

could we have a hive of mind one day and

3360

02:06:10,229 --> 02:06:08,000

say well we've had a hive mind for quite

3361

02:06:12,070 --> 02:06:10,239

some time the basic concept behind human

3362

02:06:13,350 --> 02:06:12,080

intelligence is that we specialize and

3363

02:06:15,350 --> 02:06:13,360

we network

3364

02:06:17,109 --> 02:06:15,360

uh and then we invented writing we

3365

02:06:18,950 --> 02:06:17,119

certainly could include no hive mind

3366

02:06:20,709 --> 02:06:18,960

dead people as well they become part of

3367

02:06:23,189 --> 02:06:20,719

the mixture someone doesn't have to be

3368

02:06:24,470 --> 02:06:23,199

there anymore to uh to speak to us they

3369

02:06:25,990 --> 02:06:24,480

could be on another continent they could

3370

02:06:28,149 --> 02:06:26,000

be dead for a century

3371

02:06:29,830 --> 02:06:28,159

we get these you know that's basically

3372

02:06:31,189 --> 02:06:29,840

called that calm you know communities

3373

02:06:32,950 --> 02:06:31,199

right from the get-go

3374

02:06:34,790 --> 02:06:32,960

um but that's kind of how that can

3375

02:06:36,709 --> 02:06:34,800

advance and and to what degree it would

3376

02:06:38,470 --> 02:06:36,719

is uh is certainly going to depend on

3377

02:06:40,470 --> 02:06:38,480

the individual we were talking about

3378

02:06:42,629 --> 02:06:40,480

gaming you know it's uh to me gaming is

3379

02:06:44,629 --> 02:06:42,639

still pen and paper dungeons and dragons

3380

02:06:47,830 --> 02:06:44,639

with the dice but i guess these days it

3381

02:06:49,430 --> 02:06:47,840

means more video games um you know the

3382

02:06:51,030 --> 02:06:49,440

science fiction the gaming community

3383

02:06:53,030 --> 02:06:51,040

fantasy or sci-fi

3384

02:06:55,430 --> 02:06:53,040

is where so many of these ideas do

3385

02:06:56,550 --> 02:06:55,440

actually end up getting explored so

3386

02:06:58,390 --> 02:06:56,560

a lot of times with the channel we

3387

02:07:00,470 --> 02:06:58,400

always like to you know we say the the

3388

02:07:02,390 --> 02:07:00,480

science inspires the science fiction and

3389

02:07:04,870 --> 02:07:02,400

the art which come back and inspire

3390

02:07:07,109 --> 02:07:04,880

people to go into the sciences and to

3391

02:07:09,750 --> 02:07:07,119

support the sciences and it's just it's

3392

02:07:12,310 --> 02:07:09,760

a constant feedback loop it is and i

3393

02:07:14,390 --> 02:07:12,320

believe it's it's the hive mind and we

3394

02:07:16,709 --> 02:07:14,400

don't even unders we don't even know we

3395

02:07:20,310 --> 02:07:16,719

talk about the hive mind but it is

3396

02:07:21,669 --> 02:07:20,320

actually happening constantly

3397

02:07:23,990 --> 02:07:21,679

yeah it just depends on the method for

3398

02:07:26,229 --> 02:07:24,000

doing it i mean author c clock of course

3399

02:07:29,350 --> 02:07:26,239

a lot of the sci-fi in the 50s 60s and

3400

02:07:30,629 --> 02:07:29,360

70s were really into telepathy um that's

3401

02:07:32,229 --> 02:07:30,639

kind of gone away from in science

3402

02:07:33,990 --> 02:07:32,239

fiction these days i think because we

3403

02:07:37,109 --> 02:07:34,000

can see it emerging

3404

02:07:38,709 --> 02:07:37,119

as more of the technological telepathy

3405

02:07:40,550 --> 02:07:38,719

where you can connect to people

3406

02:07:42,709 --> 02:07:40,560

instantly you know the bandwidth we use

3407

02:07:44,790 --> 02:07:42,719

that right now is speech and audio and

3408

02:07:46,550 --> 02:07:44,800

text but that's likely to mutate into

3409

02:07:48,149 --> 02:07:46,560

something much more direct and high

3410

02:07:49,030 --> 02:07:48,159

bandwidth in the future

3411

02:07:51,189 --> 02:07:49,040

um

3412

02:07:52,950 --> 02:07:51,199

and where that stops you know where that

3413

02:07:55,109 --> 02:07:52,960

goes there are so many different options

3414

02:07:57,189 --> 02:07:55,119

and it's not which one will happen but

3415

02:08:00,069 --> 02:07:57,199

more likely all of them would happen you

3416

02:08:01,990 --> 02:08:00,079

might have big classic sci-fi hive minds

3417

02:08:03,350 --> 02:08:02,000

like the borg or you might just have

3418

02:08:04,709 --> 02:08:03,360

communities where people are very used

3419

02:08:07,030 --> 02:08:04,719

to talk to each other from the other

3420

02:08:08,149 --> 02:08:07,040

side of the planet instantly you know

3421

02:08:10,149 --> 02:08:08,159

we just don't know how that's going to

3422

02:08:12,470 --> 02:08:10,159

happen but it you do get such great

3423

02:08:14,950 --> 02:08:12,480

communities popping up nowadays because

3424

02:08:16,390 --> 02:08:14,960

of that early hive mind aspect

3425

02:08:18,709 --> 02:08:16,400

i don't have to find that one person in

3426

02:08:21,030 --> 02:08:18,719

my town who shares my hobbies anymore i

3427

02:08:22,950 --> 02:08:21,040

can find the 10 000 people on the planet

3428

02:08:25,109 --> 02:08:22,960

who share my one really bizarre hobby

3429

02:08:27,430 --> 02:08:25,119

that only one million people enjoy

3430

02:08:30,470 --> 02:08:27,440

and you know all my one interest

3431

02:08:33,189 --> 02:08:30,480

and that's only going to keep getting

3432

02:08:34,550 --> 02:08:33,199

easier and better as time goes on

3433

02:08:36,390 --> 02:08:34,560

what do we do

3434

02:08:38,229 --> 02:08:36,400

when we talk about this concept of the

3435

02:08:41,430 --> 02:08:38,239

hive mind

3436

02:08:44,470 --> 02:08:41,440

and also start to incorporate our other

3437

02:08:47,589 --> 02:08:44,480

scientific realities today which is

3438

02:08:50,310 --> 02:08:47,599

quantum quantum computing entanglement

3439

02:08:51,910 --> 02:08:50,320

you brought up tachyons earlier and

3440

02:08:54,709 --> 02:08:51,920

instant uh

3441

02:08:56,950 --> 02:08:54,719

reactions at the atomic level

3442

02:09:00,229 --> 02:08:56,960

instant not not faster than the speed of

3443

02:09:04,310 --> 02:09:00,239

light but faster than that instant

3444

02:09:06,870 --> 02:09:04,320

across vast infinite distances

3445

02:09:07,990 --> 02:09:06,880

could there be communication that is

3446

02:09:11,510 --> 02:09:08,000

happening

3447

02:09:13,189 --> 02:09:11,520

uh with an alien civilization here in in

3448

02:09:16,069 --> 02:09:13,199

in the now now that we don't even

3449

02:09:19,510 --> 02:09:16,079

realize that it's coming from

3450

02:09:20,870 --> 02:09:19,520

another galaxy possibly uh spooky action

3451

02:09:22,790 --> 02:09:20,880

at distance and we don't know that's

3452

02:09:24,470 --> 02:09:22,800

necessarily instantaneous just that's

3453

02:09:25,990 --> 02:09:24,480

fast and light it's always hard to prove

3454

02:09:27,350 --> 02:09:26,000

something that you know is zero or

3455

02:09:29,350 --> 02:09:27,360

infinity as a wall

3456

02:09:31,350 --> 02:09:29,360

um the problem with the quantum

3457

02:09:34,069 --> 02:09:31,360

entanglement spooky action distance is

3458

02:09:35,669 --> 02:09:34,079

while that does happen faster than light

3459

02:09:37,589 --> 02:09:35,679

as best as we can tell the only

3460

02:09:39,669 --> 02:09:37,599

information that sends is basically the

3461

02:09:41,910 --> 02:09:39,679

single bit of up or down

3462

02:09:43,510 --> 02:09:41,920

and you can't predict it what it's going

3463

02:09:45,350 --> 02:09:43,520

to come out as you can observe it but

3464

02:09:46,950 --> 02:09:45,360

you can't predict it which makes it

3465

02:09:48,390 --> 02:09:46,960

really hard and no one's really thought

3466

02:09:49,910 --> 02:09:48,400

of a method yet to actually send

3467

02:09:51,270 --> 02:09:49,920

information that way

3468

02:09:53,510 --> 02:09:51,280

somebody might figure out how to do it

3469

02:09:54,790 --> 02:09:53,520

down the road but at the moment it

3470

02:09:56,149 --> 02:09:54,800

doesn't look like we can use that for

3471

02:09:58,550 --> 02:09:56,159

communication

3472

02:10:00,310 --> 02:09:58,560

uh if you can though all of a sudden

3473

02:10:02,870 --> 02:10:00,320

you've got a galactic internet because

3474

02:10:04,550 --> 02:10:02,880

you got galactic speed travel

3475

02:10:06,069 --> 02:10:04,560

and if you don't have the spaceships do

3476
02:10:08,310 --> 02:10:06,079
it you can start sending people around

3477
02:10:10,229 --> 02:10:08,320
it's just digitally decompressed data

3478
02:10:11,750 --> 02:10:10,239
um although that's going to take a huge

3479
02:10:12,870 --> 02:10:11,760
amount of bandwidth and we don't know

3480
02:10:15,109 --> 02:10:12,880
what the bandwidth on something like

3481
02:10:17,510 --> 02:10:15,119
that would be but even if it was just

3482
02:10:20,390 --> 02:10:17,520
basic text like a old school you know

3483
02:10:22,790 --> 02:10:20,400
one kilobyte per second modem right that

3484
02:10:24,870 --> 02:10:22,800
changes the game an awful lot and even

3485
02:10:26,149 --> 02:10:24,880
if it's not instantaneous but just much

3486
02:10:28,390 --> 02:10:26,159
faster than light

3487
02:10:30,310 --> 02:10:28,400
you know it's a game changer on how we

3488
02:10:32,629 --> 02:10:30,320

would expect civilizations to roll out

3489

02:10:34,550 --> 02:10:32,639

and how they go about observing things

3490

02:10:36,550 --> 02:10:34,560

you do not need a very big sensor or

3491

02:10:38,870 --> 02:10:36,560

probe on a planet for instance if you

3492

02:10:41,030 --> 02:10:38,880

can relay instantaneously back and forth

3493

02:10:43,030 --> 02:10:41,040

to central command what you want that

3494

02:10:46,149 --> 02:10:43,040

pro to look at and do

3495

02:10:48,709 --> 02:10:46,159

um well i want to i want to i i want to

3496

02:10:50,470 --> 02:10:48,719

discuss teleportation and

3497

02:10:52,870 --> 02:10:50,480

you know what your

3498

02:11:01,589 --> 02:10:52,880

your take on it is daunting it kind of

3499

02:11:05,189 --> 02:11:03,910

so we're going to get to teleportation

3500

02:11:08,870 --> 02:11:05,199

uh but

3501
02:11:11,990 --> 02:11:08,880
they're the phenomena of people on this

3502
02:11:14,390 --> 02:11:12,000
planet of which there are millions

3503
02:11:16,069 --> 02:11:14,400
that are channeling

3504
02:11:18,470 --> 02:11:16,079
something

3505
02:11:20,550 --> 02:11:18,480
when you hear about this and i know that

3506
02:11:21,910 --> 02:11:20,560
you've uh you know you've heard enough

3507
02:11:24,390 --> 02:11:21,920
about you know channeling different

3508
02:11:26,310 --> 02:11:24,400
species or palladians or

3509
02:11:28,550 --> 02:11:26,320
zeta reticuli right and they're they're

3510
02:11:31,430 --> 02:11:28,560
channeling an et

3511
02:11:33,109 --> 02:11:31,440
uh presence and they're conveying that

3512
02:11:35,430 --> 02:11:33,119
information back to us here on earth and

3513
02:11:37,109 --> 02:11:35,440

they've got a message for us ultimately

3514

02:11:39,910 --> 02:11:37,119

what do you think is going on is it the

3515

02:11:42,790 --> 02:11:39,920

possibility of some type of entanglement

3516

02:11:46,310 --> 02:11:42,800

and communication that et is figured out

3517

02:11:48,950 --> 02:11:46,320

and we are just uh you know uh bumping

3518

02:11:50,550 --> 02:11:48,960

into the radio signals if you were but

3519

02:11:53,109 --> 02:11:50,560

what do you think is happening with that

3520

02:11:54,629 --> 02:11:53,119

too many people are doing it for it to

3521

02:11:55,669 --> 02:11:54,639

be uh

3522

02:11:59,270 --> 02:11:55,679

uh

3523

02:12:00,870 --> 02:11:59,280

insanity right a mental issue

3524

02:12:02,629 --> 02:12:00,880

well and you know this is the thing on

3525

02:12:04,229 --> 02:12:02,639

stuff like that is they say well you

3526

02:12:05,990 --> 02:12:04,239

can't accuse everybody of being wrong or

3527

02:12:07,669 --> 02:12:06,000

being a liar and of course i would

3528

02:12:09,350 --> 02:12:07,679

imagine some people do lie about it

3529

02:12:11,030 --> 02:12:09,360

there's always some folks who would but

3530

02:12:12,790 --> 02:12:11,040

uh there are people who lied about going

3531

02:12:15,910 --> 02:12:12,800

to california i still believe california

3532

02:12:17,430 --> 02:12:15,920

exists right um but it doesn't say mean

3533

02:12:18,950 --> 02:12:17,440

they're right or they got the idea right

3534

02:12:20,550 --> 02:12:18,960

too and i don't think they'd claim that

3535

02:12:22,069 --> 02:12:20,560

either i mean this is a mysterious thing

3536

02:12:23,910 --> 02:12:22,079

that's going on to

3537

02:12:25,589 --> 02:12:23,920

them so they don't know how it works

3538

02:12:27,270 --> 02:12:25,599

they just think that it does

3539

02:12:29,030 --> 02:12:27,280

there's a lot of holes that women have

3540

02:12:30,149 --> 02:12:29,040

plugged for maybe that to make sense a

3541

02:12:32,229 --> 02:12:30,159

concept

3542

02:12:33,510 --> 02:12:32,239

if we don't know how the ftl thing is

3543

02:12:35,350 --> 02:12:33,520

working that someone's using to

3544

02:12:37,030 --> 02:12:35,360

communicate we can't say how it would

3545

02:12:39,430 --> 02:12:37,040

actually manifest

3546

02:12:41,270 --> 02:12:39,440

but you would expect in a case like that

3547

02:12:43,430 --> 02:12:41,280

that uh if you're talking to someone far

3548

02:12:45,510 --> 02:12:43,440

away they would if they're sending an

3549

02:12:48,069 --> 02:12:45,520

intentional message want that message to

3550

02:12:50,149 --> 02:12:48,079

be believed so you know if i was trying

3551

02:12:52,550 --> 02:12:50,159

to talk to a civilization like ours from

3552

02:12:54,229 --> 02:12:52,560

you know the 25th century whatever i'd

3553

02:12:56,390 --> 02:12:54,239

probably be sending them stuff that they

3554

02:12:58,550 --> 02:12:56,400

could not possibly you know that they

3555

02:13:01,030 --> 02:12:58,560

could verify and i have a really easy

3556

02:13:03,750 --> 02:13:01,040

way to do that if i'm far away because

3557

02:13:05,270 --> 02:13:03,760

i'm back in time to them right they are

3558

02:13:07,030 --> 02:13:05,280

going to be able to look at a phenomenon

3559

02:13:09,189 --> 02:13:07,040

that i saw earlier that the light hasn't

3560

02:13:11,510 --> 02:13:09,199

reached us yet from and say

3561

02:13:12,629 --> 02:13:11,520

oh so if i predict a supernova that i've

3562

02:13:14,229 --> 02:13:12,639

already seen

3563

02:13:16,790 --> 02:13:14,239

but they won't see for another decade i

3564

02:13:19,589 --> 02:13:16,800

can say look at the sky on you know

3565

02:13:20,790 --> 02:13:19,599

october 12 2021 there will be a

3566

02:13:22,550 --> 02:13:20,800

supernova

3567

02:13:25,430 --> 02:13:22,560

when that happens that you've pretty

3568

02:13:26,470 --> 02:13:25,440

much proven that beyond any reasonable

3569

02:13:28,390 --> 02:13:26,480

doubt especially if you're doing this

3570

02:13:29,669 --> 02:13:28,400

multiple times or if you send

3571

02:13:31,510 --> 02:13:29,679

information this is how you build a

3572

02:13:32,950 --> 02:13:31,520

fusion reactor but even just those

3573

02:13:34,870 --> 02:13:32,960

observations

3574

02:13:36,629 --> 02:13:34,880

you can tell them you know this signal

3575

02:13:38,310 --> 02:13:36,639

will arrive at this point in time this

3576

02:13:39,750 --> 02:13:38,320

star will do this at this point in time

3577

02:13:41,669 --> 02:13:39,760

this one will flare at this point in

3578

02:13:43,830 --> 02:13:41,679

time and you will see them at these

3579

02:13:45,910 --> 02:13:43,840

times we already saw them you know the

3580

02:13:47,750 --> 02:13:45,920

light hasn't reached you yet that is

3581

02:13:50,229 --> 02:13:47,760

such a dead

3582

02:13:52,149 --> 02:13:50,239

perfect proof of what's going on

3583

02:13:52,870 --> 02:13:52,159

that nobody's gonna you know argue with

3584

02:14:01,589 --> 02:13:52,880

that

3585

02:14:02,790 --> 02:14:01,599

along those lines if i can think of a

3586

02:14:04,790 --> 02:14:02,800

way to do that off the top of my head

3587

02:14:07,109 --> 02:14:04,800

they can probably think of a better one

3588

02:14:09,430 --> 02:14:07,119

um but they can use that one

3589

02:14:11,430 --> 02:14:09,440

why aren't they yeah it wouldn't be if

3590

02:14:14,950 --> 02:14:11,440

the yankees won

3591

02:14:17,030 --> 02:14:14,960

the world series and 20 they wouldn't

3592

02:14:19,189 --> 02:14:17,040

have that information but they would

3593

02:14:21,270 --> 02:14:19,199

have something that would be uh from the

3594

02:14:22,790 --> 02:14:21,280

heavens interstellar

3595

02:14:24,550 --> 02:14:22,800

something we could see that the light

3596

02:14:26,149 --> 02:14:24,560

got to us a little bit later you know

3597

02:14:27,910 --> 02:14:26,159

they know we're gonna see it at this

3598

02:14:29,189 --> 02:14:27,920

time and they just tell us to look out

3599

02:14:31,830 --> 02:14:29,199

for it you know

3600

02:14:33,830 --> 02:14:31,840

um and uh that's how you go about

3601

02:14:35,589 --> 02:14:33,840

proving something like that and so it

3602

02:14:37,990 --> 02:14:35,599

goes to motivations assuming they exist

3603

02:14:40,229 --> 02:14:38,000

to have motivations what is their goal

3604

02:14:42,229 --> 02:14:40,239

why are they doing this and if they were

3605

02:14:43,510 --> 02:14:42,239

using those motivations what method

3606

02:14:45,109 --> 02:14:43,520

would they use

3607

02:14:46,149 --> 02:14:45,119

if they want us to know something if

3608

02:14:47,270 --> 02:14:46,159

they were intentionally sending us

3609

02:14:49,109 --> 02:14:47,280

messages

3610

02:14:51,910 --> 02:14:49,119

then they sh they should as we just

3611

02:14:53,750 --> 02:14:51,920

showed have some very easy ways to prove

3612

02:14:55,750 --> 02:14:53,760

it if they want it proven we don't know

3613

02:14:57,750 --> 02:14:55,760

what they do it could be a prankster it

3614

02:14:59,270 --> 02:14:57,760

could be an anthropologist it could be

3615

02:15:00,229 --> 02:14:59,280

you know some lone rebel group that

3616

02:15:01,669 --> 02:15:00,239

really doesn't want to give away what

3617

02:15:03,430 --> 02:15:01,679

their location is so they're not going

3618

02:15:05,910 --> 02:15:03,440

to be too exact but what data they're

3619

02:15:07,669 --> 02:15:05,920

doing and and that's any given one of

3620

02:15:09,990 --> 02:15:07,679

these theories though we have to look at

3621

02:15:11,750 --> 02:15:10,000

what the motive for that would be and

3622

02:15:13,350 --> 02:15:11,760

how they would proceed and if it doesn't

3623

02:15:15,350 --> 02:15:13,360

hold up consistently it puts a mark

3624

02:15:17,189 --> 02:15:15,360

against that theory

3625

02:15:19,030 --> 02:15:17,199

let's bum everybody out and talk some

3626

02:15:21,350 --> 02:15:19,040

teleportation

3627

02:15:23,270 --> 02:15:21,360

now you're uh

3628

02:15:24,550 --> 02:15:23,280

okay i want you to

3629

02:15:26,069 --> 02:15:24,560

this is going to be off of the top of

3630

02:15:29,669 --> 02:15:26,079

your head i don't think you've got this

3631

02:15:33,510 --> 02:15:29,679

data in front of you but you did uh

3632

02:15:37,350 --> 02:15:33,520

talk about the amount of information

3633

02:15:38,790 --> 02:15:37,360

that would need to be uh

3634

02:15:41,430 --> 02:15:38,800

streamed

3635

02:15:43,990 --> 02:15:41,440

from our own body to reconstruct

3636

02:15:46,310 --> 02:15:44,000

and you spewed out these numbers in your

3637

02:15:47,990 --> 02:15:46,320

presentation and i went well there goes

3638

02:15:50,149 --> 02:15:48,000

that idea

3639

02:15:52,149 --> 02:15:50,159

it is a lot of data yeah it's a lie and

3640

02:15:53,990 --> 02:15:52,159

i mean bandwidth wise

3641

02:15:56,229 --> 02:15:54,000

if you're trying to transmit a human's

3642

02:15:58,390 --> 02:15:56,239

memory that actually might not be too

3643

02:16:00,550 --> 02:15:58,400

big um we don't know what the processing

3644

02:16:02,149 --> 02:16:00,560

power of a human brain is but what's

3645

02:16:03,430 --> 02:16:02,159

stored on there especially because you

3646

02:16:05,430 --> 02:16:03,440

could probably get away compressing a

3647

02:16:08,149 --> 02:16:05,440

lot you might be able to send that in

3648

02:16:09,669 --> 02:16:08,159

something relatively small i mean maybe

3649

02:16:11,910 --> 02:16:09,679

even something that we could store

3650

02:16:13,669 --> 02:16:11,920

nowadays in the terabyte range but

3651

02:16:15,430 --> 02:16:13,679

that's still a lot of bandwidth you

3652

02:16:17,270 --> 02:16:15,440

think about uh new horizons the probe

3653

02:16:19,189 --> 02:16:17,280

that just uh just went by ultimate

3654

02:16:20,950 --> 02:16:19,199

toulet a few days back

3655

02:16:22,629 --> 02:16:20,960

um that thing is going to take some

3656

02:16:24,310 --> 02:16:22,639

photographs they're going to take two

3657

02:16:26,629 --> 02:16:24,320

years to transmit back to us because

3658

02:16:29,189 --> 02:16:26,639

it's transmitting at about one kilobyte

3659

02:16:30,390 --> 02:16:29,199

a second wow

3660

02:16:31,589 --> 02:16:30,400

and it's not because we just you know

3661

02:16:33,990 --> 02:16:31,599

it's not that old attack that thing

3662

02:16:37,349 --> 02:16:34,000

launched in 2005 with the best we had at

3663

02:16:40,230 --> 02:16:37,359

the time right um it's just that the

3664

02:16:42,629 --> 02:16:40,240

power needed to send the signal uh even

3665

02:16:43,910 --> 02:16:42,639

with huge dishes listening to it

3666

02:16:45,830 --> 02:16:43,920

uh is

3667

02:16:47,750 --> 02:16:45,840

enormous to you know to send a single

3668

02:16:49,990 --> 02:16:47,760

byte that we're going to pick up

3669

02:16:52,309 --> 02:16:50,000

and so it has to send that data really

3670

02:16:54,389 --> 02:16:52,319

slow and it doesn't have that much power

3671

02:16:55,750 --> 02:16:54,399

and you can ramp the power up a lot i

3672

02:16:57,589 --> 02:16:55,760

mean it hasn't had much power because

3673

02:17:00,549 --> 02:16:57,599

it's got a really tiny power source a

3674

02:17:02,309 --> 02:17:00,559

planet another solar system has to ramp

3675

02:17:05,110 --> 02:17:02,319

that power up even more but they would

3676

02:17:06,070 --> 02:17:05,120

have gigantic reactors to do that with

3677

02:17:09,349 --> 02:17:06,080

um

3678

02:17:11,429 --> 02:17:09,359

body

3679

02:17:13,429 --> 02:17:11,439

now what what kind of bandwidth what

3680

02:17:16,469 --> 02:17:13,439

kind of feels up hugely yeah and we're

3681

02:17:17,589 --> 02:17:16,479

potentially talking about needing to use

3682

02:17:19,589 --> 02:17:17,599

potentially

3683

02:17:21,750 --> 02:17:19,599

i mean that could be up in the 10 to 24

3684

02:17:23,429 --> 02:17:21,760

bytes or more and you could compress a

3685

02:17:25,589 --> 02:17:23,439

lot of that too i mean it's a lot of

3686

02:17:27,270 --> 02:17:25,599

it's you know repeated data someone

3687

02:17:28,629 --> 02:17:27,280

might not be okay with being compressed

3688

02:17:30,709 --> 02:17:28,639

though

3689

02:17:33,110 --> 02:17:30,719

um but we don't even have all the same

3690

02:17:34,870 --> 02:17:33,120

dna for each of our individual cells if

3691

02:17:37,750 --> 02:17:34,880

you actually wanted to send a blueprint

3692

02:17:39,910 --> 02:17:37,760

of every last atom in someone's body in

3693

02:17:42,790 --> 02:17:39,920

terms of what it was and where it was

3694

02:17:44,389 --> 02:17:42,800

we have something like uh 30 trillion

3695

02:17:45,589 --> 02:17:44,399

cells something along those lines and

3696

02:17:47,509 --> 02:17:45,599

each one of those cells is like a

3697

02:17:49,429 --> 02:17:47,519

trillion atoms in it

3698

02:17:51,750 --> 02:17:49,439

you're talking about a packet that would

3699

02:17:53,349 --> 02:17:51,760

need a terabyte line and would take

3700

02:17:55,349 --> 02:17:53,359

still um

3701
02:17:56,870 --> 02:17:55,359
decades to send even at that speed you

3702
02:17:59,270 --> 02:17:56,880
know at

3703
02:18:01,110 --> 02:17:59,280
at 100 times faster than the fastest

3704
02:18:03,110 --> 02:18:01,120
publicly available internet it still is

3705
02:18:05,750 --> 02:18:03,120
going to need centuries to send a single

3706
02:18:07,270 --> 02:18:05,760
person yeah and that's problematic when

3707
02:18:09,509 --> 02:18:07,280
you're using for a laser too because

3708
02:18:11,110 --> 02:18:09,519
those things spread out over distance so

3709
02:18:13,270 --> 02:18:11,120
you want to avoid signal noise you do

3710
02:18:16,150 --> 02:18:13,280
still have a bandwidth limit

3711
02:18:17,830 --> 02:18:16,160
so i to understand what you just said so

3712
02:18:21,509 --> 02:18:17,840
you've got uh

3713
02:18:22,790 --> 02:18:21,519

25 trillion cells in in our body okay

3714

02:18:24,549 --> 02:18:22,800

that's one

3715

02:18:26,870 --> 02:18:24,559

daunting figure

3716

02:18:28,230 --> 02:18:26,880

but what's inside of each one of those

3717

02:18:29,669 --> 02:18:28,240

cells

3718

02:18:31,750 --> 02:18:29,679

trillions of individuals so i mean just

3719

02:18:34,230 --> 02:18:31,760

the dna code alone is a billion of those

3720

02:18:35,990 --> 02:18:34,240

now to be fair you can compress a lot

3721

02:18:38,790 --> 02:18:36,000

you really don't need to have an exact

3722

02:18:40,070 --> 02:18:38,800

copy of every last strand of dna because

3723

02:18:42,230 --> 02:18:40,080

even though most of us have one little

3724

02:18:43,990 --> 02:18:42,240

mutation off from each other

3725

02:18:45,270 --> 02:18:44,000

you can send just that mutation or you

3726

02:18:47,270 --> 02:18:45,280

don't have to send it i don't really

3727

02:18:49,190 --> 02:18:47,280

care if one of my cells arise with a

3728

02:18:51,589 --> 02:18:49,200

different dna packet than had before if

3729

02:18:53,270 --> 02:18:51,599

it's still one of my dna strands it's

3730

02:18:54,150 --> 02:18:53,280

just a little different

3731

02:18:56,389 --> 02:18:54,160

um

3732

02:18:57,509 --> 02:18:56,399

but so you don't have to set a perfect

3733

02:18:59,589 --> 02:18:57,519

copy

3734

02:19:01,349 --> 02:18:59,599

but that gets in the question of how

3735

02:19:03,270 --> 02:19:01,359

perfect a copy needs to be to be the

3736

02:19:05,110 --> 02:19:03,280

original person too

3737

02:19:07,910 --> 02:19:05,120

and so if you're trying to send all

3738

02:19:09,190 --> 02:19:07,920

those last data states and you know you

3739

02:19:10,709 --> 02:19:09,200

might have a choice you might have to

3740

02:19:12,389 --> 02:19:10,719

send the entire you know when i take a

3741

02:19:14,629 --> 02:19:12,399

photograph of someone i don't get to

3742

02:19:15,910 --> 02:19:14,639

photoshop that photo i'm taking their

3743

02:19:17,349 --> 02:19:15,920

exact data

3744

02:19:19,030 --> 02:19:17,359

if that's the way you capture that

3745

02:19:21,270 --> 02:19:19,040

information then you have to transmit it

3746

02:19:22,629 --> 02:19:21,280

that way too and that would require a

3747

02:19:24,150 --> 02:19:22,639

ton of bandwidth and we'll talk about

3748

02:19:25,509 --> 02:19:24,160

something like quantum entanglement as a

3749

02:19:27,030 --> 02:19:25,519

way of sending teleport you know

3750

02:19:28,150 --> 02:19:27,040

teleporting people

3751
02:19:31,110 --> 02:19:28,160
that is

3752
02:19:32,469 --> 02:19:31,120
entangling every last single atom in

3753
02:19:34,549 --> 02:19:32,479
their body

3754
02:19:36,469 --> 02:19:34,559
will get like a thousand i think is our

3755
02:19:38,870 --> 02:19:36,479
court record for entangling atoms at the

3756
02:19:41,030 --> 02:19:38,880
same time that's under a very controlled

3757
02:19:42,950 --> 02:19:41,040
circumstance right i don't even know how

3758
02:19:43,910 --> 02:19:42,960
you would go about doing that but if you

3759
02:19:46,870 --> 02:19:43,920
could

3760
02:19:48,150 --> 02:19:46,880
that's you know again that's a massive

3761
02:19:49,510 --> 02:19:48,160
massive thing and then the kind of

3762
02:19:51,510 --> 02:19:49,520
computing power need to do something

3763
02:19:52,469 --> 02:19:51,520

like that is just

3764

02:19:57,349 --> 02:19:52,479

obscene

3765

02:19:59,910 --> 02:19:57,359

end of that it's the amount of time that

3766

02:20:02,630 --> 02:19:59,920

it would take to do the transfer you

3767

02:20:04,950 --> 02:20:02,640

might as well just fly there and uh and

3768

02:20:06,870 --> 02:20:04,960

take a couple hundred years and at least

3769

02:20:09,510 --> 02:20:06,880

you know that every atom in your body

3770

02:20:11,190 --> 02:20:09,520

would arrive in the way that it departed

3771

02:20:13,590 --> 02:20:11,200

because that's the other thing you don't

3772

02:20:15,990 --> 02:20:13,600

know if it's going to reconstruct now

3773

02:20:17,670 --> 02:20:16,000

that the other part of this is your

3774

02:20:20,710 --> 02:20:17,680

consciousness

3775

02:20:22,870 --> 02:20:20,720

you know would that also be part of the

3776

02:20:24,950 --> 02:20:22,880

teleportation i i understand your

3777

02:20:27,510 --> 02:20:24,960

memories could be but what about the

3778

02:20:29,270 --> 02:20:27,520

stuff that makes isaac isaac

3779

02:20:31,030 --> 02:20:29,280

how does that's the million-dollar

3780

02:20:32,469 --> 02:20:31,040

question isn't it because we don't know

3781

02:20:34,950 --> 02:20:32,479

right

3782

02:20:37,030 --> 02:20:34,960

um i i tend to subscribe to the the john

3783

02:20:38,790 --> 02:20:37,040

locke approach on continuity of identity

3784

02:20:40,230 --> 02:20:38,800

and consciousness not because it's

3785

02:20:42,070 --> 02:20:40,240

particularly provable it's none of these

3786

02:20:43,349 --> 02:20:42,080

things have any more evidence supporting

3787

02:20:44,630 --> 02:20:43,359

them than any of the others but because

3788

02:20:45,990 --> 02:20:44,640

it's the one that seems to make the most

3789

02:20:48,389 --> 02:20:46,000

sense to me

3790

02:20:49,830 --> 02:20:48,399

um or at least is the most comfortable

3791

02:20:52,550 --> 02:20:49,840

to settle on

3792

02:20:55,910 --> 02:20:52,560

uh and the notion there is is so long as

3793

02:20:57,510 --> 02:20:55,920

i'm continuing my uh my existence more

3794

02:21:00,070 --> 02:20:57,520

or less the same with any really abrupt

3795

02:21:00,950 --> 02:21:00,080

changes then my identity is persistent

3796

02:21:02,870 --> 02:21:00,960

too

3797

02:21:04,710 --> 02:21:02,880

uh but that becomes a real issue if i

3798

02:21:06,230 --> 02:21:04,720

let's say i make a copy of myself on

3799

02:21:08,710 --> 02:21:06,240

another planet what about the copy

3800

02:21:11,190 --> 02:21:08,720

that's back back here what about the

3801
02:21:13,030 --> 02:21:11,200
copy they brought online that was uh not

3802
02:21:14,870 --> 02:21:13,040
quite right so they stored it and

3803
02:21:16,389 --> 02:21:14,880
another one's used and then they wake up

3804
02:21:17,910 --> 02:21:16,399
the uh damaged one because they forgot

3805
02:21:19,990 --> 02:21:17,920
how to repair it now there's two of me

3806
02:21:21,429 --> 02:21:20,000
there which one's me that well

3807
02:21:23,110 --> 02:21:21,439
apparently they're both me but they're

3808
02:21:24,230 --> 02:21:23,120
not really the same as each other

3809
02:21:27,510 --> 02:21:24,240
anymore

3810
02:21:30,870 --> 02:21:27,520
and i've never heard a a explanation for

3811
02:21:32,950 --> 02:21:30,880
how to cope with that that was entirely

3812
02:21:34,710 --> 02:21:32,960
solid across the board and met all the

3813
02:21:37,110 --> 02:21:34,720

the goals we'd have for just being

3814

02:21:39,270 --> 02:21:37,120

somewhere else and i don't think you're

3815

02:21:41,030 --> 02:21:39,280

gonna get one either because it's it's

3816

02:21:43,190 --> 02:21:41,040

it's a little bit too

3817

02:21:44,389 --> 02:21:43,200

subjective certain things are abstract

3818

02:21:46,950 --> 02:21:44,399

and things like consciousness and

3819

02:21:48,710 --> 02:21:46,960

identity are very abstract concepts

3820

02:21:51,030 --> 02:21:48,720

and i i do not think that we're going to

3821

02:21:51,990 --> 02:21:51,040

get a satisfactory answer to those do

3822

02:21:57,110 --> 02:21:52,000

you

3823

02:22:01,910 --> 02:21:57,120

go

3824

02:22:03,510 --> 02:22:01,920

there's the star trek teleporter

3825

02:22:05,030 --> 02:22:03,520

transporter right you know if if you're

3826
02:22:06,710 --> 02:22:05,040
reassembling me down there and

3827
02:22:09,750 --> 02:22:06,720
disassembling me up here

3828
02:22:11,270 --> 02:22:09,760
um did you just kill me

3829
02:22:13,349 --> 02:22:11,280
and of course you got the examples but i

3830
02:22:14,550 --> 02:22:13,359
think they did cover that in uh i have

3831
02:22:17,270 --> 02:22:14,560
the episode it was the one with the two

3832
02:22:18,790 --> 02:22:17,280
rifles so uh there's a copy of him left

3833
02:22:20,790 --> 02:22:18,800
alone on a planet that was the extra

3834
02:22:22,469 --> 02:22:20,800
that bounced back um

3835
02:22:24,630 --> 02:22:22,479
which one of those is the vo1 right

3836
02:22:26,870 --> 02:22:24,640
which one you know

3837
02:22:28,389 --> 02:22:26,880
and there is no clear answer on

3838
02:22:30,230 --> 02:22:28,399

something like that that that i i at

3839

02:22:31,190 --> 02:22:30,240

least i have not heard an answer that

3840

02:22:34,950 --> 02:22:31,200

would be

3841

02:22:37,830 --> 02:22:34,960

100 solid now and there is uh

3842

02:22:40,710 --> 02:22:37,840

if if teleportation isn't the answer an

3843

02:22:44,630 --> 02:22:40,720

entanglement isn't the answer

3844

02:22:47,510 --> 02:22:44,640

science today and for me i think is is

3845

02:22:48,790 --> 02:22:47,520

is when it gets to uh quantum computing

3846

02:22:51,590 --> 02:22:48,800

and qubits

3847

02:22:54,070 --> 02:22:51,600

is now strongly suggesting isaac that

3848

02:22:56,150 --> 02:22:54,080

parallel worlds are real

3849

02:22:58,710 --> 02:22:56,160

right and for quantum entanglement for a

3850

02:23:02,070 --> 02:22:58,720

qubit to operate correctly

3851
02:23:05,270 --> 02:23:02,080
um and the concepts of quantum computing

3852
02:23:07,670 --> 02:23:05,280
well then we have to accept a parallel

3853
02:23:09,750 --> 02:23:07,680
world apparel an infinite situation to

3854
02:23:11,910 --> 02:23:09,760
our right and to our left

3855
02:23:13,190 --> 02:23:11,920
not necessarily we've got uh well we

3856
02:23:14,469 --> 02:23:13,200
have quite a few quantum theories but

3857
02:23:17,670 --> 02:23:14,479
the two people are most familiar with

3858
02:23:19,349 --> 02:23:17,680
are copenhagen and mini wards um many

3859
02:23:22,070 --> 02:23:19,359
words has

3860
02:23:24,070 --> 02:23:22,080
a a lot of following it's it's the other

3861
02:23:25,990 --> 02:23:24,080
big one but copenhagen tends to be the

3862
02:23:27,990 --> 02:23:26,000
slightly more popular physicist at least

3863
02:23:30,389 --> 02:23:28,000

less i checked not by a lot

3864

02:23:32,469 --> 02:23:30,399

they both allow quantum computing as as

3865

02:23:34,950 --> 02:23:32,479

the peers take place there is not a

3866

02:23:36,950 --> 02:23:34,960

single shred of evidence of any sort to

3867

02:23:38,950 --> 02:23:36,960

back up copenhagen many words or any of

3868

02:23:41,590 --> 02:23:38,960

the other quantum interpretations we

3869

02:23:42,870 --> 02:23:41,600

don't know right if those exist you know

3870

02:23:44,389 --> 02:23:42,880

that's a pretty big deal and i think a

3871

02:23:46,070 --> 02:23:44,399

lot of folks like many wars because it

3872

02:23:47,590 --> 02:23:46,080

gets around the anthropic principle and

3873

02:23:50,150 --> 02:23:47,600

fine-tuning issues for the universe

3874

02:23:51,030 --> 02:23:50,160

those are a big problem in copenhagen

3875

02:23:52,630 --> 02:23:51,040

um

3876

02:23:54,309 --> 02:23:52,640

and i tend to subscribe to copenhagen

3877

02:23:56,309 --> 02:23:54,319

myself though i think i think many wards

3878

02:23:57,590 --> 02:23:56,319

would be more fun if it was true

3879

02:23:59,110 --> 02:23:57,600

um

3880

02:24:01,110 --> 02:23:59,120

if you have those that starts getting a

3881

02:24:02,950 --> 02:24:01,120

question do i bother to travel to

3882

02:24:05,830 --> 02:24:02,960

another solar system when i can just

3883

02:24:07,510 --> 02:24:05,840

step off onto a copy of earth where

3884

02:24:09,270 --> 02:24:07,520

humanity got wiped out seventy thousand

3885

02:24:11,030 --> 02:24:09,280

years ago by i can't relate that

3886

02:24:12,790 --> 02:24:11,040

asteroid the the one that they think

3887

02:24:14,309 --> 02:24:12,800

killed off a lot of of civilization at

3888

02:24:16,389 --> 02:24:14,319

the time that or people don't think

3889

02:24:17,750 --> 02:24:16,399

there's really civilization yet uh you

3890

02:24:19,510 --> 02:24:17,760

go to that copy of that plant because

3891

02:24:21,110 --> 02:24:19,520

it's identical to ours except it's

3892

02:24:23,190 --> 02:24:21,120

uninhabited

3893

02:24:26,469 --> 02:24:23,200

that's the perfect place to set up a

3894

02:24:28,389 --> 02:24:26,479

colony i mean why go tail form rigel or

3895

02:24:30,309 --> 02:24:28,399

vega uh like it's actually pronounced

3896

02:24:32,150 --> 02:24:30,319

vega now i heard that recently yes why

3897

02:24:34,230 --> 02:24:32,160

would colonize those places when you can

3898

02:24:36,469 --> 02:24:34,240

just step out onto an empty copy of your

3899

02:24:39,590 --> 02:24:36,479

own planet that's different because and

3900

02:24:42,150 --> 02:24:39,600

there'll be so many versions every last

3901
02:24:44,309 --> 02:24:42,160
minor variation even one atom being will

3902
02:24:45,990 --> 02:24:44,319
not place off in a single rock is its

3903
02:24:47,910 --> 02:24:46,000
own multicourse

3904
02:24:49,349 --> 02:24:47,920
and so you have a virtually unlimited

3905
02:24:50,950 --> 02:24:49,359
number of these the technique is still a

3906
02:24:52,469 --> 02:24:50,960
finite number but it's one of those ones

3907
02:24:53,990 --> 02:24:52,479
we actually have an exponent on the

3908
02:24:55,510 --> 02:24:54,000
exponent you know

3909
02:24:56,550 --> 02:24:55,520
this near infinite number of these

3910
02:24:58,870 --> 02:24:56,560
things

3911
02:25:01,030 --> 02:24:58,880
why why would you ever colonize another

3912
02:25:03,510 --> 02:25:01,040
solar system in a case like that except

3913
02:25:04,790 --> 02:25:03,520

to maybe your own sun starting to burn

3914

02:25:08,230 --> 02:25:04,800

out you know

3915

02:25:11,830 --> 02:25:08,240

um are you okay with that though because

3916

02:25:14,230 --> 02:25:11,840

if if quantum mechanics quantum theory

3917

02:25:17,510 --> 02:25:14,240

if and and quantum computers in in the

3918

02:25:20,710 --> 02:25:17,520

in cuba if it continues down its path

3919

02:25:23,030 --> 02:25:20,720

isaac you are going to have to accept

3920

02:25:24,389 --> 02:25:23,040

either the many worlds or coping you're

3921

02:25:26,950 --> 02:25:24,399

going to have to go one way or the other

3922

02:25:28,710 --> 02:25:26,960

or maybe even another

3923

02:25:31,750 --> 02:25:28,720

another reality that we haven't

3924

02:25:34,150 --> 02:25:31,760

theorized yet but are you okay with that

3925

02:25:35,830 --> 02:25:34,160

does your head explode or are you okay

3926
02:25:37,670 --> 02:25:35,840
my head explodes whenever i deal with

3927
02:25:39,110 --> 02:25:37,680
many wards or the size of the universe

3928
02:25:40,710 --> 02:25:39,120
you know people talk about the sheer

3929
02:25:43,110 --> 02:25:40,720
scale of that and you're trying to come

3930
02:25:45,110 --> 02:25:43,120
to understand astronomical times you can

3931
02:25:47,110 --> 02:25:45,120
study this stuff for years you can learn

3932
02:25:49,670 --> 02:25:47,120
all the math and your brain still never

3933
02:25:51,110 --> 02:25:49,680
really wraps around the scale involved

3934
02:25:53,030 --> 02:25:51,120
as to whether or not i mean if another

3935
02:25:54,469 --> 02:25:53,040
theory comes up or gets proven um i

3936
02:25:55,830 --> 02:25:54,479
think i'd be fine with it but you never

3937
02:25:57,910 --> 02:25:55,840
know until the time i'd like to think i

3938
02:26:00,309 --> 02:25:57,920

would be um

3939

02:26:02,070 --> 02:26:00,319

that's that's the core of science is

3940

02:26:03,670 --> 02:26:02,080

adapting when the knowledge changes

3941

02:26:05,910 --> 02:26:03,680

figuring out what it means and and you

3942

02:26:07,110 --> 02:26:05,920

follow the truth it doesn't matter i

3943

02:26:09,190 --> 02:26:07,120

mean it doesn't matter if you accept it

3944

02:26:11,270 --> 02:26:09,200

or not either the truth is the truth

3945

02:26:12,710 --> 02:26:11,280

um but you know personally i'd like to

3946

02:26:14,630 --> 02:26:12,720

think that i would i might be a little

3947

02:26:16,230 --> 02:26:14,640

disappointed in myself if i didn't but

3948

02:26:18,389 --> 02:26:16,240

you know we all have a blind what's on

3949

02:26:19,270 --> 02:26:18,399

about something that's the human nature

3950

02:26:22,389 --> 02:26:19,280

so

3951

02:26:24,070 --> 02:26:22,399

what i have been enjoying lately is

3952

02:26:26,630 --> 02:26:24,080

listening to

3953

02:26:28,389 --> 02:26:26,640

the physicists the celebrity physicists

3954

02:26:30,469 --> 02:26:28,399

too as well i listen to all of their

3955

02:26:33,270 --> 02:26:30,479

presentations i study it

3956

02:26:35,349 --> 02:26:33,280

how they are getting farther farther

3957

02:26:37,030 --> 02:26:35,359

apart from each other where they thought

3958

02:26:39,429 --> 02:26:37,040

that they had a grip

3959

02:26:42,070 --> 02:26:39,439

on things you know certainly 50 years

3960

02:26:44,469 --> 02:26:42,080

ago but it is unraveling now because the

3961

02:26:46,870 --> 02:26:44,479

data is coming in faster than anybody

3962

02:26:49,990 --> 02:26:46,880

and now anybody's theory gets thrown on

3963

02:26:52,150 --> 02:26:50,000

the table and it's as valid as the next

3964

02:26:52,870 --> 02:26:52,160

um i too would agree uh some of the i

3965

02:26:54,309 --> 02:26:52,880

mean

3966

02:26:56,550 --> 02:26:54,319

most of the folks that people recognize

3967

02:26:59,030 --> 02:26:56,560

the names of of this or that physicist

3968

02:27:00,790 --> 02:26:59,040

like i don't do any active research um

3969

02:27:02,710 --> 02:27:00,800

yeah i don't know how much tyson does

3970

02:27:04,950 --> 02:27:02,720

nye obviously doesn't do any uh at least

3971

02:27:06,950 --> 02:27:04,960

i'm not that i'm aware of michio keku i

3972

02:27:08,710 --> 02:27:06,960

think still does but you know the the

3973

02:27:11,030 --> 02:27:08,720

the totally new minds saying most these

3974

02:27:12,790 --> 02:27:11,040

theories are usually folks people never

3975

02:27:15,990 --> 02:27:12,800

heard of and you have to keep up with

3976
02:27:17,750 --> 02:27:16,000
that um and sometimes those get debunked

3977
02:27:19,750 --> 02:27:17,760
sometimes they get proven a lot of times

3978
02:27:21,110 --> 02:27:19,760
they sit for a decade or two you know

3979
02:27:22,309 --> 02:27:21,120
they might get a really big news article

3980
02:27:24,150 --> 02:27:22,319
talking about them and they just kind of

3981
02:27:25,510 --> 02:27:24,160
linger or not being proven or disspooned

3982
02:27:28,070 --> 02:27:25,520
for a long time

3983
02:27:29,990 --> 02:27:28,080
it takes a long time a lot we've done so

3984
02:27:31,349 --> 02:27:30,000
well advancing the field of physics in

3985
02:27:32,790 --> 02:27:31,359
the last century

3986
02:27:35,190 --> 02:27:32,800
that we're actually starting to slow

3987
02:27:38,469 --> 02:27:35,200
down now because any new step we need to

3988
02:27:40,870 --> 02:27:38,479

take requires these huge projects that

3989

02:27:43,349 --> 02:27:40,880

that that even if you could just give an

3990

02:27:45,990 --> 02:27:43,359

infinite blank check to still take 10 or

3991

02:27:48,070 --> 02:27:46,000

20 years to produce the experiment

3992

02:27:49,670 --> 02:27:48,080

that's going to find out say something

3993

02:27:51,590 --> 02:27:49,680

like fusion the biggest horde upon that

3994

02:27:54,150 --> 02:27:51,600

is it takes us so long just to build the

3995

02:27:54,950 --> 02:27:54,160

thing and it's hard to rush that process

3996

02:27:56,550 --> 02:27:54,960

you know

3997

02:27:58,630 --> 02:27:56,560

yeah i know and

3998

02:28:00,309 --> 02:27:58,640

you're absolutely i've thought so much

3999

02:28:01,990 --> 02:28:00,319

about i've got to take a break here in

4000

02:28:04,150 --> 02:28:02,000

15 seconds but when you have guys like

4001

02:28:05,990 --> 02:28:04,160

lawrence krauss or brian greene

4002

02:28:07,990 --> 02:28:06,000

and you know that that are doing this

4003

02:28:09,110 --> 02:28:08,000

research and and putting these ideas out

4004

02:28:11,110 --> 02:28:09,120

there

4005

02:28:13,990 --> 02:28:11,120

if anything comes to fruition it's going

4006

02:28:16,870 --> 02:28:14,000

to take 20 25 years that they don't have

4007

02:28:18,630 --> 02:28:16,880

another project to move on to after that

4008

02:28:22,710 --> 02:28:18,640

you know what i mean it takes so much

4009

02:28:24,309 --> 02:28:22,720

time to do the one version of something

4010

02:28:26,230 --> 02:28:24,319

oh yeah and i mean i think they'd agree

4011

02:28:28,710 --> 02:28:26,240

too it's not about the individual it's a

4012

02:28:30,630 --> 02:28:28,720

progressive generational step we as a

4013

02:28:32,230 --> 02:28:30,640

community field specific or look

4014

02:28:34,230 --> 02:28:32,240

although everybody in general because

4015

02:28:36,070 --> 02:28:34,240

everybody commits these things even if

4016

02:28:39,030 --> 02:28:36,080

they're just paying tax sign

4017

02:28:40,070 --> 02:28:39,040

um it takes a long time and you know

4018

02:28:41,670 --> 02:28:40,080

people are talking about could we do

4019

02:28:43,590 --> 02:28:41,680

these projects that would take us you

4020

02:28:45,429 --> 02:28:43,600

know thousands of years to do say well

4021

02:28:47,270 --> 02:28:45,439

we have we have done this we built

4022

02:28:48,710 --> 02:28:47,280

cathedrals that took centuries we've

4023

02:28:50,790 --> 02:28:48,720

committed to so many projects that are

4024

02:28:53,510 --> 02:28:50,800

multi-generational and this is just one

4025

02:28:55,590 --> 02:28:53,520

example it takes time but we got lots of

4026
02:28:56,710 --> 02:28:55,600
time now uh we're going to take a break

4027
02:28:59,030 --> 02:28:56,720
right here i'm going to hold you over

4028
02:29:01,349 --> 02:28:59,040
for a little overtime i want to discuss

4029
02:29:05,270 --> 02:29:01,359
two things that we didn't get to tonight

4030
02:29:07,429 --> 02:29:05,280
uh one is dark energy uh i i want to go

4031
02:29:10,150 --> 02:29:07,439
there and i want to close out the show

4032
02:29:12,550 --> 02:29:10,160
with a discussion on disclosure and what

4033
02:29:14,790 --> 02:29:12,560
is going on now and the possibility of

4034
02:29:17,910 --> 02:29:14,800
what our government may or may not know

4035
02:29:19,830 --> 02:29:17,920
when it comes to alien and e.t contact

4036
02:29:22,309 --> 02:29:19,840
you want to stand by right there

4037
02:29:24,389 --> 02:29:22,319
i'll be glad to our guest is isaac

4038
02:29:25,670 --> 02:29:24,399

arthur been waiting for this stay right

4039

02:29:27,429 --> 02:29:25,680

there we'll be right back after this

4040

02:29:30,770 --> 02:29:27,439

short break gonna do a little overtime

4041

02:29:53,910 --> 02:29:30,780

this is fade to black stay with us

4042

02:29:55,750 --> 02:29:53,920

[Music]

4043

02:29:58,150 --> 02:29:55,760

hey what up y'all should go biblical fox

4044

02:30:03,429 --> 02:29:58,160

here and you are listening to my boy

4045

02:30:15,830 --> 02:30:05,990

despite popular opinion

4046

02:30:21,750 --> 02:30:19,830

hurricanes earthquakes wildfires this

4047

02:30:24,150 --> 02:30:21,760

year we've experienced more than our

4048

02:30:26,469 --> 02:30:24,160

fair share this is jimmy church of fade

4049

02:30:28,469 --> 02:30:26,479

to black and last month i decided to

4050

02:30:30,950 --> 02:30:28,479

make sure my family does not have to

4051
02:30:34,070 --> 02:30:30,960
worry about food should we get caught in

4052
02:30:36,469 --> 02:30:34,080
a real emergency situation introducing

4053
02:30:38,309 --> 02:30:36,479
numana a healthy storable product that

4054
02:30:40,150 --> 02:30:38,319
tastes so good that you'll want to eat

4055
02:30:42,550 --> 02:30:40,160
it every day instead of just during

4056
02:30:44,870 --> 02:30:42,560
those times of duress all new mana

4057
02:30:48,150 --> 02:30:44,880
products have a 25 year shelf life our

4058
02:30:50,710 --> 02:30:48,160
msg and gmo free no preservatives and

4059
02:30:52,630 --> 02:30:50,720
are made in america with the new mana

4060
02:30:54,230 --> 02:30:52,640
pack in your home you'll be able to

4061
02:30:55,990 --> 02:30:54,240
sleep at night knowing that you've

4062
02:30:58,790 --> 02:30:56,000
protected your family

4063
02:31:01,429 --> 02:30:58,800

not only have i tasted and tested i own

4064

02:31:03,830 --> 02:31:01,439

it now you can too just click on the new

4065

02:31:05,990 --> 02:31:03,840

mana banner on jimmychurchradio.com and

4066

02:31:08,389 --> 02:31:06,000

use the promo code jimmy when you order

4067

02:31:10,870 --> 02:31:08,399

in addition to a discount we'll send you

4068

02:31:14,630 --> 02:31:10,880

an autographed fade to black t-shirt

4069

02:31:16,950 --> 02:31:14,640

seriously go backly tappy this is jimmy

4070

02:31:20,150 --> 02:31:16,960

church of fade to black and i take life

4071

02:31:21,670 --> 02:31:20,160

change t supplements every single day

4072

02:31:23,190 --> 02:31:21,680

it's what i do

4073

02:31:27,270 --> 02:31:23,200

click on their banner at

4074

02:31:32,070 --> 02:31:29,429

when you take the beans from central

4075

02:31:34,469 --> 02:31:32,080

america with dashes of indonesian and

4076
02:31:37,670 --> 02:31:34,479
african mixed in and then roasted to the

4077
02:31:40,150 --> 02:31:37,680
dark side of fade to black you create

4078
02:31:43,110 --> 02:31:40,160
the ultimate brew of fringe

4079
02:31:46,389 --> 02:31:43,120
introducing the fade to black blend from

4080
02:31:49,190 --> 02:31:46,399
river moon coffee yes river moon's

4081
02:31:51,990 --> 02:31:49,200
darkest customized roast was created for

4082
02:31:54,630 --> 02:31:52,000
the love of fade to black

4083
02:31:57,190 --> 02:31:54,640
the alchemy of masterful roasting and

4084
02:32:00,790 --> 02:31:57,200
smoking the beans is in every sip of

4085
02:32:03,750 --> 02:32:00,800
this full-bodied dark java i need my

4086
02:32:05,990 --> 02:32:03,760
coffee doc deep with distinct

4087
02:32:08,710 --> 02:32:06,000
bittersweet chocolate highlights just

4088
02:32:11,349 --> 02:32:08,720

like the bunker leaning further into the

4089

02:32:14,469 --> 02:32:11,359

darkness of the roast is fade to black

4090

02:32:16,630 --> 02:32:14,479

blend from river moon coffee just click

4091

02:32:20,309 --> 02:32:16,640

on the banner at jimmychurchradio.com

4092

02:32:22,469 --> 02:32:20,319

and use the promo code f2b blend for 15

4093

02:32:25,030 --> 02:32:22,479

off of your order today

4094

02:32:27,510 --> 02:32:25,040

go back lee tappy

4095

02:32:29,590 --> 02:32:27,520

hi folks cbd is the home run hitter for

4096

02:32:31,270 --> 02:32:29,600

health right now why you ask because of

4097

02:32:33,349 --> 02:32:31,280

what it does for the body and

4098

02:32:35,429 --> 02:32:33,359

fortunately i can't tell you all about

4099

02:32:37,429 --> 02:32:35,439

the benefit you know there's reasons do

4100

02:32:39,990 --> 02:32:37,439

your due diligence and log on to ancient

4101
02:32:42,230 --> 02:32:40,000
life oil dot com that's ancient life oil

4102
02:32:44,309 --> 02:32:42,240
dot com angel life oil uses organic

4103
02:32:46,790 --> 02:32:44,319
ingredients and is blended in coconut

4104
02:32:49,750 --> 02:32:46,800
oil for some of the best benefits legal

4105
02:32:52,230 --> 02:32:49,760
in 50 states and non-psychoactive

4106
02:32:54,630 --> 02:32:52,240
log on to ancient life oil.com that's

4107
02:32:56,389 --> 02:32:54,640
ancient life oil.com

4108
02:32:59,349 --> 02:32:56,399
this is jimmy church of fade to black

4109
02:33:02,150 --> 02:32:59,359
and my family is safe because of new

4110
02:33:04,230 --> 02:33:02,160
mana emergency food storage

4111
02:33:06,550 --> 02:33:04,240
just go to the new mana banner at

4112
02:33:07,830 --> 02:33:06,560
jimmychurchradio.com

4113
02:33:10,309 --> 02:33:07,840

promo code

4114

02:33:12,550 --> 02:33:10,319

jimmy10

4115

02:33:15,349 --> 02:33:12,560

are you intrigued by paranormal talk

4116

02:33:18,070 --> 02:33:15,359

radio you love the new paranormal radio

4117

02:33:19,830 --> 02:33:18,080

app from talkstream live

4118

02:33:22,630 --> 02:33:19,840

you'll find a great selection of talk

4119

02:33:25,270 --> 02:33:22,640

shows covering ufos ghosts strange

4120

02:33:27,590 --> 02:33:25,280

phenomena and much more download the

4121

02:33:29,590 --> 02:33:27,600

paranormal radio app now and start

4122

02:33:31,830 --> 02:33:29,600

listening to the very best in paranormal

4123

02:33:33,590 --> 02:33:31,840

talk entertainment including the network

4124

02:33:36,790 --> 02:33:33,600

you're listening to right now the

4125

02:33:47,110 --> 02:33:36,800

paranormal radio app free in google play

4126
02:33:59,270 --> 02:33:50,550
not a store we chose we were born this

4127
02:33:59,280 --> 02:34:05,410
this is kjcr jimmychurchradio.com

4128
02:34:05,420 --> 02:34:18,710
[Music]

4129
02:34:21,670 --> 02:34:20,230
welcome back fade to black i'm your

4130
02:34:24,389 --> 02:34:21,680
jimmy church doing a little over time

4131
02:34:26,309 --> 02:34:24,399
tonight with our guest isaac arthur

4132
02:34:27,670 --> 02:34:26,319
want to remind everybody what's going on

4133
02:34:29,750 --> 02:34:27,680
this week

4134
02:34:32,870 --> 02:34:29,760
tomorrow night carolyn ford is going to

4135
02:34:34,710 --> 02:34:32,880
be here and of course that is einstein

4136
02:34:36,790 --> 02:34:34,720
in the ancient crystal skull of

4137
02:34:38,389 --> 02:34:36,800
consciousness wednesday night david

4138
02:34:40,469 --> 02:34:38,399

wilcock is going to be here thursday

4139

02:34:42,790 --> 02:34:40,479

night fader night teresa yanaris of

4140

02:34:45,590 --> 02:34:42,800

course divine frequency on the airwaves

4141

02:34:47,910 --> 02:34:45,600

followed by open lines all night long

4142

02:34:49,750 --> 02:34:47,920

our guest of course is isaac arthur and

4143

02:34:51,990 --> 02:34:49,760

isaac right before the break where i was

4144

02:34:52,790 --> 02:34:52,000

you know uh discussing with you

4145

02:34:55,429 --> 02:34:52,800

uh

4146

02:34:57,750 --> 02:34:55,439

the the new realities that are there to

4147

02:34:58,389 --> 02:34:57,760

hitting astrophysicists and physicists

4148

02:35:00,710 --> 02:34:58,399

and

4149

02:35:02,389 --> 02:35:00,720

cosmologists around the world is dark

4150

02:35:03,510 --> 02:35:02,399

energy and

4151
02:35:07,349 --> 02:35:03,520
this is

4152
02:35:11,670 --> 02:35:07,359
uh

4153
02:35:13,190 --> 02:35:11,680
over the last year

4154
02:35:14,630 --> 02:35:13,200
they are for colloquium when they are

4155
02:35:15,830 --> 02:35:14,640
first present in this notion i was an

4156
02:35:17,030 --> 02:35:15,840
undergrad at the time too so i was

4157
02:35:19,429 --> 02:35:17,040
mostly there for the

4158
02:35:21,590 --> 02:35:19,439
coffee and cookies um but they just

4159
02:35:22,870 --> 02:35:21,600
started noticing with the supernova um

4160
02:35:24,870 --> 02:35:22,880
charles they were building up the data

4161
02:35:26,309 --> 02:35:24,880
for that that the expansion rates for

4162
02:35:28,150 --> 02:35:26,319
the universe weren't quite matching up

4163
02:35:29,670 --> 02:35:28,160

to what we thought they were going to be

4164

02:35:31,110 --> 02:35:29,680

and that time the

4165

02:35:32,870 --> 02:35:31,120

you know the margin of error bars were

4166

02:35:34,950 --> 02:35:32,880

so big that we couldn't actually tell if

4167

02:35:36,389 --> 02:35:34,960

it was expanding contracting or whatever

4168

02:35:38,070 --> 02:35:36,399

right but as we would find that down we

4169

02:35:40,070 --> 02:35:38,080

started seeing that it's accelerating

4170

02:35:41,590 --> 02:35:40,080

its expansion rate and that is a weird

4171

02:35:43,910 --> 02:35:41,600

one because it

4172

02:35:44,870 --> 02:35:43,920

kind of arguably breaks conservation of

4173

02:35:46,630 --> 02:35:44,880

energy

4174

02:35:47,990 --> 02:35:46,640

um depending on how much you used to

4175

02:35:50,309 --> 02:35:48,000

look at that that's

4176
02:35:51,750 --> 02:35:50,319
really much more complex but we already

4177
02:35:54,309 --> 02:35:51,760
kind of suspect that in the first place

4178
02:35:56,469 --> 02:35:54,319
because space takes energy to make and

4179
02:35:58,070 --> 02:35:56,479
uh all the way back in einstein's day we

4180
02:36:00,150 --> 02:35:58,080
were starting to wonder about whether or

4181
02:36:01,510 --> 02:36:00,160
not energy was really conserved in that

4182
02:36:04,309 --> 02:36:01,520
context

4183
02:36:05,670 --> 02:36:04,319
and it's really shaping you know the

4184
02:36:07,510 --> 02:36:05,680
future of what the universe is going to

4185
02:36:09,670 --> 02:36:07,520
look like down the road

4186
02:36:12,230 --> 02:36:09,680
we don't know how fast it's accelerating

4187
02:36:13,270 --> 02:36:12,240
yet or if it's going to speed up and so

4188
02:36:14,630 --> 02:36:13,280

we don't even know what the end of the

4189

02:36:16,389 --> 02:36:14,640

universe is going to look like right now

4190

02:36:18,150 --> 02:36:16,399

because it could be a big rip scenario

4191

02:36:20,469 --> 02:36:18,160

where i think it's shredded apart in 100

4192

02:36:22,070 --> 02:36:20,479

billion years or 20 million years or it

4193

02:36:23,990 --> 02:36:22,080

could be the more classic heat death

4194

02:36:25,670 --> 02:36:24,000

that we've uh tended to settle on in

4195

02:36:27,510 --> 02:36:25,680

more recent times

4196

02:36:29,429 --> 02:36:27,520

um and

4197

02:36:30,870 --> 02:36:29,439

with the the awesome thing about right

4198

02:36:32,150 --> 02:36:30,880

now is that we will probably get to see

4199

02:36:33,990 --> 02:36:32,160

most of the cool new knowledge that

4200

02:36:35,670 --> 02:36:34,000

comes from this over the next 20 or 30

4201

02:36:36,950 --> 02:36:35,680

years although this is one of those

4202

02:36:39,349 --> 02:36:36,960

problems that might be you know where

4203

02:36:42,309 --> 02:36:39,359

it's coming from could be going on for

4204

02:36:44,309 --> 02:36:42,319

centuries to come and you know when when

4205

02:36:45,349 --> 02:36:44,319

we talk about gravity

4206

02:36:47,349 --> 02:36:45,359

uh

4207

02:36:49,670 --> 02:36:47,359

there are so many different things going

4208

02:36:51,510 --> 02:36:49,680

on there's the gravity of of our cells

4209

02:36:53,830 --> 02:36:51,520

and what's holding you know us together

4210

02:36:55,429 --> 02:36:53,840

there's that and expanding out from that

4211

02:36:56,469 --> 02:36:55,439

of course you know the solar system and

4212

02:36:58,230 --> 02:36:56,479

earth and

4213

02:37:00,790 --> 02:36:58,240

and you know what's holding us together

4214

02:37:03,190 --> 02:37:00,800

you go out a step beyond that and and

4215

02:37:04,469 --> 02:37:03,200

the galaxy and and how that's spiraling

4216

02:37:06,550 --> 02:37:04,479

and how gravity

4217

02:37:09,190 --> 02:37:06,560

is holding that together where we're not

4218

02:37:12,790 --> 02:37:09,200

spinning off into everything and then

4219

02:37:15,990 --> 02:37:12,800

but the opposite seems to be happening

4220

02:37:17,670 --> 02:37:16,000

with dark energy which is forcing things

4221

02:37:19,910 --> 02:37:17,680

in the opposite direction and not

4222

02:37:22,950 --> 02:37:19,920

pulling it together and then the

4223

02:37:24,870 --> 02:37:22,960

original concept that i think everybody

4224

02:37:27,190 --> 02:37:24,880

accepted for so long

4225

02:37:29,510 --> 02:37:27,200

was that gravity the universe would

4226
02:37:31,270 --> 02:37:29,520
expand until gravity would overtake it

4227
02:37:33,349 --> 02:37:31,280
then pull it back together

4228
02:37:35,750 --> 02:37:33,359
and we would have another big bang it

4229
02:37:38,469 --> 02:37:35,760
would be like rinse repeat you know

4230
02:37:39,429 --> 02:37:38,479
lather and cyclic bangs right cyclic

4231
02:37:42,309 --> 02:37:39,439
banks

4232
02:37:43,910 --> 02:37:42,319
and and now i think uh

4233
02:37:47,030 --> 02:37:43,920
we're starting to take a harsh look at

4234
02:37:50,389 --> 02:37:47,040
this that we we just may be on a one-way

4235
02:37:52,230 --> 02:37:50,399
trip here right that it just may expand

4236
02:37:54,710 --> 02:37:52,240
out and eventually

4237
02:37:57,270 --> 02:37:54,720
uh if we're still around

4238
02:38:00,550 --> 02:37:57,280

we will be completely by ourselves that

4239

02:38:02,389 --> 02:38:00,560

the cosmos will be black

4240

02:38:03,910 --> 02:38:02,399

there's a second part of that i mean

4241

02:38:06,150 --> 02:38:03,920

that's one of the scenarios could happen

4242

02:38:07,910 --> 02:38:06,160

just the local galaxies by us all merged

4243

02:38:09,429 --> 02:38:07,920

together as they're already doing all

4244

02:38:11,270 --> 02:38:09,439

galaxies are cannibal and so is

4245

02:38:13,349 --> 02:38:11,280

andromeda and uh they talk about

4246

02:38:14,630 --> 02:38:13,359

andromeda and milky way colliding but

4247

02:38:15,910 --> 02:38:14,640

we're actually probably end up colliding

4248

02:38:17,670 --> 02:38:15,920

with the whirlpool while the other ones

4249

02:38:19,190 --> 02:38:17,680

first right those were all merged

4250

02:38:20,950 --> 02:38:19,200

together and everybody else will expand

4251
02:38:22,309 --> 02:38:20,960
out we'll never see them 150 billion

4252
02:38:24,630 --> 02:38:22,319
years from now you wouldn't be able to

4253
02:38:26,389 --> 02:38:24,640
see those galaxies it says the most

4254
02:38:28,870 --> 02:38:26,399
trace red shift to things disappearing

4255
02:38:30,389 --> 02:38:28,880
over the cosmological event horizon

4256
02:38:32,550 --> 02:38:30,399
um but

4257
02:38:35,110 --> 02:38:32,560
in some big rip scenarios for instance

4258
02:38:37,110 --> 02:38:35,120
uh if the this pushing force of dark

4259
02:38:38,389 --> 02:38:37,120
energy keeps growing you could get to

4260
02:38:40,950 --> 02:38:38,399
the point where it was actually ripping

4261
02:38:42,710 --> 02:38:40,960
apart quarks themselves and you actually

4262
02:38:45,349 --> 02:38:42,720
can't really rip quarks apart because

4263
02:38:47,349 --> 02:38:45,359

when you do you make more quarks

4264

02:38:48,710 --> 02:38:47,359

so there are some scenarios for like the

4265

02:38:50,710 --> 02:38:48,720

big rip for instance where this just

4266

02:38:53,830 --> 02:38:50,720

kept growing until you had a new big

4267

02:38:55,349 --> 02:38:53,840

bang going on everywhere all at once

4268

02:38:57,110 --> 02:38:55,359

and we're not actually sure that's not

4269

02:38:58,469 --> 02:38:57,120

how that happened in the first place you

4270

02:39:00,630 --> 02:38:58,479

say we talk about the size of the

4271

02:39:02,710 --> 02:39:00,640

universe being really tiny but we only

4272

02:39:04,230 --> 02:39:02,720

mean the chunk we can see it could have

4273

02:39:05,750 --> 02:39:04,240

expanded everywhere and already been

4274

02:39:07,990 --> 02:39:05,760

infinite in size in the first place

4275

02:39:09,750 --> 02:39:08,000

right um you know more infinity of

4276

02:39:11,990 --> 02:39:09,760

infinity what's infinity plus infinity

4277

02:39:13,429 --> 02:39:12,000

or times infinity it's still infinity

4278

02:39:14,870 --> 02:39:13,439

uh and so that is actually one

4279

02:39:16,630 --> 02:39:14,880

possibility of course we would not

4280

02:39:19,030 --> 02:39:16,640

survive that if it's ripping quarks

4281

02:39:20,870 --> 02:39:19,040

apart uh but you could have that as

4282

02:39:22,710 --> 02:39:20,880

something that happens every 100 billion

4283

02:39:25,750 --> 02:39:22,720

years or so the universe just re-erupts

4284

02:39:26,790 --> 02:39:25,760

as a whole new you know big bang

4285

02:39:28,389 --> 02:39:26,800

um

4286

02:39:30,150 --> 02:39:28,399

and well i don't subscribe to myself one

4287

02:39:32,150 --> 02:39:30,160

of the more popular competitors for the

4288

02:39:34,630 --> 02:39:32,160

big bang for a long time not the steady

4289

02:39:36,469 --> 02:39:34,640

state but quasi steady state universe

4290

02:39:38,630 --> 02:39:36,479

where you had little micro big bangs

4291

02:39:40,469 --> 02:39:38,640

going off all the time or

4292

02:39:41,830 --> 02:39:40,479

uh the idea was that you'll have a

4293

02:39:43,349 --> 02:39:41,840

little bit of hydrogen appearing here

4294

02:39:45,429 --> 02:39:43,359

and there at random everywhere all the

4295

02:39:47,510 --> 02:39:45,439

time and people say oh you wouldn't have

4296

02:39:50,150 --> 02:39:47,520

that and then we say well we got dark

4297

02:39:51,750 --> 02:39:50,160

energy doing that now uh i mean

4298

02:39:53,670 --> 02:39:51,760

this is new space that's appealing out

4299

02:39:54,790 --> 02:39:53,680

of nowhere and it's doing in probably

4300

02:39:56,469 --> 02:39:54,800

tiny amounts we haven't actually been

4301
02:39:58,150 --> 02:39:56,479
able to narrow that down yet but you

4302
02:39:59,910 --> 02:39:58,160
could easily have tiny tiny little

4303
02:40:01,030 --> 02:39:59,920
packets of new space popping up in you

4304
02:40:02,550 --> 02:40:01,040
all the time

4305
02:40:03,830 --> 02:40:02,560
you ignore them because all the

4306
02:40:05,270 --> 02:40:03,840
electrical forces hold your body

4307
02:40:08,070 --> 02:40:05,280
together but

4308
02:40:09,750 --> 02:40:08,080
they'd still be going on you know and so

4309
02:40:11,030 --> 02:40:09,760
you might have new little bits of space

4310
02:40:12,870 --> 02:40:11,040
popping up inside you and that's what

4311
02:40:14,790 --> 02:40:12,880
caused the expansion it just adds up

4312
02:40:17,270 --> 02:40:14,800
over a distance

4313
02:40:18,710 --> 02:40:17,280

well in the the okay there's two

4314

02:40:21,030 --> 02:40:18,720

directions i want to go in really

4315

02:40:22,550 --> 02:40:21,040

quickly one our big bang just happened

4316

02:40:25,750 --> 02:40:22,560

to be perfect

4317

02:40:28,870 --> 02:40:25,760

in that gravity was right the forces

4318

02:40:31,910 --> 02:40:28,880

were right and and

4319

02:40:34,389 --> 02:40:31,920

our universe just wants to create things

4320

02:40:37,190 --> 02:40:34,399

right life is just like everyone i mean

4321

02:40:40,070 --> 02:40:37,200

we just planets and stars but if it was

4322

02:40:42,550 --> 02:40:40,080

off by just a little bit things don't

4323

02:40:45,110 --> 02:40:43,510

it's just

4324

02:40:46,469 --> 02:40:45,120

probably not i mean that's the fine

4325

02:40:48,870 --> 02:40:46,479

tuning approach is that everything is

4326

02:40:50,790 --> 02:40:48,880

exactly perfect for us or in a very tiny

4327

02:40:52,150 --> 02:40:50,800

range compared to what it could be right

4328

02:40:54,230 --> 02:40:52,160

well that's i have to say the models

4329

02:40:55,590 --> 02:40:54,240

done for that are still iffy enough that

4330

02:40:57,590 --> 02:40:55,600

you couldn't say that something else

4331

02:41:00,309 --> 02:40:57,600

wouldn't form with patterns like we have

4332

02:41:02,309 --> 02:41:00,319

now and just might be very different but

4333

02:41:03,510 --> 02:41:02,319

it it and that's just throwing out there

4334

02:41:06,230 --> 02:41:03,520

that those models aren't really all that

4335

02:41:08,309 --> 02:41:06,240

precise yet um it does look like the

4336

02:41:09,990 --> 02:41:08,319

universe we're in is is

4337

02:41:11,910 --> 02:41:10,000

just perfect and so you get the

4338

02:41:14,070 --> 02:41:11,920

anthropic principle that says

4339

02:41:15,830 --> 02:41:14,080

is it a freak coincidence or is it just

4340

02:41:17,910 --> 02:41:15,840

that we are the only places that had

4341

02:41:19,429 --> 02:41:17,920

anything at large to notice that we were

4342

02:41:21,270 --> 02:41:19,439

perfect all the other places no life

4343

02:41:24,309 --> 02:41:21,280

emerges to notice that their universe

4344

02:41:29,670 --> 02:41:27,349

but that's exactly right in that there

4345

02:41:31,349 --> 02:41:29,680

are it could be infinite universes out

4346

02:41:33,750 --> 02:41:31,359

there that are dead

4347

02:41:36,469 --> 02:41:33,760

right that it just don't have any action

4348

02:41:39,510 --> 02:41:36,479

going on their big bang was just off by

4349

02:41:41,910 --> 02:41:39,520

a little bit and it just it just wasn't

4350

02:41:43,510 --> 02:41:41,920

right yeah the physical constants were

4351

02:41:45,670 --> 02:41:43,520

just a little bit off for that or the

4352

02:41:47,030 --> 02:41:45,680

time for the inflation was not quite

4353

02:41:48,469 --> 02:41:47,040

right or

4354

02:41:50,309 --> 02:41:48,479

and there were so many ways that could

4355

02:41:51,190 --> 02:41:50,319

have played out that would result in no

4356

02:41:53,270 --> 02:41:51,200

life

4357

02:41:55,270 --> 02:41:53,280

um and the only caveat on that is that

4358

02:41:56,550 --> 02:41:55,280

we probably don't want to rule out that

4359

02:41:58,630 --> 02:41:56,560

quite a few more than we would tend to

4360

02:42:00,710 --> 02:41:58,640

expect might be life-bearing

4361

02:42:02,309 --> 02:42:00,720

um but i wouldn't expect most of them to

4362

02:42:04,550 --> 02:42:02,319

be it just might be more than we tend to

4363

02:42:06,469 --> 02:42:04,560

think and right now we think that it's a

4364

02:42:08,070 --> 02:42:06,479

one of those numbers that's so small

4365

02:42:09,349 --> 02:42:08,080

that you need you know exponents to

4366

02:42:11,750 --> 02:42:09,359

express it

4367

02:42:14,309 --> 02:42:11,760

um and that that again that goes in the

4368

02:42:15,190 --> 02:42:14,319

fine-tuning anthropic principle approach

4369

02:42:18,070 --> 02:42:15,200

um

4370

02:42:19,910 --> 02:42:18,080

for instance sometimes we say oh the

4371

02:42:20,950 --> 02:42:19,920

universe is so huge we have to have x y

4372

02:42:23,030 --> 02:42:20,960

or z

4373

02:42:24,870 --> 02:42:23,040

earth takes up only a very tiny portion

4374

02:42:26,469 --> 02:42:24,880

of the value of space uh that's

4375

02:42:28,630 --> 02:42:26,479

habitable here and you want to get to

4376

02:42:30,309 --> 02:42:28,640

the next system that has a stone it you

4377

02:42:32,630 --> 02:42:30,319

have to encompass a volume that's a

4378

02:42:34,550 --> 02:42:32,640

quadrillion times larger than the sphere

4379

02:42:36,870 --> 02:42:34,560

you'd make around the earth uh the sun

4380

02:42:38,950 --> 02:42:36,880

at the earth's distance right and that's

4381

02:42:40,230 --> 02:42:38,960

empty that's pretty empty anyway and we

4382

02:42:42,230 --> 02:42:40,240

don't really think about anything being

4383

02:42:44,550 --> 02:42:42,240

there but earth is already a one a

4384

02:42:46,790 --> 02:42:44,560

quintillion thing just by

4385

02:42:47,910 --> 02:42:46,800

our solar system existing by being so

4386

02:42:49,510 --> 02:42:47,920

huge

4387

02:42:53,510 --> 02:42:49,520

um

4388

02:42:55,670 --> 02:42:53,520

these really suggest too well yet and

4389

02:42:57,190 --> 02:42:55,680

we're going to find out more but

4390

02:43:00,469 --> 02:42:57,200

and as we say you have to be patient

4391

02:43:02,950 --> 02:43:00,479

with science it takes a long time

4392

02:43:04,230 --> 02:43:02,960

it's fun though and when we take that

4393

02:43:06,870 --> 02:43:04,240

concept

4394

02:43:08,469 --> 02:43:06,880

because the odds of

4395

02:43:11,110 --> 02:43:08,479

your dna

4396

02:43:11,990 --> 02:43:11,120

right the odds of it

4397

02:43:13,510 --> 02:43:12,000

when

4398

02:43:15,270 --> 02:43:13,520

you talk to

4399

02:43:17,110 --> 02:43:15,280

uh different scientists out there and

4400

02:43:19,110 --> 02:43:17,120

i'm not going to name names but we'll

4401
02:43:21,830 --> 02:43:19,120
say well look it was just

4402
02:43:24,550 --> 02:43:21,840
you know lightning hit some amino acids

4403
02:43:27,590 --> 02:43:24,560
on a crystal in a in a creek bed

4404
02:43:30,070 --> 02:43:27,600
boom we had dna you know well

4405
02:43:32,389 --> 02:43:30,080
we have no idea how that happened

4406
02:43:33,429 --> 02:43:32,399
we know two things reasonably well by

4407
02:43:35,030 --> 02:43:33,439
inference

4408
02:43:36,630 --> 02:43:35,040
that it would have taken a decent

4409
02:43:38,230 --> 02:43:36,640
chemical mixture and that you need to

4410
02:43:39,349 --> 02:43:38,240
have some kind of energy input for them

4411
02:43:41,190 --> 02:43:39,359
to live on

4412
02:43:43,110 --> 02:43:41,200
and so and then people sometimes think

4413
02:43:45,190 --> 02:43:43,120

we know more about this than we do

4414

02:43:47,190 --> 02:43:45,200

um we all we do is we look at what

4415

02:43:48,870 --> 02:43:47,200

circumstances on earth might have had

4416

02:43:50,630 --> 02:43:48,880

those and say well that's a place that

4417

02:43:51,830 --> 02:43:50,640

could have happened we don't know yet we

4418

02:43:53,750 --> 02:43:51,840

have no idea it could have been thermal

4419

02:43:55,429 --> 02:43:53,760

events it could have been uh tidal pools

4420

02:43:57,030 --> 02:43:55,439

it could have been panspermia comets

4421

02:43:59,910 --> 02:43:57,040

coming down with the earth cold that had

4422

02:44:01,750 --> 02:43:59,920

some microbes in them uh all we can say

4423

02:44:03,990 --> 02:44:01,760

with reasonable certainty is you need to

4424

02:44:05,830 --> 02:44:04,000

have a good chemical mixture and some

4425

02:44:07,990 --> 02:44:05,840

sort of energy input you need the raw

4426
02:44:11,269 --> 02:44:08,000
materials and the fuel and a lot of time

4427
02:44:13,830 --> 02:44:11,279
yeah a lot of time a lot of time now

4428
02:44:16,150 --> 02:44:14,950
this is where i'm going to push you a

4429
02:44:18,389 --> 02:44:16,160
little bit

4430
02:44:20,870 --> 02:44:18,399
the odds and you always present these

4431
02:44:22,870 --> 02:44:20,880
numbers really well uh you know how many

4432
02:44:25,590 --> 02:44:22,880
zeros that we're going to put on the

4433
02:44:27,110 --> 02:44:25,600
odds of dna being created i don't know

4434
02:44:29,670 --> 02:44:27,120
but it would probably go from here to

4435
02:44:33,190 --> 02:44:29,680
mars that's a big number if you are

4436
02:44:35,349 --> 02:44:33,200
going with luck right okay which is what

4437
02:44:36,389 --> 02:44:35,359
we're talking about here chance

4438
02:44:38,070 --> 02:44:36,399

or

4439

02:44:40,150 --> 02:44:38,080

could there be and i'm not talking about

4440

02:44:43,750 --> 02:44:40,160

god or religion but could there have

4441

02:44:47,110 --> 02:44:43,760

been a divine type of interference here

4442

02:44:48,389 --> 02:44:47,120

from maybe uh panspermia or an et

4443

02:44:50,950 --> 02:44:48,399

connection

4444

02:44:54,309 --> 02:44:50,960

where we were placed here

4445

02:44:56,790 --> 02:44:54,319

that it wasn't odds and it wasn't luck

4446

02:44:59,030 --> 02:44:56,800

and it wasn't nature that

4447

02:45:02,070 --> 02:44:59,040

possibly yeah i mean yeah

4448

02:45:04,150 --> 02:45:02,080

i i think the key thing and sometimes

4449

02:45:05,990 --> 02:45:04,160

folks miss this with the science when

4450

02:45:08,150 --> 02:45:06,000

you're doing it you are obliged to stick

4451

02:45:10,389 --> 02:45:08,160

to a certain specific window for

4452

02:45:11,830 --> 02:45:10,399

evidence and you don't stray outside

4453

02:45:13,590 --> 02:45:11,840

that the moment you start strain outside

4454

02:45:14,870 --> 02:45:13,600

of that you're no longer doing science

4455

02:45:16,309 --> 02:45:14,880

doesn't mean you're doing illegitimate

4456

02:45:18,710 --> 02:45:16,319

thought but you're not doing the science

4457

02:45:19,670 --> 02:45:18,720

anymore and i always try to stick to

4458

02:45:21,110 --> 02:45:19,680

that because i don't like when

4459

02:45:23,750 --> 02:45:21,120

scientists start talking outside their

4460

02:45:25,030 --> 02:45:23,760

fields too much

4461

02:45:26,710 --> 02:45:25,040

but

4462

02:45:28,070 --> 02:45:26,720

simulation hypothesis is a great example

4463

02:45:30,230 --> 02:45:28,080

of that we say what if we all live

4464

02:45:31,349 --> 02:45:30,240

inside a civilization sorry inside a

4465

02:45:33,190 --> 02:45:31,359

simulation

4466

02:45:34,950 --> 02:45:33,200

and say well that's very obvious the

4467

02:45:36,630 --> 02:45:34,960

example of intelligent design call it

4468

02:45:38,309 --> 02:45:36,640

what you want for something like that

4469

02:45:39,750 --> 02:45:38,319

whether it's a programmer named bob or

4470

02:45:41,750 --> 02:45:39,760

whether it's god or the great sandwich

4471

02:45:43,830 --> 02:45:41,760

people you don't know but that is

4472

02:45:45,990 --> 02:45:43,840

something that's very plausible to do we

4473

02:45:48,309 --> 02:45:46,000

probably can simulate and you know an

4474

02:45:50,070 --> 02:45:48,319

artificial universe of some scope

4475

02:45:51,670 --> 02:45:50,080

with artificial intelligence inside it

4476
02:45:52,790 --> 02:45:51,680
that would think that that was the real

4477
02:45:53,670 --> 02:45:52,800
universe

4478
02:45:55,750 --> 02:45:53,680
and

4479
02:46:00,070 --> 02:45:55,760
we're close to doing that now

4480
02:46:01,830 --> 02:46:00,080
gaming i mean it's getting really good

4481
02:46:03,429 --> 02:46:01,840
and and a big key thing on this is that

4482
02:46:06,070 --> 02:46:03,439
those universes don't actually have to

4483
02:46:07,590 --> 02:46:06,080
be real like in the sense of being the

4484
02:46:09,269 --> 02:46:07,600
same as the one you're in you can set

4485
02:46:11,830 --> 02:46:09,279
the physical lost whatever you want them

4486
02:46:13,510 --> 02:46:11,840
to be so what passes for life inside

4487
02:46:15,269 --> 02:46:13,520
those even though it thinks it's alive

4488
02:46:17,110 --> 02:46:15,279

and and by any reasonable standard would

4489

02:46:18,790 --> 02:46:17,120

have to be considered alive might not

4490

02:46:20,070 --> 02:46:18,800

resemble the universe it was simulated

4491

02:46:21,030 --> 02:46:20,080

from at all

4492

02:46:22,230 --> 02:46:21,040

um

4493

02:46:23,590 --> 02:46:22,240

because that might be an experiment they

4494

02:46:25,510 --> 02:46:23,600

were doing to see what strange things

4495

02:46:27,429 --> 02:46:25,520

could actually produce life

4496

02:46:29,830 --> 02:46:27,439

um we don't know about the higher level

4497

02:46:31,510 --> 02:46:29,840

of reality if it exists and i would tend

4498

02:46:32,550 --> 02:46:31,520

to argue that it's not really any more

4499

02:46:34,950 --> 02:46:32,560

real than

4500

02:46:36,830 --> 02:46:34,960

than ours this is not a new concept it's

4501

02:46:38,550 --> 02:46:36,840

just dressing up in science

4502

02:46:40,870 --> 02:46:38,560

um

4503

02:46:43,190 --> 02:46:40,880

evidence is what matters for that though

4504

02:46:44,389 --> 02:46:43,200

and uh we don't have any evidence of it

4505

02:46:45,670 --> 02:46:44,399

we don't have the evidence for or

4506

02:46:47,110 --> 02:46:45,680

against it and we probably can't

4507

02:46:49,190 --> 02:46:47,120

actually get any

4508

02:46:51,429 --> 02:46:49,200

we will probably never know

4509

02:46:53,110 --> 02:46:51,439

where life started on earth whether it

4510

02:46:54,950 --> 02:46:53,120

was in a common impact or a thermal

4511

02:46:56,870 --> 02:46:54,960

event or a title pool we certainly

4512

02:46:58,389 --> 02:46:56,880

aren't going to know which one it was

4513

02:47:00,469 --> 02:46:58,399

uh and we would have no way to check to

4514

02:47:02,550 --> 02:47:00,479

see if somebody had done that so we can

4515

02:47:04,230 --> 02:47:02,560

only logically infer that

4516

02:47:06,309 --> 02:47:04,240

somebody probably didn't do that because

4517

02:47:08,469 --> 02:47:06,319

they they should still be around where

4518

02:47:10,389 --> 02:47:08,479

we can see and contact them if they were

4519

02:47:12,389 --> 02:47:10,399

but again you can poke holes in that

4520

02:47:14,309 --> 02:47:12,399

argument very easily too

4521

02:47:15,590 --> 02:47:14,319

it's you can't conclude that that's what

4522

02:47:17,349 --> 02:47:15,600

happened you can really say it's a

4523

02:47:20,150 --> 02:47:17,359

possibility on the table

4524

02:47:23,030 --> 02:47:20,160

yeah and when i consider all of that and

4525

02:47:24,630 --> 02:47:23,040

especially when we uh

4526

02:47:30,309 --> 02:47:24,640

when

4527

02:47:33,269 --> 02:47:30,319

orthodox academics that you know uh

4528

02:47:35,190 --> 02:47:33,279

darwin and development and evolution and

4529

02:47:37,750 --> 02:47:35,200

where we are talking about hundreds of

4530

02:47:39,910 --> 02:47:37,760

millions of years an event you know our

4531

02:47:43,190 --> 02:47:39,920

ancestors were fish but here we are

4532

02:47:45,990 --> 02:47:43,200

today well the reason why i poke holes

4533

02:47:50,309 --> 02:47:46,000

in that is is common sense

4534

02:47:53,590 --> 02:47:50,319

you and i uh isaac homo sapien sapien

4535

02:47:54,389 --> 02:47:53,600

150 000 years old that's it

4536

02:47:57,830 --> 02:47:54,399

right

4537

02:47:59,030 --> 02:47:57,840

that that's it well there isn't anything

4538

02:48:00,150 --> 02:47:59,040

there isn't

4539

02:48:02,389 --> 02:48:00,160

that

4540

02:48:06,550 --> 02:48:02,399

of course the missing link but there

4541

02:48:09,670 --> 02:48:06,560

isn't the slow development into us

4542

02:48:11,349 --> 02:48:09,680

where we just appeared here and that i i

4543

02:48:13,910 --> 02:48:11,359

have a hard time

4544

02:48:16,710 --> 02:48:13,920

accepting that we just appeared that

4545

02:48:19,750 --> 02:48:16,720

suddenly one day there was something

4546

02:48:22,150 --> 02:48:19,760

else and then virtually overnight

4547

02:48:24,790 --> 02:48:22,160

we are here and i i i don't understand

4548

02:48:26,630 --> 02:48:24,800

how that is possible i i i

4549

02:48:28,150 --> 02:48:26,640

evolution doesn't always happen you know

4550

02:48:30,070 --> 02:48:28,160

and it's kind of this long progression

4551

02:48:31,830 --> 02:48:30,080

thing if you have a really radical

4552

02:48:33,830 --> 02:48:31,840

mutation that that is actually useful

4553

02:48:35,269 --> 02:48:33,840

and most are not right that can spread

4554

02:48:37,510 --> 02:48:35,279

very quickly we'll say though that was

4555

02:48:39,269 --> 02:48:37,520

very quick but you know 150 000 years

4556

02:48:41,030 --> 02:48:39,279

and that you can only nail that down to

4557

02:48:42,309 --> 02:48:41,040

maybe a couple thousand years think

4558

02:48:44,230 --> 02:48:42,319

about what we've done in a thousand

4559

02:48:45,670 --> 02:48:44,240

years i think about what some species of

4560

02:48:47,510 --> 02:48:45,680

the missing link there the missing link

4561

02:48:49,830 --> 02:48:47,520

is a million-year time gap that's a lot

4562

02:48:51,349 --> 02:48:49,840

of stuff going on but we're the only

4563

02:48:53,750 --> 02:48:51,359

ones though that's the thing we're the

4564

02:48:55,990 --> 02:48:53,760

only ones on this planet that's it

4565

02:48:57,830 --> 02:48:56,000

that do what we do and there is an

4566

02:49:00,150 --> 02:48:57,840

exclusivity on that if you're the first

4567

02:49:02,550 --> 02:49:00,160

species that pops up somewhere uh you

4568

02:49:04,309 --> 02:49:02,560

make it harder for new ones to emerge

4569

02:49:05,429 --> 02:49:04,319

now that's not to say that we were the

4570

02:49:07,429 --> 02:49:05,439

only one it doesn't look like they were

4571

02:49:09,429 --> 02:49:07,439

maybe some other homo sapien

4572

02:49:10,630 --> 02:49:09,439

well uh but not homosexual the hominid

4573

02:49:13,190 --> 02:49:10,640

lines that were probably fairly

4574

02:49:16,150 --> 02:49:13,200

intelligent too and uh we might have

4575

02:49:17,670 --> 02:49:16,160

inbred with them or knocked them out um

4576

02:49:20,950 --> 02:49:17,680

but we don't know

4577

02:49:22,950 --> 02:49:20,960

i need more data but we just don't know

4578

02:49:25,190 --> 02:49:22,960

and i i don't know if we'll ever find

4579

02:49:27,750 --> 02:49:25,200

out you know i really don't which takes

4580

02:49:31,269 --> 02:49:27,760

me to my last uh question

4581

02:49:34,230 --> 02:49:31,279

when it comes to disclosure um and in

4582

02:49:36,870 --> 02:49:34,240

our ufo uh community in the conspiracy

4583

02:49:39,510 --> 02:49:36,880

community disclosure the d word

4584

02:49:42,389 --> 02:49:39,520

is a really big deal and

4585

02:49:44,790 --> 02:49:42,399

last year in 2018 we had a lot

4586

02:49:47,110 --> 02:49:44,800

of ufos in the headlines you know

4587

02:49:48,790 --> 02:49:47,120

starting with the new york times and and

4588

02:49:50,389 --> 02:49:48,800

everything that happened last year it

4589

02:49:52,790 --> 02:49:50,399

seemed like

4590

02:49:54,469 --> 02:49:52,800

you know the pentagon and and somebody

4591

02:49:56,550 --> 02:49:54,479

out there is feeding this information

4592

02:49:59,990 --> 02:49:56,560

back into the community and it got to be

4593

02:50:01,750 --> 02:50:00,000

out of control with fox and cnn and bbc

4594

02:50:02,550 --> 02:50:01,760

and everybody reporting on this last

4595

02:50:04,710 --> 02:50:02,560

year

4596

02:50:06,550 --> 02:50:04,720

do you think that the government is

4597

02:50:09,349 --> 02:50:06,560

sitting on

4598

02:50:12,230 --> 02:50:09,359

information that they are not releasing

4599

02:50:15,429 --> 02:50:12,240

to us when it comes to the et question

4600

02:50:16,950 --> 02:50:15,439

whether we are alone or not

4601
02:50:18,150 --> 02:50:16,960
uh there's a good thing with the caveat

4602
02:50:20,630 --> 02:50:18,160
i'm sure the government's sitting on

4603
02:50:22,389 --> 02:50:20,640
information we don't have access to um

4604
02:50:24,230 --> 02:50:22,399
whether that's military secrets or

4605
02:50:25,990 --> 02:50:24,240
extraterrestrials or just you know

4606
02:50:27,750 --> 02:50:26,000
individual like i haven't i've worked

4607
02:50:29,110 --> 02:50:27,760
with some secret stuff back in the past

4608
02:50:31,670 --> 02:50:29,120
and uh it was usually something very

4609
02:50:34,070 --> 02:50:31,680
mundane like a specific frequency that

4610
02:50:35,429 --> 02:50:34,080
this airplane would be emitting at when

4611
02:50:37,110 --> 02:50:35,439
it was at high speed

4612
02:50:38,710 --> 02:50:37,120
um

4613
02:50:39,910 --> 02:50:38,720

when we find that you know i can't

4614

02:50:42,150 --> 02:50:39,920

speculate is what we're going to find in

4615

02:50:43,590 --> 02:50:42,160

those because we don't have it yet and

4616

02:50:46,469 --> 02:50:43,600

one of the things i always object to

4617

02:50:48,389 --> 02:50:46,479

folks doing is assuming that you know

4618

02:50:50,469 --> 02:50:48,399

there's not going to be something there

4619

02:50:51,990 --> 02:50:50,479

um assuming something's there that's bad

4620

02:50:53,750 --> 02:50:52,000

too but there is a habit of always

4621

02:50:55,110 --> 02:50:53,760

assuming there's nothing there from the

4622

02:50:57,349 --> 02:50:55,120

skeptic angle

4623

02:50:59,750 --> 02:50:57,359

and that's not good skepticism you wait

4624

02:51:01,190 --> 02:50:59,760

until you have the information and then

4625

02:51:02,710 --> 02:51:01,200

you draw conclusions from that

4626
02:51:05,030 --> 02:51:02,720
information you check if that

4627
02:51:06,070 --> 02:51:05,040
information is valid and until you have

4628
02:51:09,590 --> 02:51:06,080
it

4629
02:51:11,110 --> 02:51:09,600
a scientific perspective to be

4630
02:51:13,269 --> 02:51:11,120
speculating on it we don't know what it

4631
02:51:15,750 --> 02:51:13,279
says yet when we do when we have that

4632
02:51:18,469 --> 02:51:15,760
information we check its validity we try

4633
02:51:20,230 --> 02:51:18,479
to test its validity in whatever ways we

4634
02:51:21,990 --> 02:51:20,240
can come up with and then we draw

4635
02:51:23,750 --> 02:51:22,000
conclusions off that and whatever those

4636
02:51:25,190 --> 02:51:23,760
conclusions say

4637
02:51:27,269 --> 02:51:25,200
are the ones we have to go with if

4638
02:51:28,870 --> 02:51:27,279

they're good conclusions those might get

4639

02:51:30,230 --> 02:51:28,880

knocked out 10 years later by a second

4640

02:51:31,510 --> 02:51:30,240

round of disclosure more recent

4641

02:51:32,950 --> 02:51:31,520

information you know you always got

4642

02:51:34,710 --> 02:51:32,960

secrets they're going to stay secret

4643

02:51:35,750 --> 02:51:34,720

because they're time sensitive

4644

02:51:37,750 --> 02:51:35,760

um

4645

02:51:39,269 --> 02:51:37,760

i don't expect to see anything there per

4646

02:51:41,590 --> 02:51:39,279

se but

4647

02:51:42,870 --> 02:51:41,600

we'll see we will see when we find out

4648

02:51:44,469 --> 02:51:42,880

what it says

4649

02:51:46,070 --> 02:51:44,479

with all of the

4650

02:51:49,030 --> 02:51:46,080

uh we were just talking about science

4651
02:51:51,830 --> 02:51:49,040
fiction in the gaming community and that

4652
02:51:53,910 --> 02:51:51,840
entire genre is big as it is and

4653
02:51:57,190 --> 02:51:53,920
consider the rest of the planet

4654
02:51:59,269 --> 02:51:57,200
and forget about our ufo community we're

4655
02:52:01,110 --> 02:51:59,279
already believers we're okay with it but

4656
02:52:03,750 --> 02:52:01,120
with everything that happened with the

4657
02:52:06,469 --> 02:52:03,760
new york times and that explosion

4658
02:52:09,110 --> 02:52:06,479
of the the et question that went out

4659
02:52:10,469 --> 02:52:09,120
nobody jumped off any buildings isaac

4660
02:52:12,630 --> 02:52:10,479
right that's one thing that always gets

4661
02:52:13,590 --> 02:52:12,640
me to say well maybe the aliens are

4662
02:52:15,269 --> 02:52:13,600
staying away from us because they're

4663
02:52:16,710 --> 02:52:15,279

worried we have shock

4664

02:52:17,830 --> 02:52:16,720

um

4665

02:52:19,670 --> 02:52:17,840

either the poor is like half the

4666

02:52:20,950 --> 02:52:19,680

population believes in intelligent alien

4667

02:52:22,710 --> 02:52:20,960

life whether they believe it's busy or

4668

02:52:24,070 --> 02:52:22,720

not right and i'm actually one of the

4669

02:52:25,269 --> 02:52:24,080

real exceptions that i don't think it's

4670

02:52:28,630 --> 02:52:25,279

around just because i'm sure we'd have

4671

02:52:30,309 --> 02:52:28,640

seen it in a more overt fashion but i

4672

02:52:31,510 --> 02:52:30,319

wouldn't find it shocking i always took

4673

02:52:33,510 --> 02:52:31,520

as a given that there were intelligent

4674

02:52:35,030 --> 02:52:33,520

species all over the place until i i

4675

02:52:37,590 --> 02:52:35,040

thought on it more at the fermi paradox

4676
02:52:39,190 --> 02:52:37,600
angles that wouldn't rock my i mean i'm

4677
02:52:41,190 --> 02:52:39,200
sure it'd be rather shocking you know

4678
02:52:43,349 --> 02:52:41,200
you can you can believe in something

4679
02:52:45,190 --> 02:52:43,359
and the baby has come face to face with

4680
02:52:47,190 --> 02:52:45,200
you it is a little bit different

4681
02:52:49,269 --> 02:52:47,200
i i imagine it would cause a quite the

4682
02:52:51,030 --> 02:52:49,279
firestorm but i don't think it would be

4683
02:52:52,630 --> 02:52:51,040
a civilization-wrecking event and

4684
02:52:54,070 --> 02:52:52,640
probably be old news by the end of the

4685
02:52:56,389 --> 02:52:54,080
year you know

4686
02:52:59,910 --> 02:52:56,399
i i i agree with you no i think it takes

4687
02:53:01,590 --> 02:52:59,920
15 minutes to become old news

4688
02:53:03,590 --> 02:53:01,600

it's it would cycle because you know

4689

02:53:05,190 --> 02:53:03,600

it's i'll use the example of death you

4690

02:53:06,630 --> 02:53:05,200

know that the you know the denial phase

4691

02:53:08,550 --> 02:53:06,640

the acceptance phase and it's not those

4692

02:53:09,830 --> 02:53:08,560

happen once they keep cycling over and

4693

02:53:12,550 --> 02:53:09,840

over again

4694

02:53:15,269 --> 02:53:12,560

um but is it because

4695

02:53:18,309 --> 02:53:15,279

is it because of people like you and and

4696

02:53:20,469 --> 02:53:18,319

the gaming community and the movies and

4697

02:53:22,710 --> 02:53:20,479

hollywood and and science fiction where

4698

02:53:24,950 --> 02:53:22,720

we are just acclimated now

4699

02:53:27,110 --> 02:53:24,960

i think though two to two degree yeah

4700

02:53:29,750 --> 02:53:27,120

now humans are bio very natural very

4701
02:53:31,190 --> 02:53:29,760
adaptable thinking you know we we i mean

4702
02:53:32,389 --> 02:53:31,200
people forget this we always used to

4703
02:53:34,309 --> 02:53:32,399
believe there were other intelligent

4704
02:53:36,790 --> 02:53:34,319
life forms in ourselves on this planet

4705
02:53:38,630 --> 02:53:36,800
until relatively recently that's a new

4706
02:53:40,469 --> 02:53:38,640
thing that we you know there was nothing

4707
02:53:42,630 --> 02:53:40,479
shocking about the idea of a yeti to the

4708
02:53:43,910 --> 02:53:42,640
people of uh ancient europe you know

4709
02:53:45,750 --> 02:53:43,920
right uh whether or not they happen to

4710
02:53:47,590 --> 02:53:45,760
believe in that one specifically

4711
02:53:49,429 --> 02:53:47,600
um this phase that we're going through

4712
02:53:50,790 --> 02:53:49,439
right now um

4713
02:53:53,670 --> 02:53:50,800

which may persist you know again there

4714

02:53:55,429 --> 02:53:53,680

might be nothing there um but

4715

02:53:56,950 --> 02:53:55,439

i don't think we'd be overwhelmed by it

4716

02:53:59,110 --> 02:53:56,960

but it does help to acclimate to it and

4717

02:54:00,790 --> 02:53:59,120

let's say with with science fiction

4718

02:54:02,790 --> 02:54:00,800

that's part of the feedback loop that

4719

02:54:05,190 --> 02:54:02,800

helps us keep we incorporate these new

4720

02:54:06,950 --> 02:54:05,200

ideas we ponder them we contemplate them

4721

02:54:07,990 --> 02:54:06,960

we come up with things we never expected

4722

02:54:09,990 --> 02:54:08,000

out of it you know no one's going to

4723

02:54:13,030 --> 02:54:10,000

predict the smartphone right

4724

02:54:14,710 --> 02:54:13,040

um and we adjust and it can be it does

4725

02:54:17,030 --> 02:54:14,720

have an effect you can't just say that

4726
02:54:19,110 --> 02:54:17,040
it you know if we find aliens tomorrow

4727
02:54:20,469 --> 02:54:19,120
they land on the white house front lawn

4728
02:54:22,389 --> 02:54:20,479
yeah that's gonna

4729
02:54:24,550 --> 02:54:22,399
be very big news and it's still gonna be

4730
02:54:25,830 --> 02:54:24,560
big news 20 30 years from now

4731
02:54:28,389 --> 02:54:25,840
but

4732
02:54:30,630 --> 02:54:28,399
business as usual will persist we are

4733
02:54:31,429 --> 02:54:30,640
designed to handle that kind of stress

4734
02:54:33,269 --> 02:54:31,439
they

4735
02:54:35,190 --> 02:54:33,279
like yeah you know what you're right

4736
02:54:36,790 --> 02:54:35,200
you're right about that and

4737
02:54:39,190 --> 02:54:36,800
again i think it would be about 15

4738
02:54:40,790 --> 02:54:39,200

minutes it would be live on tv and then

4739

02:54:43,349 --> 02:54:40,800

trump's going to step out and go get

4740

02:54:45,269 --> 02:54:43,359

this thing off of my lawn

4741

02:54:47,269 --> 02:54:45,279

you know it's blocking traffic on

4742

02:54:49,110 --> 02:54:47,279

pennsylvania avenue and you think about

4743

02:54:50,950 --> 02:54:49,120

the effect i say so how long is it going

4744

02:54:52,309 --> 02:54:50,960

to be before somebody invites them to go

4745

02:54:54,150 --> 02:54:52,319

to their restaurant because they want

4746

02:54:57,269 --> 02:54:54,160

them to be the first to say the alien

4747

02:54:59,910 --> 02:54:57,279

visitor is keen to my restaurant first

4748

02:55:01,429 --> 02:54:59,920

casino we are bio-nature practical

4749

02:55:03,510 --> 02:55:01,439

creatures

4750

02:55:05,750 --> 02:55:03,520

so what's up what's up next for you what

4751
02:55:08,630 --> 02:55:05,760
uh what's your next video release what's

4752
02:55:10,070 --> 02:55:08,640
the subject uh making suns actually

4753
02:55:11,990 --> 02:55:10,080
that's the thursday episode is gonna be

4754
02:55:14,070 --> 02:55:12,000
about how you could make stars if you

4755
02:55:15,190 --> 02:55:14,080
wanted to and uh some variations you

4756
02:55:17,349 --> 02:55:15,200
might make that be better than the

4757
02:55:18,389 --> 02:55:17,359
naturally occurring ones uh which would

4758
02:55:19,830 --> 02:55:18,399
be an interesting one if we started

4759
02:55:21,429 --> 02:55:19,840
seeing stars popping up where they

4760
02:55:24,070 --> 02:55:21,439
didn't used to exist before in this in

4761
02:55:25,670 --> 02:55:24,080
the cosmos uh and it's another one of

4762
02:55:27,429 --> 02:55:25,680
those great examples say it's not seo

4763
02:55:28,950 --> 02:55:27,439

that high tech technology helps it's

4764

02:55:30,630 --> 02:55:28,960

just brute force

4765

02:55:32,469 --> 02:55:30,640

and uh maybe you don't have to spend

4766

02:55:34,150 --> 02:55:32,479

years traveling to other star systems

4767

02:55:35,990 --> 02:55:34,160

because you just build your own solar

4768

02:55:39,190 --> 02:55:36,000

systems closer at hand

4769

02:55:42,150 --> 02:55:39,200

how often uh do you do uh are you like

4770

02:55:44,389 --> 02:55:42,160

on a week-to-week uh production schedule

4771

02:55:47,030 --> 02:55:44,399

uh yeah we we do the weekly episode on

4772

02:55:48,870 --> 02:55:47,040

thursday mornings and um we do

4773

02:55:50,309 --> 02:55:48,880

occasionally do extra bonus episodes or

4774

02:55:52,150 --> 02:55:50,319

live streams interviews that kind of

4775

02:55:55,190 --> 02:55:52,160

thing but we always have an episode

4776

02:55:57,110 --> 02:55:55,200

every thursday it's uh anything else is

4777

02:55:58,630 --> 02:55:57,120

a bonus and i don't think we've missed

4778

02:55:59,990 --> 02:55:58,640

one and

4779

02:56:02,230 --> 02:56:00,000

actually i think we never missed one

4780

02:56:03,510 --> 02:56:02,240

since we started doing it weekly so

4781

02:56:08,309 --> 02:56:03,520

absolutely

4782

02:56:10,790 --> 02:56:08,319

and from myself and and our audience

4783

02:56:13,269 --> 02:56:10,800

here i want to thank you because

4784

02:56:15,750 --> 02:56:13,279

you've managed to crank out not only a

4785

02:56:18,070 --> 02:56:15,760

large volume of material but just

4786

02:56:19,429 --> 02:56:18,080

absolutely fascinating and well

4787

02:56:20,950 --> 02:56:19,439

researched

4788

02:56:23,990 --> 02:56:20,960

well thank you for so much for having me

4789

02:56:25,830 --> 02:56:24,000

on too and uh we're going to have you on

4790

02:56:27,030 --> 02:56:25,840

the next time around everybody i'm just

4791

02:56:30,309 --> 02:56:27,040

going to let you know we're going to do

4792

02:56:32,070 --> 02:56:30,319

the fermi uh paradox and it'll be the

4793

02:56:34,950 --> 02:56:32,080

entire show

4794

02:56:37,110 --> 02:56:34,960

uh maybe we'll have to do a two-parter

4795

02:56:38,790 --> 02:56:37,120

just like you've done yeah you're you're

4796

02:56:41,510 --> 02:56:38,800

competing so much

4797

02:56:44,150 --> 02:56:41,520

so much so much material isaac thank you

4798

02:56:45,510 --> 02:56:44,160

so much and we'll talk to you very soon

4799

02:56:46,389 --> 02:56:45,520

but thank you for taking the time

4800

02:56:47,750 --> 02:56:46,399

tonight

4801
02:56:50,870 --> 02:56:47,760
looking forward to it thanks for having

4802
02:56:52,550 --> 02:56:50,880
me on isaac arthur and everybody just go

4803
02:56:54,070 --> 02:56:52,560
to isaac i thank you isaac

4804
02:56:55,630 --> 02:56:54,080
isaacarthur.net

4805
02:56:57,670 --> 02:56:55,640
the links are over at

4806
02:56:59,190 --> 02:56:57,680
jimmychurchradio.com and i think we

4807
02:57:01,670 --> 02:56:59,200
might have his youtube channel up there

4808
02:57:03,590 --> 02:57:01,680
too as well but of course it is over at

4809
02:57:05,830 --> 02:57:03,600
isaacarthur.net

4810
02:57:07,510 --> 02:57:05,840
fascinating conversation now i got to

4811
02:57:10,150 --> 02:57:07,520
remind everybody what's going on this

4812
02:57:12,309 --> 02:57:10,160
week tomorrow night caroline ford will

4813
02:57:14,630 --> 02:57:12,319

be here we're going to discuss of course

4814

02:57:17,110 --> 02:57:14,640

for the first time einstein the ancient

4815

02:57:19,110 --> 02:57:17,120

crystal skull of consciousness that'll

4816

02:57:20,950 --> 02:57:19,120

be tomorrow night wednesday night david

4817

02:57:23,750 --> 02:57:20,960

wilcock is here we're going to take a

4818

02:57:26,230 --> 02:57:23,760

little look at 2018 the year that was

4819

02:57:29,670 --> 02:57:26,240

but we're going to look straight forward

4820

02:57:33,190 --> 02:57:29,680

into disclosure and the great awakening

4821

02:57:35,110 --> 02:57:33,200

uh for 2019 that'll be wednesday night

4822

02:57:36,950 --> 02:57:35,120

thursday night is another fader night

4823

02:57:39,429 --> 02:57:36,960

teresa and eris is going to be here

4824

02:57:42,790 --> 02:57:39,439

divine frequency on the airwaves

4825

02:57:44,870 --> 02:57:42,800

followed by open lines all night long

4826
02:57:46,950 --> 02:57:44,880
with that i'm going to get out of here

4827
02:57:49,750 --> 02:57:46,960
thank you to isaac arthur once again

4828
02:57:51,510 --> 02:57:49,760
fascinating perfect conversation tonight

4829
02:57:53,349 --> 02:57:51,520
i'm your host jimmy church fade to

4830
02:57:56,150 --> 02:57:53,359
black's executive producer is rita

4831
02:57:58,710 --> 02:57:56,160
kamarian shows produced by hill j palm

4832
02:58:01,110 --> 02:57:58,720
renee dennis and bob announcers are

4833
02:58:02,150 --> 02:58:01,120
steve harder gene batteau and mark d

4834
02:58:04,790 --> 02:58:02,160
kovar

4835
02:58:06,950 --> 02:58:04,800
webmaster is drew the geek music doug

4836
02:58:09,030 --> 02:58:06,960
aldridge intro spaceboy

4837
02:58:11,110 --> 02:58:09,040
spaceboymusic.com

4838
02:58:12,950 --> 02:58:11,120

they to black is produced by kjcr for

4839

02:58:16,469 --> 02:58:12,960

the game changer network and syndication

4840

02:58:19,429 --> 02:58:16,479

is kgra the planet thank you to isaac

4841

02:58:21,830 --> 02:58:19,439

arthur isaacarthur.net

4842

02:58:23,429 --> 02:58:21,840

this broadcast owned a copyrighted 2018

4843

02:58:25,750 --> 02:58:23,439

by fade to black and the game changer

4844

02:58:27,990 --> 02:58:25,760

network it cannot be rebroadcast

4845

02:58:30,150 --> 02:58:28,000

downloaded copied or used anywhere in

4846

02:58:31,670 --> 02:58:30,160

the known universe without written

4847

02:58:33,670 --> 02:58:31,680

permission from fade to black of the

4848

02:58:36,070 --> 02:58:33,680

game changer network i'm your host jimmy

4849

02:58:39,349 --> 02:58:36,080

church follow me on twitter at j church

4850

02:58:40,469 --> 02:58:39,359

radio until tomorrow night everybody be

4851
02:58:46,110 --> 02:58:40,479
safe

4852
02:58:48,860 --> 02:58:46,290
[Music]

4853
02:59:08,040 --> 02:58:48,870
[Applause]

4854
02:59:08,050 --> 02:59:16,389
[Music]

4855
02:59:16,399 --> 02:59:27,050
so