



The UFO Rabbit Hole

**WAKING UP INSIDE THE
CAVE [PT 2]:
SIMULATION THEORY & THE
HOLOGRAPHIC UNIVERSE**

Episode 22

1
00:00:16,130 --> 00:00:02,149
[Music]

2
00:00:24,040 --> 00:00:16,140
[Applause]

3
00:00:33,770 --> 00:00:24,050
[Music]

4
00:00:36,530 --> 00:00:33,780
welcome back to the UFO Rabbit Hole

5
00:00:39,290 --> 00:00:36,540
podcast I'm your host Kelly Chase

6
00:00:41,869 --> 00:00:39,300
today we're diving into part two of The

7
00:00:43,549 --> 00:00:41,879
Waking Up Inside the cave series if you

8
00:00:45,170 --> 00:00:43,559
haven't listened to part one yet I

9
00:00:47,930 --> 00:00:45,180
highly recommend that you do so first

10
00:00:49,910 --> 00:00:47,940
it's linked in the episode brief

11
00:00:52,010 --> 00:00:49,920
for many who take the trip down the UFO

12
00:00:54,110 --> 00:00:52,020
Rabbit Hole there comes a point where

13
00:00:56,990 --> 00:00:54,120

you find yourself asking much bigger

14

00:00:57,770 --> 00:00:57,000

questions about reality it boils down to

15

00:01:00,650 --> 00:00:57,780

this

16

00:01:02,330 --> 00:01:00,660

the UFO phenomenon is Impossible by

17

00:01:06,109 --> 00:01:02,340

every single measure that we use to

18

00:01:08,630 --> 00:01:06,119

determine such things and yet it is and

19

00:01:10,490 --> 00:01:08,640

the existence of the impossible posits

20

00:01:12,890 --> 00:01:10,500

that the models that we use to determine

21

00:01:15,830 --> 00:01:12,900

what is possible and what isn't are

22

00:01:19,010 --> 00:01:15,840

irretrievably flawed there is no other

23

00:01:20,810 --> 00:01:19,020

logical explanation frankly if UFOs

24

00:01:22,609 --> 00:01:20,820

don't make you question the nature of

25

00:01:24,050 --> 00:01:22,619

your reality you haven't really

26

00:01:26,330 --> 00:01:24,060

understood them

27

00:01:28,070 --> 00:01:26,340

in part one of this series we took a

28

00:01:29,749 --> 00:01:28,080

closer look at the most fundamental

29

00:01:32,390 --> 00:01:29,759

meaning making models that we have

30

00:01:34,969 --> 00:01:32,400

starting with the very origins of the

31

00:01:37,010 --> 00:01:34,979

universe and I made the case that very

32

00:01:39,289 --> 00:01:37,020

little about this narrative makes any

33

00:01:41,810 --> 00:01:39,299

kind of rational sense and that it's

34

00:01:44,030 --> 00:01:41,820

only real utility lies in explaining

35

00:01:45,170 --> 00:01:44,040

things away without actually explaining

36

00:01:47,030 --> 00:01:45,180

them at all

37

00:01:49,670 --> 00:01:47,040

when exposed to the harsh light of

38

00:01:51,950 --> 00:01:49,680

objective interrogation the consensus

39

00:01:53,330 --> 00:01:51,960

view of reality quickly dissipates like

40

00:01:55,670 --> 00:01:53,340

morning fog

41

00:01:58,130 --> 00:01:55,680

Plato's Cave has become an important

42

00:01:59,810 --> 00:01:58,140

Touchstone for this podcast because it

43

00:02:01,850 --> 00:01:59,820

provides the perfect framework for

44

00:02:04,429 --> 00:02:01,860

discussing the process of pursuing this

45

00:02:06,530 --> 00:02:04,439

line of questioning and as we begin to

46

00:02:08,270 --> 00:02:06,540

recognize the consensus reality is

47

00:02:11,210 --> 00:02:08,280

little more than a shadow play on the

48

00:02:15,110 --> 00:02:11,220

will the inevitable questions arise

49

00:02:17,690 --> 00:02:15,120

where are we what is this place and what

50

00:02:20,449 --> 00:02:17,700

is the shadow play meant to conceal

51
00:02:22,550 --> 00:02:20,459
we discussed back in episode 18 in my

52
00:02:25,430 --> 00:02:22,560
first interview with James Madden that

53
00:02:26,570 --> 00:02:25,440
humans are natural cave Builders all of

54
00:02:28,790 --> 00:02:26,580
the greatest achievements of

55
00:02:31,490 --> 00:02:28,800
civilization have required that we be

56
00:02:34,070 --> 00:02:31,500
able to create shared World Views and

57
00:02:36,290 --> 00:02:34,080
agreed upon meanings for things it's our

58
00:02:38,390 --> 00:02:36,300
superpower every bit as much as it's our

59
00:02:40,729 --> 00:02:38,400
weakness and I think it's important to

60
00:02:43,250 --> 00:02:40,739
keep in mind that just because we find

61
00:02:45,890 --> 00:02:43,260
ourselves in a cave doesn't necessarily

62
00:02:47,990 --> 00:02:45,900
mean that someone put us there the walls

63
00:02:49,369 --> 00:02:48,000

of the cave could be entirely

64

00:02:51,949 --> 00:02:49,379

self-created

65

00:02:53,809 --> 00:02:51,959

And yet when you find yourself tied up

66

00:02:55,430 --> 00:02:53,819

in a cave and recognize that the very

67

00:02:58,430 --> 00:02:55,440

nature of your reality has been

68

00:03:00,710 --> 00:02:58,440

concealed seemingly intentionally it's

69

00:03:02,869 --> 00:03:00,720

impossible not to wonder about who your

70

00:03:05,150 --> 00:03:02,879

potential captors might be and about

71

00:03:07,670 --> 00:03:05,160

what strange new world might be waiting

72

00:03:09,949 --> 00:03:07,680

for you right outside its walls

73

00:03:12,110 --> 00:03:09,959

over the past several years a strange

74

00:03:14,030 --> 00:03:12,120

and disturbing idea has been popularized

75

00:03:16,790 --> 00:03:14,040

by everyone from futurist to Tech

76

00:03:18,050 --> 00:03:16,800

billionaires namely that we're living in

77

00:03:20,210 --> 00:03:18,060

a simulation

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00:03:21,589 --> 00:03:20,220

could this be the explanation for the

79

00:03:24,170 --> 00:03:21,599

strange position in which we find

80

00:03:26,449 --> 00:03:24,180

ourselves could Plato's Cave be more

81

00:03:29,149 --> 00:03:26,459

than just an allegory could what we

82

00:03:30,170 --> 00:03:29,159

perceive as our reality actually be our

83

00:03:32,149 --> 00:03:30,180

prison

84

00:03:34,130 --> 00:03:32,159

it sounds a lot like the plot of The

85

00:03:36,949 --> 00:03:34,140

Matrix but the more we learn the more

86

00:03:39,290 --> 00:03:36,959

likely this unsettling scenario becomes

87

00:03:41,270 --> 00:03:39,300

so buckle up because this rabbit hole is

88

00:03:43,430 --> 00:03:41,280

going to be a wild ride

89

00:03:45,410 --> 00:03:43,440

so what are the chances that we are

90

00:03:47,750 --> 00:03:45,420

actually living in a simulation

91

00:03:50,030 --> 00:03:47,760

According to some including Elon Musk

92

00:03:52,550 --> 00:03:50,040

and Neil deGrasse Tyson the probability

93

00:03:55,070 --> 00:03:52,560

that we live in a fabricated reality is

94

00:03:57,350 --> 00:03:55,080

pretty high the argument goes like this

95

00:03:59,449 --> 00:03:57,360

if you think about the earliest video

96

00:04:01,729 --> 00:03:59,459

games like pong and compare them to

97

00:04:03,410 --> 00:04:01,739

video games now you can see that this

98

00:04:06,470 --> 00:04:03,420

kind of technology is evolving

99

00:04:08,750 --> 00:04:06,480

exponentially and as it does so it gets

100

00:04:11,030 --> 00:04:08,760

closer and closer to replicating actual

101
00:04:13,670 --> 00:04:11,040
reality if you've ever played a game

102
00:04:15,470 --> 00:04:13,680
with a virtual reality headset you know

103
00:04:17,090 --> 00:04:15,480
that even though you wouldn't mistake

104
00:04:19,670 --> 00:04:17,100
the world of the video game for real

105
00:04:22,009 --> 00:04:19,680
life it can still trick your brain into

106
00:04:23,450 --> 00:04:22,019
processing that visual information as

107
00:04:25,430 --> 00:04:23,460
though it were real

108
00:04:27,890 --> 00:04:25,440
if you stand on the edge of a cliff in

109
00:04:29,570 --> 00:04:27,900
the game your stomach drops if you ride

110
00:04:31,969 --> 00:04:29,580
a roller coaster you can practically

111
00:04:34,310 --> 00:04:31,979
feel the wind in your hair if something

112
00:04:36,050 --> 00:04:34,320
jumps out at you you get startled and if

113
00:04:37,610 --> 00:04:36,060

you're like me make a very undignified

114

00:04:39,710 --> 00:04:37,620

squealing noise

115

00:04:41,810 --> 00:04:39,720

so if you assume that any rate of

116

00:04:43,969 --> 00:04:41,820

progress continues it is inevitable that

117

00:04:46,430 --> 00:04:43,979

at some point in the future that we will

118

00:04:48,650 --> 00:04:46,440

be able to create simulated environments

119

00:04:51,409 --> 00:04:48,660

that are indistinguishable from reality

120

00:04:53,810 --> 00:04:51,419

and when you combine that with the idea

121

00:04:56,870 --> 00:04:53,820

of massively multiplayer online games

122

00:05:00,110 --> 00:04:56,880

like World of Warcraft and fortnite it

123

00:05:02,150 --> 00:05:00,120

seems not just possible but likely that

124

00:05:04,189 --> 00:05:02,160

someday playing a video game could

125

00:05:05,990 --> 00:05:04,199

literally feel like stepping into a

126

00:05:07,070 --> 00:05:06,000

different reality that feels just as

127

00:05:09,350 --> 00:05:07,080

real

128

00:05:11,270 --> 00:05:09,360

and the issue with that is that once you

129

00:05:13,550 --> 00:05:11,280

introduce the potential for realistic

130

00:05:15,710 --> 00:05:13,560

fully immersive simulated environments

131

00:05:17,629 --> 00:05:15,720

then suddenly the chances that the

132

00:05:20,990 --> 00:05:17,639

reality that you find yourself in is

133

00:05:22,850 --> 00:05:21,000

base reality drops significantly and if

134

00:05:24,830 --> 00:05:22,860

you imagine the proliferation of these

135

00:05:27,050 --> 00:05:24,840

simulations on a long enough timeline

136

00:05:28,909 --> 00:05:27,060

then the chances that you are in base

137

00:05:30,529 --> 00:05:28,919

reality become something more like

138

00:05:32,090 --> 00:05:30,539

getting struck by lightning while

139

00:05:33,590 --> 00:05:32,100

holding the winning Powerball ticket

140

00:05:36,110 --> 00:05:33,600

twice

141

00:05:37,790 --> 00:05:36,120

in fact the only real way for us to be

142

00:05:40,010 --> 00:05:37,800

certain that we aren't in a simulation

143

00:05:41,990 --> 00:05:40,020

would be if we were somehow the very

144

00:05:43,189 --> 00:05:42,000

first intelligence to create simulated

145

00:05:45,170 --> 00:05:43,199

realities

146

00:05:47,330 --> 00:05:45,180

but given the fact that the universe is

147

00:05:49,730 --> 00:05:47,340

nearly 10 billion years older than the

148

00:05:51,290 --> 00:05:49,740

earth it seems pretty unlikely that we

149

00:05:52,550 --> 00:05:51,300

could be the first ones to reach that

150

00:05:54,830 --> 00:05:52,560

milestone

151

00:05:57,950 --> 00:05:54,840

in an influential paper on this topic

152

00:05:59,810 --> 00:05:57,960

Oxford philosopher Nick Bostrom made the

153

00:06:01,969 --> 00:05:59,820

case that at least one of the following

154

00:06:05,210 --> 00:06:01,979

things must be true

155

00:06:07,430 --> 00:06:05,220

one all human-like civilizations in the

156

00:06:09,409 --> 00:06:07,440

universe go extinct before they develop

157

00:06:11,270 --> 00:06:09,419

the technological capacity to create

158

00:06:14,390 --> 00:06:11,280

simulated realities

159

00:06:16,850 --> 00:06:14,400

two if any civilizations do Reach This

160

00:06:19,430 --> 00:06:16,860

phase of technological maturity none of

161

00:06:21,950 --> 00:06:19,440

them will bother to run simulations or

162

00:06:23,689 --> 00:06:21,960

three Advanced civilizations would have

163

00:06:26,029 --> 00:06:23,699

the ability to create many many

164

00:06:27,770 --> 00:06:26,039

simulations and that means that there

165

00:06:30,409 --> 00:06:27,780

are far more simulated worlds than

166

00:06:32,150 --> 00:06:30,419

non-simulated ones and that makes sense

167

00:06:33,890 --> 00:06:32,160

right there aren't any plausible

168

00:06:36,469 --> 00:06:33,900

scenarios that we can think of that fall

169

00:06:38,510 --> 00:06:36,479

outside of those three buckets so the

170

00:06:40,550 --> 00:06:38,520

question then becomes which of these

171

00:06:43,790 --> 00:06:40,560

three possibilities is the most likely

172

00:06:45,590 --> 00:06:43,800

to be true the first possibility that

173

00:06:47,450 --> 00:06:45,600

all human-like civilizations in the

174

00:06:49,309 --> 00:06:47,460

universe go extinct before they develop

175

00:06:52,249 --> 00:06:49,319

the technological capacity to create

176

00:06:53,990 --> 00:06:52,259

simulated realities functions a lot like

177

00:06:55,909 --> 00:06:54,000

the great filter that we discussed in

178

00:06:57,050 --> 00:06:55,919

episode 3 with regard to the Fermi

179

00:06:58,790 --> 00:06:57,060

paradox

180

00:07:01,010 --> 00:06:58,800

and given the fact that our modern

181

00:07:02,629 --> 00:07:01,020

technological Society has created a

182

00:07:04,909 --> 00:07:02,639

world where we're constantly flirting

183

00:07:07,189 --> 00:07:04,919

with a variety of plausible apocalyptic

184

00:07:09,529 --> 00:07:07,199

scenarios in the form of nuclear weapons

185

00:07:11,809 --> 00:07:09,539

artificial intelligence viruses and

186

00:07:14,110 --> 00:07:11,819

climatological disasters this

187

00:07:16,969 --> 00:07:14,120

possibility can certainly give one pause

188

00:07:19,430 --> 00:07:16,979

it's easy to imagine countless scenarios

189

00:07:21,890 --> 00:07:19,440

just based on the last 100 years of

190

00:07:23,629 --> 00:07:21,900

human history whereby a civilization

191

00:07:25,550 --> 00:07:23,639

having reached a certain level of

192

00:07:27,589 --> 00:07:25,560

technological advancement could pretty

193

00:07:29,390 --> 00:07:27,599

quickly eradicate itself

194

00:07:31,189 --> 00:07:29,400

but I'd argue that we have more than

195

00:07:34,010 --> 00:07:31,199

sufficient data to dispatch this

196

00:07:35,990 --> 00:07:34,020

particular scenario because sure it's

197

00:07:37,610 --> 00:07:36,000

altogether possible and perhaps even

198

00:07:39,409 --> 00:07:37,620

likely that a certain percentage of

199

00:07:41,330 --> 00:07:39,419

civilizations that reach a certain level

200

00:07:42,290 --> 00:07:41,340

of advancement end up destroying

201
00:07:45,950 --> 00:07:42,300
themselves

202
00:07:47,809 --> 00:07:45,960
however for this scenario to be true all

203
00:07:49,430 --> 00:07:47,819
human-like civilizations that reach that

204
00:07:52,070 --> 00:07:49,440
point would have to destroy themselves

205
00:07:54,350 --> 00:07:52,080
and it seems pretty clear that that is

206
00:07:56,629 --> 00:07:54,360
not the case the fact that we have

207
00:07:58,430 --> 00:07:56,639
highly Advanced technological objects in

208
00:08:00,589 --> 00:07:58,440
our skies and underwater are clear

209
00:08:02,510 --> 00:08:00,599
evidence that Humanity does not

210
00:08:05,809 --> 00:08:02,520
represent the Pinnacle of technological

211
00:08:07,249 --> 00:08:05,819
progress even on our own Planet so if

212
00:08:08,930 --> 00:08:07,259
there is some kind of filtering event

213
00:08:11,210 --> 00:08:08,940

that happens at a certain level of

214

00:08:12,830 --> 00:08:11,220

technological advancement we at least

215

00:08:14,450 --> 00:08:12,840

have confirmation that some

216

00:08:15,290 --> 00:08:14,460

civilizations have made it past that

217

00:08:17,390 --> 00:08:15,300

point

218

00:08:19,249 --> 00:08:17,400

we ourselves are perhaps only a few

219

00:08:21,710 --> 00:08:19,259

decades away from creating fully

220

00:08:23,029 --> 00:08:21,720

immersive simulated environments so we

221

00:08:25,369 --> 00:08:23,039

have to assume that whatever

222

00:08:26,930 --> 00:08:25,379

intelligence is behind for example the

223

00:08:29,150 --> 00:08:26,940

Tic Tac from the infamous Nimitz

224

00:08:31,490 --> 00:08:29,160

incident that was tracked going 80 000

225

00:08:34,250 --> 00:08:31,500

feet in less than a second past that

226

00:08:36,889 --> 00:08:34,260

Milestone a long time ago so we can

227

00:08:38,389 --> 00:08:36,899

safely roll out scenario number one the

228

00:08:40,430 --> 00:08:38,399

second scenario that if any

229

00:08:42,649 --> 00:08:40,440

civilizations do Reach This phase of

230

00:08:44,870 --> 00:08:42,659

technological maturity none of them will

231

00:08:47,870 --> 00:08:44,880

bother to run simulations is a little

232

00:08:50,210 --> 00:08:47,880

more complicated after all there are

233

00:08:51,889 --> 00:08:50,220

plenty of very logical reasons why a

234

00:08:53,509 --> 00:08:51,899

civilization would choose not to

235

00:08:56,090 --> 00:08:53,519

exercise the full scope of its

236

00:08:58,009 --> 00:08:56,100

technological ability it is not in the

237

00:09:00,110 --> 00:08:58,019

best interest of any species to create

238

00:09:01,910 --> 00:09:00,120

technological objects that could

239

00:09:03,170 --> 00:09:01,920

potentially destroy or in some way

240

00:09:05,389 --> 00:09:03,180

enslave them

241

00:09:07,610 --> 00:09:05,399

creating fully immersive simulated

242

00:09:08,509 --> 00:09:07,620

environments would present that level of

243

00:09:10,190 --> 00:09:08,519

threat

244

00:09:11,870 --> 00:09:10,200

so maybe it's the case that

245

00:09:15,110 --> 00:09:11,880

civilizations that are smart enough to

246

00:09:17,509 --> 00:09:15,120

create such things choose not to do so

247

00:09:20,090 --> 00:09:17,519

however just like in scenario number one

248

00:09:21,889 --> 00:09:20,100

it's not enough that some or even most

249

00:09:24,470 --> 00:09:21,899

of the civilizations who get to that

250

00:09:27,170 --> 00:09:24,480

point choose not to create simulations

251
00:09:28,970 --> 00:09:27,180
all of them need to make that choice and

252
00:09:30,889 --> 00:09:28,980
in the case of humanity it's pretty

253
00:09:33,230 --> 00:09:30,899
clear that that is just not how we

254
00:09:35,389 --> 00:09:33,240
operate as we've discussed in previous

255
00:09:37,790 --> 00:09:35,399
episodes particularly in my recent

256
00:09:39,790 --> 00:09:37,800
interview with James Madden we seem to

257
00:09:42,530 --> 00:09:39,800
be almost Bewitched by our technology

258
00:09:44,810 --> 00:09:42,540
how else can we explain the creation of

259
00:09:46,250 --> 00:09:44,820
nuclear weapons whose only purpose is

260
00:09:47,690 --> 00:09:46,260
our destruction

261
00:09:50,090 --> 00:09:47,700
and despite the fact that the

262
00:09:52,850 --> 00:09:50,100
existential horror of that creation has

263
00:09:55,009 --> 00:09:52,860

reshaped World politics and Unleashed

264

00:09:56,870 --> 00:09:55,019

potential Futures that are so Bleak and

265

00:09:59,150 --> 00:09:56,880

so terrifying that most of us just do

266

00:10:00,650 --> 00:09:59,160

our best not to think about it we didn't

267

00:10:04,130 --> 00:10:00,660

learn our lesson

268

00:10:05,630 --> 00:10:04,140

just a few weeks ago on May 1st 2023 the

269

00:10:08,389 --> 00:10:05,640

New York Times published an article

270

00:10:10,610 --> 00:10:08,399

about Jeffrey Hinton the 75 year old

271

00:10:12,530 --> 00:10:10,620

Godfather of AI who just left his

272

00:10:15,230 --> 00:10:12,540

position at Google in a sounding alarm

273

00:10:18,170 --> 00:10:15,240

about his concerns about the very types

274

00:10:21,170 --> 00:10:18,180

of AI that he helped to bring into being

275

00:10:23,329 --> 00:10:21,180

he sees the rise of chatbot AIS as a

276
00:10:25,430 --> 00:10:23,339
very real and rapidly advancing threat

277
00:10:27,710 --> 00:10:25,440
for which we have no answer

278
00:10:29,269 --> 00:10:27,720
of his role in creating the very thing

279
00:10:31,730 --> 00:10:29,279
that he thinks could be the ultimate

280
00:10:33,710 --> 00:10:31,740
downfall of humanity as we know it he

281
00:10:36,829 --> 00:10:33,720
said I console myself with the normal

282
00:10:37,970 --> 00:10:36,839
excuse if I hadn't done it somebody else

283
00:10:41,030 --> 00:10:37,980
would have

284
00:10:42,949 --> 00:10:41,040
and we see this over and over again the

285
00:10:45,110 --> 00:10:42,959
father of the atomic bomb J Robert

286
00:10:47,449 --> 00:10:45,120
Oppenheimer famously said upon its

287
00:10:49,550 --> 00:10:47,459
detonation now I am become death

288
00:10:51,710 --> 00:10:49,560

destroyer of worlds

289

00:10:53,990 --> 00:10:51,720

and that quote seems to Echo throughout

290

00:10:56,449 --> 00:10:54,000

history with the appended usual excuse

291

00:10:57,290 --> 00:10:56,459

if I hadn't done it somebody else would

292

00:10:59,210 --> 00:10:57,300

have

293

00:11:01,850 --> 00:10:59,220

and although that kind of logic is

294

00:11:04,790 --> 00:11:01,860

chilling on its face it's hard to argue

295

00:11:06,590 --> 00:11:04,800

that it's wrong if they hadn't somebody

296

00:11:08,930 --> 00:11:06,600

else would have

297

00:11:10,790 --> 00:11:08,940

so if we look to human civilization as a

298

00:11:13,670 --> 00:11:10,800

guide it seems pretty clear that we can

299

00:11:15,590 --> 00:11:13,680

rule out scenario number two unless

300

00:11:17,329 --> 00:11:15,600

Humanity's toxic relationship with

301

00:11:19,610 --> 00:11:17,339

potentially civilization ending

302

00:11:22,130 --> 00:11:19,620

technology is some sort of a weird

303

00:11:24,710 --> 00:11:22,140

outlier that is rarely replicated Across

304

00:11:26,930 --> 00:11:24,720

the Universe it seems likely that some

305

00:11:28,910 --> 00:11:26,940

if not most human-like civilizations

306

00:11:32,030 --> 00:11:28,920

that are capable of creating simulations

307

00:11:34,130 --> 00:11:32,040

would do so regardless of the threat

308

00:11:36,650 --> 00:11:34,140

so that leaves us with scenario number

309

00:11:38,509 --> 00:11:36,660

three that advanced civilizations who

310

00:11:41,329 --> 00:11:38,519

had the ability to create simulations

311

00:11:43,069 --> 00:11:41,339

would do so and that means that there

312

00:11:44,810 --> 00:11:43,079

are far more simulated worlds than

313

00:11:47,090 --> 00:11:44,820

non-simulated ones

314

00:11:49,130 --> 00:11:47,100

so are we living in a simulation

315

00:11:52,069 --> 00:11:49,140

I don't know but if we're just playing

316

00:11:53,990 --> 00:11:52,079

the odds I wouldn't bet against it

317

00:11:56,030 --> 00:11:54,000

but maybe we don't need to rely on

318

00:11:58,850 --> 00:11:56,040

probabilities to figure this one out

319

00:12:01,730 --> 00:11:58,860

after all if we're in a simulation there

320

00:12:03,110 --> 00:12:01,740

should be signs right hypothetically we

321

00:12:05,449 --> 00:12:03,120

should be able to take what we know

322

00:12:07,069 --> 00:12:05,459

about simulations and extrapolate some

323

00:12:09,170 --> 00:12:07,079

kind of a testable set of assumptions

324

00:12:11,030 --> 00:12:09,180

that would help us determine whether

325

00:12:13,910 --> 00:12:11,040

what we experience as reality is

326

00:12:15,769 --> 00:12:13,920

actually real or only simulated

327

00:12:18,530 --> 00:12:15,779

and eerily when we do this thought

328

00:12:20,870 --> 00:12:18,540

exercise we find that our reality does

329

00:12:22,370 --> 00:12:20,880

in fact look and behave much like we

330

00:12:24,050 --> 00:12:22,380

would expect it to if it were a

331

00:12:25,790 --> 00:12:24,060

simulation

332

00:12:27,949 --> 00:12:25,800

first of all if we're living in a

333

00:12:30,170 --> 00:12:27,959

simulation we'd expect that simulation

334

00:12:31,790 --> 00:12:30,180

to be self-contained and this

335

00:12:33,650 --> 00:12:31,800

containment would reveal itself as

336

00:12:34,370 --> 00:12:33,660

limits in our knowledge about where we

337

00:12:36,290 --> 00:12:34,380

are

338

00:12:37,790 --> 00:12:36,300

just like you can't find the edge of the

339

00:12:39,829 --> 00:12:37,800

world in World of Warcraft and then

340

00:12:41,870 --> 00:12:39,839

climb out of the server there would be

341

00:12:44,629 --> 00:12:41,880

boundaries past which we would have no

342

00:12:46,430 --> 00:12:44,639

access and past that boundary we'd have

343

00:12:47,990 --> 00:12:46,440

no ability to have knowledge of the

344

00:12:49,850 --> 00:12:48,000

outside conditions

345

00:12:52,069 --> 00:12:49,860

as we discussed in the last episode

346

00:12:54,110 --> 00:12:52,079

These sorts of limits and boundaries at

347

00:12:56,449 --> 00:12:54,120

the edges of our reality do seem to

348

00:12:59,150 --> 00:12:56,459

exist we're taught that the fabric of

349

00:13:00,829 --> 00:12:59,160

our reality is space-time but space and

350

00:13:03,470 --> 00:13:00,839

time can only exist in relation to

351
00:13:05,930 --> 00:13:03,480
matter so before the Big Bang there was

352
00:13:08,509 --> 00:13:05,940
no space time and therefore no reality

353
00:13:10,190 --> 00:13:08,519
to speak of this is why scientists tell

354
00:13:13,310 --> 00:13:10,200
us that asking what happened before the

355
00:13:15,350 --> 00:13:13,320
Big Bang is meaningless and yet it seems

356
00:13:17,210 --> 00:13:15,360
inconceivable that all of existence

357
00:13:19,610 --> 00:13:17,220
could spring out of true nothingness

358
00:13:22,129 --> 00:13:19,620
which in and of itself is as impossible

359
00:13:24,710 --> 00:13:22,139
to conceptualize as it is to prove

360
00:13:27,170 --> 00:13:24,720
so we have this hint that surely

361
00:13:29,750 --> 00:13:27,180
something must have existed before the

362
00:13:32,509 --> 00:13:29,760
Big Bang even if our particular Universe

363
00:13:34,250 --> 00:13:32,519

didn't but we have no way of accessing

364

00:13:37,250 --> 00:13:34,260

that knowledge of what happened before

365

00:13:40,370 --> 00:13:37,260

the Big Bang beyond that point the very

366

00:13:42,590 --> 00:13:40,380

fabric of our own reality ceases to be

367

00:13:45,530 --> 00:13:42,600

so whatever reality may exist beyond

368

00:13:47,269 --> 00:13:45,540

that Horizon is utterly unknowable and

369

00:13:50,090 --> 00:13:47,279

not only do we know that the space-time

370

00:13:52,430 --> 00:13:50,100

we experience hasn't always existed we

371

00:13:53,930 --> 00:13:52,440

also know that it can break down at the

372

00:13:55,910 --> 00:13:53,940

center of a black hole matter is

373

00:13:58,069 --> 00:13:55,920

compressed down into an infinitely tiny

374

00:13:59,090 --> 00:13:58,079

Point obliterating our Concepts as face

375

00:14:01,250 --> 00:13:59,100

and time

376

00:14:03,590 --> 00:14:01,260

so we find ourselves embedded in

377

00:14:05,569 --> 00:14:03,600

space-time a substrate of reality that

378

00:14:08,269 --> 00:14:05,579

appears to be able to be both created

379

00:14:10,190 --> 00:14:08,279

and destroyed and from what we can tell

380

00:14:12,350 --> 00:14:10,200

mathematically it seems that our

381

00:14:15,590 --> 00:14:12,360

particular instantiation of space-time

382

00:14:17,329 --> 00:14:15,600

has a definitive beginning around 13.8

383

00:14:19,610 --> 00:14:17,339

billion years ago

384

00:14:21,889 --> 00:14:19,620

basically we find ourselves in a

385

00:14:24,530 --> 00:14:21,899

self-contained system the boundaries of

386

00:14:26,569 --> 00:14:24,540

which are entirely opaque to us we have

387

00:14:28,490 --> 00:14:26,579

no way of knowing what conditions if any

388

00:14:30,710 --> 00:14:28,500

exist outside of our known universe

389

00:14:33,050 --> 00:14:30,720

which is exactly what we'd expect to see

390

00:14:35,990 --> 00:14:33,060

if we were in a simulation

391

00:14:37,490 --> 00:14:36,000

okay but that's just one example there

392

00:14:38,810 --> 00:14:37,500

are certainly other potential reasons

393

00:14:41,449 --> 00:14:38,820

for why we don't know what happened

394

00:14:42,710 --> 00:14:41,459

before the Big Bang and considering how

395

00:14:44,990 --> 00:14:42,720

much of the story of The Big Bang

396

00:14:46,910 --> 00:14:45,000

doesn't make sense it seems reasonable

397

00:14:48,769 --> 00:14:46,920

to allow that we might know more about

398

00:14:50,750 --> 00:14:48,779

what happened before the beginning of

399

00:14:53,090 --> 00:14:50,760

time at some point in the future

400

00:14:55,009 --> 00:14:53,100

or more likely we might learn something

401
00:14:57,410 --> 00:14:55,019
about the nature of our reality that

402
00:14:58,850 --> 00:14:57,420
will render all of these questions moot

403
00:15:01,189 --> 00:14:58,860
so there's no need to jump to

404
00:15:02,750 --> 00:15:01,199
conclusions for us to seriously consider

405
00:15:04,189 --> 00:15:02,760
this possibility we'd need more

406
00:15:06,230 --> 00:15:04,199
supporting evidence

407
00:15:08,329 --> 00:15:06,240
but you might be surprised at how much

408
00:15:10,670 --> 00:15:08,339
supporting evidence there is for example

409
00:15:12,110 --> 00:15:10,680
another characteristic of reality that

410
00:15:13,970 --> 00:15:12,120
we'd expect to find if we were in a

411
00:15:15,949 --> 00:15:13,980
simulation is that it would be perfectly

412
00:15:17,509 --> 00:15:15,959
calibrated to support the particular

413
00:15:20,389 --> 00:15:17,519

conditions it was programmed to be

414

00:15:21,650 --> 00:15:20,399

simulating right it's so obvious that

415

00:15:24,170 --> 00:15:21,660

that would be true that it's almost

416

00:15:26,389 --> 00:15:24,180

meaningless to say it the whole point of

417

00:15:28,430 --> 00:15:26,399

a simulation is that it simulates a very

418

00:15:30,290 --> 00:15:28,440

particular set of conditions

419

00:15:32,689 --> 00:15:30,300

so if we assume that we are in a

420

00:15:34,550 --> 00:15:32,699

simulation where we live on earth then

421

00:15:36,350 --> 00:15:34,560

everything in that simulation would be

422

00:15:38,689 --> 00:15:36,360

perfectly calibrated to create the

423

00:15:40,069 --> 00:15:38,699

conditions on earth once again this is

424

00:15:41,030 --> 00:15:40,079

super obvious to the point of being

425

00:15:43,009 --> 00:15:41,040

meaningless

426

00:15:44,810 --> 00:15:43,019

so why do I bring it up

427

00:15:46,670 --> 00:15:44,820

well as you'll recall from our last

428

00:15:49,129 --> 00:15:46,680

episode the universe in which we find

429

00:15:51,650 --> 00:15:49,139

ourselves seems to be uncannily well

430

00:15:54,170 --> 00:15:51,660

suited to support the existence of life

431

00:15:56,210 --> 00:15:54,180

for example if the Big Bang had been one

432

00:15:57,650 --> 00:15:56,220

part in a million more powerful it would

433

00:15:59,389 --> 00:15:57,660

have expanded too quickly for the

434

00:16:01,730 --> 00:15:59,399

galaxies and therefore life to develop

435

00:16:04,370 --> 00:16:01,740

if the strong nuclear force were

436

00:16:06,590 --> 00:16:04,380

decreased by just two percent Atomic

437

00:16:07,730 --> 00:16:06,600

nuclei wouldn't hold together and the

438

00:16:10,670 --> 00:16:07,740

universe would be filled with nothing

439

00:16:13,129 --> 00:16:10,680

but hydrogen if the gravitational force

440

00:16:15,590 --> 00:16:13,139

were decreased by just a hair Stars

441

00:16:17,569 --> 00:16:15,600

including the sun wouldn't ignite

442

00:16:19,910 --> 00:16:17,579

these are just a couple of the more than

443

00:16:21,590 --> 00:16:19,920

200 physical parameters within the

444

00:16:24,410 --> 00:16:21,600

universe that had to be precisely

445

00:16:26,150 --> 00:16:24,420

calibrated for life to be possible if

446

00:16:28,610 --> 00:16:26,160

even one of these parameters were off

447

00:16:30,949 --> 00:16:28,620

even slightly the likely result would

448

00:16:32,810 --> 00:16:30,959

have been a universe devoid of life

449

00:16:34,610 --> 00:16:32,820

the chances of the Big Bang would result

450

00:16:37,370 --> 00:16:34,620

in a universe that is suitable to life

451
00:16:39,230 --> 00:16:37,380
are so vanishingly small but it becomes

452
00:16:41,090 --> 00:16:39,240
very difficult to posit any sort of

453
00:16:42,470 --> 00:16:41,100
irrational explanation for how it

454
00:16:44,210 --> 00:16:42,480
actually happened

455
00:16:45,889 --> 00:16:44,220
some would argue that the fact that we

456
00:16:47,509 --> 00:16:45,899
exist and are here to ask the question

457
00:16:50,269 --> 00:16:47,519
of why the universe is perfectly

458
00:16:52,370 --> 00:16:50,279
calibrated to support life presupposes

459
00:16:54,829 --> 00:16:52,380
that life exists and so the question is

460
00:16:57,170 --> 00:16:54,839
moot but that kind of circular logic

461
00:16:59,150 --> 00:16:57,180
doesn't actually explain anything the

462
00:17:01,189 --> 00:16:59,160
only thing it accomplishes is taking the

463
00:17:03,470 --> 00:17:01,199

very legitimate question of how we

464

00:17:06,169 --> 00:17:03,480

manage such a lucky role of the cosmic

465

00:17:08,630 --> 00:17:06,179

Dice and makes it out of bounds

466

00:17:10,490 --> 00:17:08,640

but if the universe is a simulation then

467

00:17:12,470 --> 00:17:10,500

suddenly we have a very straightforward

468

00:17:14,329 --> 00:17:12,480

explanation for why it's so perfectly

469

00:17:16,850 --> 00:17:14,339

calibrated to support life

470

00:17:18,169 --> 00:17:16,860

it was created to be and it would

471

00:17:20,809 --> 00:17:18,179

suggest that the purpose of the

472

00:17:23,030 --> 00:17:20,819

simulation is deeply tied to life itself

473

00:17:25,610 --> 00:17:23,040

perhaps it's to study how life evolves

474

00:17:27,350 --> 00:17:25,620

over eons we don't know and without

475

00:17:30,049 --> 00:17:27,360

access to knowledge outside of the

476
00:17:32,270 --> 00:17:30,059
system it would be impossible to prove

477
00:17:35,090 --> 00:17:32,280
but as far-fetched as the simulation

478
00:17:36,890 --> 00:17:35,100
hypothesis may sound we have to admit

479
00:17:39,110 --> 00:17:36,900
that it does have at least some

480
00:17:41,510 --> 00:17:39,120
explanatory power in Realms where we'd

481
00:17:43,970 --> 00:17:41,520
previously had only questions

482
00:17:45,590 --> 00:17:43,980
okay now admittedly those first two

483
00:17:46,909 --> 00:17:45,600
examples are interesting but they're

484
00:17:48,710 --> 00:17:46,919
hardly The Smoking Gun in our

485
00:17:50,990 --> 00:17:48,720
investigation into whether or not we're

486
00:17:53,330 --> 00:17:51,000
living in a simulation with both

487
00:17:55,789 --> 00:17:53,340
examples we have no real way to verify

488
00:17:57,350 --> 00:17:55,799

or falsify the hypothesis so we're left

489

00:17:59,450 --> 00:17:57,360

with only conjecture

490

00:18:01,490 --> 00:17:59,460

one of the main problems with proving

491

00:18:03,409 --> 00:18:01,500

whether or not we're in a simulation is

492

00:18:05,510 --> 00:18:03,419

that anything that we can observe by

493

00:18:07,669 --> 00:18:05,520

definition would be a part of the

494

00:18:09,409 --> 00:18:07,679

simulation and without access to

495

00:18:12,049 --> 00:18:09,419

information from outside of the system

496

00:18:14,510 --> 00:18:12,059

we have no way to say decisively whether

497

00:18:16,909 --> 00:18:14,520

we are in a simulation or not however

498

00:18:18,830 --> 00:18:16,919

some have argued that there would be one

499

00:18:20,390 --> 00:18:18,840

artifact from the outside world that

500

00:18:22,850 --> 00:18:20,400

would be discoverable within a

501
00:18:25,669 --> 00:18:22,860
simulation and that artifact is the

502
00:18:27,590 --> 00:18:25,679
simulations processing speed processing

503
00:18:30,710 --> 00:18:27,600
speed refers to how quickly a computer

504
00:18:32,810 --> 00:18:30,720
can process data or instructions so if

505
00:18:34,669 --> 00:18:32,820
hypothetically our reality is being

506
00:18:37,010 --> 00:18:34,679
simulated and is being hosted on

507
00:18:38,750 --> 00:18:37,020
something like a server somewhere then

508
00:18:40,610 --> 00:18:38,760
the hardware that it's running on would

509
00:18:42,710 --> 00:18:40,620
leave an artifact within the world of

510
00:18:45,890 --> 00:18:42,720
the simulation in the form of how fast

511
00:18:47,330 --> 00:18:45,900
it can process data in other words all

512
00:18:49,010 --> 00:18:47,340
the other laws and rules of the

513
00:18:52,310 --> 00:18:49,020

simulation would be a result of the

514

00:18:54,409 --> 00:18:52,320

simulation itself or the software but

515

00:18:56,930 --> 00:18:54,419

processing speed is a result of the

516

00:18:59,330 --> 00:18:56,940

hardware on which the software runs

517

00:19:01,430 --> 00:18:59,340

so if you're a character in a video game

518

00:19:03,890 --> 00:19:01,440

all of the laws of the game would be a

519

00:19:05,930 --> 00:19:03,900

part of the simulation but no matter how

520

00:19:08,450 --> 00:19:05,940

complete and perfect the simulation was

521

00:19:10,370 --> 00:19:08,460

anything you did within the game would

522

00:19:12,049 --> 00:19:10,380

be constrained by the processor speed

523

00:19:14,390 --> 00:19:12,059

because the hardware on which it's

524

00:19:17,029 --> 00:19:14,400

running by its very nature can only

525

00:19:19,130 --> 00:19:17,039

process so much information at once

526

00:19:20,990 --> 00:19:19,140

so it would be impossible for you to do

527

00:19:23,390 --> 00:19:21,000

anything faster than the time it took

528

00:19:25,490 --> 00:19:23,400

the hardware to process that information

529

00:19:27,950 --> 00:19:25,500

it follows then that if we live in a

530

00:19:30,110 --> 00:19:27,960

simulation our universe should also have

531

00:19:32,450 --> 00:19:30,120

such an artifact but what would that

532

00:19:34,190 --> 00:19:32,460

look like by reverse engineering what

533

00:19:36,590 --> 00:19:34,200

the artifact would look like to us from

534

00:19:38,690 --> 00:19:36,600

inside the simulation we have a starting

535

00:19:40,669 --> 00:19:38,700

point to determine if such an artifact

536

00:19:42,590 --> 00:19:40,679

exists in our reality

537

00:19:44,750 --> 00:19:42,600

first of all the artifact would be

538

00:19:46,310 --> 00:19:44,760

unaffected by anything going on in the

539

00:19:48,350 --> 00:19:46,320

simulation and would be basically

540

00:19:50,630 --> 00:19:48,360

irrelevant within the simulated reality

541

00:19:52,070 --> 00:19:50,640

until you tried to do something that

542

00:19:54,289 --> 00:19:52,080

required the hardware to process

543

00:19:55,070 --> 00:19:54,299

information more quickly than it's able

544

00:19:57,230 --> 00:19:55,080

to

545

00:19:59,450 --> 00:19:57,240

the way that we'd experience that inside

546

00:20:01,130 --> 00:19:59,460

of the simulation would be as an upper

547

00:20:03,350 --> 00:20:01,140

limit of some kind

548

00:20:05,090 --> 00:20:03,360

another property of the artifact is that

549

00:20:06,770 --> 00:20:05,100

it would not be able to be explained by

550

00:20:08,990 --> 00:20:06,780

the underlying laws of the simulation

551
00:20:11,690 --> 00:20:09,000
because it's separate from those laws

552
00:20:13,970 --> 00:20:11,700
again the artifact is a result of the

553
00:20:16,669 --> 00:20:13,980
hardware all of the other laws are a

554
00:20:18,529 --> 00:20:16,679
result of the software as a result this

555
00:20:20,870 --> 00:20:18,539
artifact would be taken as a given

556
00:20:23,029 --> 00:20:20,880
within the simulation we wouldn't be

557
00:20:24,890 --> 00:20:23,039
able to explain why it existed we just

558
00:20:26,690 --> 00:20:24,900
know that it did exist when we bumped up

559
00:20:28,610 --> 00:20:26,700
against its upper limit

560
00:20:30,710 --> 00:20:28,620
and finally the artifact would be

561
00:20:32,390 --> 00:20:30,720
absolute there would be no exceptions

562
00:20:33,830 --> 00:20:32,400
because there would be no situation in

563
00:20:35,450 --> 00:20:33,840

which the hardware would be able to

564

00:20:36,590 --> 00:20:35,460

process more information than it can

565

00:20:39,049 --> 00:20:36,600

process

566

00:20:41,330 --> 00:20:39,059

so when we put all of this together the

567

00:20:43,010 --> 00:20:41,340

artifact would be an inviolable law of

568

00:20:45,049 --> 00:20:43,020

the universe the cause for which we

569

00:20:46,970 --> 00:20:45,059

can't explain but which operates as a

570

00:20:49,010 --> 00:20:46,980

basic underlying law of physics and

571

00:20:49,789 --> 00:20:49,020

which only reveals itself as an upper

572

00:20:51,590 --> 00:20:49,799

limit

573

00:20:53,690 --> 00:20:51,600

and when we consider the artifact in

574

00:20:55,610 --> 00:20:53,700

this way it becomes clear that there is

575

00:20:58,070 --> 00:20:55,620

something within our reality that has

576

00:20:58,909 --> 00:20:58,080

all of these properties the speed of

577

00:21:03,470 --> 00:20:58,919

light

578

00:21:05,210 --> 00:21:03,480

speed limit of the universe as far as we

579

00:21:06,950 --> 00:21:05,220

know it's not possible for anything to

580

00:21:08,630 --> 00:21:06,960

move faster than that and there's

581

00:21:10,970 --> 00:21:08,640

nothing within the laws of physics that

582

00:21:12,710 --> 00:21:10,980

explains why this is the case but we

583

00:21:14,450 --> 00:21:12,720

know that it is because it serves as an

584

00:21:15,830 --> 00:21:14,460

upper limit that is absolute and can't

585

00:21:17,810 --> 00:21:15,840

be violated

586

00:21:19,490 --> 00:21:17,820

so could the speed of light be an

587

00:21:22,010 --> 00:21:19,500

artifact of the hardware on which the

588

00:21:23,870 --> 00:21:22,020

simulation of our reality is run there's

589

00:21:25,730 --> 00:21:23,880

no way to know for sure but there are

590

00:21:26,930 --> 00:21:25,740

many that would argue that that is proof

591

00:21:29,090 --> 00:21:26,940

positive that we're living in a

592

00:21:30,649 --> 00:21:29,100

simulation and as we move on to examine

593

00:21:33,890 --> 00:21:30,659

other evidence that we may be living in

594

00:21:36,890 --> 00:21:33,900

a simulation things only get spookier

595

00:21:39,169 --> 00:21:36,900

let's talk about rendering if we use the

596

00:21:41,390 --> 00:21:39,179

example of a video game rendering is the

597

00:21:43,610 --> 00:21:41,400

process of generating an image from a 2d

598

00:21:44,750 --> 00:21:43,620

or a 3D model by means of a computer

599

00:21:46,370 --> 00:21:44,760

program

600

00:21:48,169 --> 00:21:46,380

As you move through the world of the

601
00:21:49,970 --> 00:21:48,179
video game it renders the world of the

602
00:21:51,350 --> 00:21:49,980
game in front of you from the underlying

603
00:21:52,850 --> 00:21:51,360
code of the game

604
00:21:54,890 --> 00:21:52,860
and for the purposes of this

605
00:21:57,350 --> 00:21:54,900
conversation it's important to recognize

606
00:21:59,390 --> 00:21:57,360
that the video game only renders what is

607
00:22:01,430 --> 00:21:59,400
in front of you and that makes a lot of

608
00:22:03,470 --> 00:22:01,440
sense because if the game had to

609
00:22:05,330 --> 00:22:03,480
continually render the entire world of

610
00:22:07,789 --> 00:22:05,340
the game it would waste a ton of

611
00:22:09,649 --> 00:22:07,799
resources and be extremely inefficient

612
00:22:11,870 --> 00:22:09,659
so the world of the video game only

613
00:22:14,330 --> 00:22:11,880

exists as a programmed possibility

614

00:22:16,370 --> 00:22:14,340

within the game until it comes into your

615

00:22:17,990 --> 00:22:16,380

character's field of vision

616

00:22:19,490 --> 00:22:18,000

and if this reminds you of the

617

00:22:21,230 --> 00:22:19,500

implications of the double slit

618

00:22:23,690 --> 00:22:21,240

experiment then you see where I'm going

619

00:22:25,370 --> 00:22:23,700

with this we've already discussed the

620

00:22:28,310 --> 00:22:25,380

double slit experiment in quantum

621

00:22:29,870 --> 00:22:28,320

mechanics in episodes 5 and 19. so if

622

00:22:31,130 --> 00:22:29,880

you need a refresher I'll have those

623

00:22:33,289 --> 00:22:31,140

linked up with the appropriate

624

00:22:34,669 --> 00:22:33,299

timestamps in the episode brief so that

625

00:22:37,250 --> 00:22:34,679

you can listen to those sections again

626
00:22:38,870 --> 00:22:37,260
I'm going to move forward here assuming

627
00:22:40,070 --> 00:22:38,880
that you already have a handle on those

628
00:22:42,890 --> 00:22:40,080
ideas

629
00:22:44,630 --> 00:22:42,900
for many people myself included the

630
00:22:46,310 --> 00:22:44,640
clear implications of the double slit

631
00:22:48,710 --> 00:22:46,320
experiment is that everything that we

632
00:22:50,390 --> 00:22:48,720
experience in our reality exists in a

633
00:22:53,570 --> 00:22:50,400
probabilistic state of superposition

634
00:22:55,789 --> 00:22:53,580
until it is observed the very active

635
00:22:58,070 --> 00:22:55,799
observation causes these probabilistic

636
00:22:59,810 --> 00:22:58,080
outcomes to resolve themselves into one

637
00:23:01,789 --> 00:22:59,820
definite reality

638
00:23:03,470 --> 00:23:01,799

now granted there are plenty of

639

00:23:05,029 --> 00:23:03,480

scientists out there who do not agree

640

00:23:07,190 --> 00:23:05,039

with that interpretation of quantum

641

00:23:08,450 --> 00:23:07,200

mechanics and the reason for that is

642

00:23:10,070 --> 00:23:08,460

that it breaks everything that we

643

00:23:11,510 --> 00:23:10,080

thought we knew about what the world is

644

00:23:13,850 --> 00:23:11,520

and how it works

645

00:23:15,649 --> 00:23:13,860

at around seven or eight months of age a

646

00:23:18,230 --> 00:23:15,659

baby begins to develop an understanding

647

00:23:20,330 --> 00:23:18,240

of object permanence in this important

648

00:23:21,890 --> 00:23:20,340

developmental stage a baby learns that

649

00:23:24,590 --> 00:23:21,900

something that is hidden out of their

650

00:23:25,370 --> 00:23:24,600

view still exists even if they can't see

651
00:23:26,870 --> 00:23:25,380
it

652
00:23:28,610 --> 00:23:26,880
this is why there's such a sharp

653
00:23:30,289 --> 00:23:28,620
drop-off and how much you can blow a

654
00:23:32,870 --> 00:23:30,299
baby's mind with a game of peekaboo

655
00:23:34,549 --> 00:23:32,880
after a certain age they understand that

656
00:23:36,110 --> 00:23:34,559
you're still there behind your hands and

657
00:23:37,970 --> 00:23:36,120
The Jig Is Up

658
00:23:39,710 --> 00:23:37,980
the understanding that things are still

659
00:23:41,390 --> 00:23:39,720
there even if we can't see them is

660
00:23:43,010 --> 00:23:41,400
fundamental to the ways that we model

661
00:23:44,149 --> 00:23:43,020
the world as we learn and grow into

662
00:23:46,669 --> 00:23:44,159
adulthood

663
00:23:48,590 --> 00:23:46,679

without object permanence you'd never

664

00:23:50,750 --> 00:23:48,600

know where you left your keys or how to

665

00:23:52,610 --> 00:23:50,760

get to the grocery store the concept

666

00:23:54,289 --> 00:23:52,620

that objects are objectively still there

667

00:23:55,970 --> 00:23:54,299

even when we aren't looking at them as

668

00:23:57,350 --> 00:23:55,980

one of our most basic meaning making

669

00:23:59,570 --> 00:23:57,360

constructs

670

00:24:01,549 --> 00:23:59,580

and so it's easy to understand why so

671

00:24:03,770 --> 00:24:01,559

many outright reject the idea that

672

00:24:04,850 --> 00:24:03,780

nothing objectively exists until it's

673

00:24:06,950 --> 00:24:04,860

observed

674

00:24:08,810 --> 00:24:06,960

the implications of quantum mechanics

675

00:24:11,029 --> 00:24:08,820

turn our most basic assumptions about

676

00:24:13,250 --> 00:24:11,039

the nature of reality on its head

677

00:24:15,470 --> 00:24:13,260

but despite their protestations the

678

00:24:17,270 --> 00:24:15,480

naysayers aren't able to offer any kind

679

00:24:19,070 --> 00:24:17,280

of attainable alternative

680

00:24:20,390 --> 00:24:19,080

some simply throw up their hands and

681

00:24:21,950 --> 00:24:20,400

claim the quantum mechanics is

682

00:24:23,090 --> 00:24:21,960

impossible to understand and doesn't

683

00:24:25,310 --> 00:24:23,100

make sense

684

00:24:27,110 --> 00:24:25,320

and yet quantum mechanics is one of the

685

00:24:29,570 --> 00:24:27,120

most successful quantitative theories

686

00:24:31,490 --> 00:24:29,580

ever produced not a single one of the

687

00:24:33,529 --> 00:24:31,500

untold thousands of experiments done to

688

00:24:35,930 --> 00:24:33,539

test it has ever found the basic

689

00:24:37,549 --> 00:24:35,940

principles to be an error so how could

690

00:24:40,490 --> 00:24:37,559

something that can't possibly be right

691

00:24:42,710 --> 00:24:40,500

work so well perhaps the answer is that

692

00:24:43,730 --> 00:24:42,720

the nature of our reality isn't what we

693

00:24:45,890 --> 00:24:43,740

think it is

694

00:24:47,630 --> 00:24:45,900

we expect the things objectively exist

695

00:24:49,850 --> 00:24:47,640

whether or not someone is there to

696

00:24:51,890 --> 00:24:49,860

observe them but quantum mechanics

697

00:24:54,169 --> 00:24:51,900

suggests that at the most fundamental

698

00:24:56,330 --> 00:24:54,179

Atomic level that's not the way it works

699

00:24:58,010 --> 00:24:56,340

and the way it actually works ends up

700

00:25:00,409 --> 00:24:58,020

looking a lot more like the way the

701
00:25:02,510 --> 00:25:00,419
world is rendered in a video game

702
00:25:04,789 --> 00:25:02,520
another clue that we might be living in

703
00:25:06,830 --> 00:25:04,799
a simulation is that much like in the

704
00:25:07,970 --> 00:25:06,840
world of a video game reality is

705
00:25:09,950 --> 00:25:07,980
pixelated

706
00:25:11,750 --> 00:25:09,960
now to be clear I'm not saying that

707
00:25:14,270 --> 00:25:11,760
reality is literally made out of pixels

708
00:25:16,490 --> 00:25:14,280
but rather I'm pointing to the concept

709
00:25:18,649 --> 00:25:16,500
that just like an image that is rendered

710
00:25:21,049 --> 00:25:18,659
on a screen when you zoom in close

711
00:25:22,730 --> 00:25:21,059
enough you see that reality isn't one

712
00:25:23,990 --> 00:25:22,740
continuous hole in the way that we

713
00:25:25,789 --> 00:25:24,000

perceive it

714

00:25:27,830 --> 00:25:25,799

reality as we know it is actually

715

00:25:30,830 --> 00:25:27,840

composed of countless tiny particles

716

00:25:33,230 --> 00:25:30,840

from atoms to quarks to electrons which

717

00:25:35,210 --> 00:25:33,240

make up everything in the universe

718

00:25:36,649 --> 00:25:35,220

the behavior of these particles is

719

00:25:37,730 --> 00:25:36,659

governed by the laws of quantum

720

00:25:39,590 --> 00:25:37,740

mechanics

721

00:25:41,870 --> 00:25:39,600

one of the most remarkable aspects of

722

00:25:44,750 --> 00:25:41,880

quantum mechanics is that it reveals

723

00:25:46,850 --> 00:25:44,760

that reality is quantized this means

724

00:25:49,430 --> 00:25:46,860

that energy momentum and other physical

725

00:25:52,010 --> 00:25:49,440

quantities can only exist in discrete

726
00:25:54,470 --> 00:25:52,020
indivisible units that come together to

727
00:25:56,690 --> 00:25:54,480
form the whole much like how individual

728
00:25:58,970 --> 00:25:56,700
pixels on a screen come together to form

729
00:26:01,190 --> 00:25:58,980
an image

730
00:26:03,590 --> 00:26:01,200
if we lived in a simulation we'd expect

731
00:26:05,630 --> 00:26:03,600
to see much the same thing any

732
00:26:07,610 --> 00:26:05,640
simulation would ultimately have a

733
00:26:09,890 --> 00:26:07,620
finite resolution that would reveal

734
00:26:12,289 --> 00:26:09,900
itself as discrete indivisible units

735
00:26:14,630 --> 00:26:12,299
much like pixels which is exactly what

736
00:26:16,549 --> 00:26:14,640
we see another potential sign that we're

737
00:26:19,010 --> 00:26:16,559
living in a simulation would be the

738
00:26:21,350 --> 00:26:19,020

appearance of glitches in The Matrix

739

00:26:23,630 --> 00:26:21,360

if our reality operates in a way similar

740

00:26:25,730 --> 00:26:23,640

to a video game we'd expect that

741

00:26:27,289 --> 00:26:25,740

occasionally we'd encounter bugs or

742

00:26:29,390 --> 00:26:27,299

errors that disrupt the game's

743

00:26:31,310 --> 00:26:29,400

continuity or consistency

744

00:26:33,409 --> 00:26:31,320

if we're in a simulation small

745

00:26:35,330 --> 00:26:33,419

inconsistencies could be the result of

746

00:26:38,029 --> 00:26:35,340

changes or errors made by whoever's

747

00:26:39,830 --> 00:26:38,039

running it these glitches may result in

748

00:26:42,110 --> 00:26:39,840

alterations to our shared histories

749

00:26:43,610 --> 00:26:42,120

creating discrepancies between our

750

00:26:45,350 --> 00:26:43,620

Collective memories and the reality

751
00:26:48,110 --> 00:26:45,360
that's presented to us

752
00:26:50,450 --> 00:26:48,120
and strangely there is some significant

753
00:26:52,490 --> 00:26:50,460
evidence to support this in particular

754
00:26:56,810 --> 00:26:52,500
the Mandela effect

755
00:26:59,750 --> 00:26:56,820
coined by paranormal consultant Fiona

756
00:27:01,549 --> 00:26:59,760
Broome in 2010 to describe a collective

757
00:27:03,890 --> 00:27:01,559
false memory she discovered at a

758
00:27:06,529 --> 00:27:03,900
convention where many people including

759
00:27:08,990 --> 00:27:06,539
herself remembered Nelson Mandela dying

760
00:27:11,930 --> 00:27:09,000
in prison during the 1980s even though

761
00:27:13,850 --> 00:27:11,940
he actually passed away in 2013. the

762
00:27:16,190 --> 00:27:13,860
phenomenon is marked by a large number

763
00:27:18,470 --> 00:27:16,200

of people sharing what appears to be an

764

00:27:20,810 --> 00:27:18,480

incorrect memory which raises major

765

00:27:23,690 --> 00:27:20,820

questions about both the nature of our

766

00:27:25,730 --> 00:27:23,700

reality and our perception of it and

767

00:27:28,370 --> 00:27:25,740

this phenomenon is not isolated to the

768

00:27:29,930 --> 00:27:28,380

case of Nelson Mandela one instance of

769

00:27:32,510 --> 00:27:29,940

the Mandela effect that I have always

770

00:27:35,029 --> 00:27:32,520

found particularly maddening involves Ed

771

00:27:37,970 --> 00:27:35,039

McMahon and Publishers Clearinghouse

772

00:27:40,250 --> 00:27:37,980

many people myself included distinctly

773

00:27:41,990 --> 00:27:40,260

remember McMahon delivering oversized

774

00:27:44,029 --> 00:27:42,000

checks to Winners homes as part of the

775

00:27:46,789 --> 00:27:44,039

Publisher's Clearinghouse Sweepstakes

776

00:27:48,950 --> 00:27:46,799

in my case if anyone had asked me who Ed

777

00:27:51,049 --> 00:27:48,960

McMahon was that would have been the

778

00:27:52,669 --> 00:27:51,059

first thing I said about him and I would

779

00:27:56,269 --> 00:27:52,679

have bet any amount of money that I was

780

00:27:59,510 --> 00:27:56,279

right I mean I saw that I know I did

781

00:28:01,310 --> 00:27:59,520

and yet in actuality McMahon was never

782

00:28:03,649 --> 00:28:01,320

associated with Publishers Clearinghouse

783

00:28:05,630 --> 00:28:03,659

he did actually work for a different

784

00:28:08,210 --> 00:28:05,640

sweepstakes company called American

785

00:28:10,730 --> 00:28:08,220

Family Publishers but he never went to

786

00:28:13,190 --> 00:28:10,740

anyone's house and he never held a giant

787

00:28:15,110 --> 00:28:13,200

check so why do so many of us remember

788

00:28:16,909 --> 00:28:15,120

it that way

789

00:28:18,769 --> 00:28:16,919

for me though perhaps the most

790

00:28:21,890 --> 00:28:18,779

disturbing example of the Mandela effect

791

00:28:24,409 --> 00:28:21,900

is The Berenstain Bears I grew up with

792

00:28:26,870 --> 00:28:24,419

shelves full of Berenstain bear books I

793

00:28:28,430 --> 00:28:26,880

watched the show every day both were

794

00:28:31,070 --> 00:28:28,440

very Central to my early childhood

795

00:28:32,870 --> 00:28:31,080

memories and as a kid who was obsessed

796

00:28:34,430 --> 00:28:32,880

with words and with spelling it's

797

00:28:36,710 --> 00:28:34,440

virtually impossible for me to believe

798

00:28:38,930 --> 00:28:36,720

that this whole time it wasn't the

799

00:28:41,870 --> 00:28:38,940

Berenstain Bears but the Berenstain

800

00:28:43,909 --> 00:28:41,880

Bears and yet every shred of available

801
00:28:44,750 --> 00:28:43,919
evidence seems to indicate that this was

802
00:28:46,850 --> 00:28:44,760
the case

803
00:28:48,529 --> 00:28:46,860
when I'm in a used bookstore I always

804
00:28:50,570 --> 00:28:48,539
make sure to swing by the kids section

805
00:28:52,549 --> 00:28:50,580
because I still have this irrational

806
00:28:54,169 --> 00:28:52,559
feeling that one day I'll be able to

807
00:28:57,110 --> 00:28:54,179
find a copy of a book that says

808
00:28:59,630 --> 00:28:57,120
Berenstein instead of Berenstain I never

809
00:29:01,730 --> 00:28:59,640
have but the uncomfortable dissonance of

810
00:29:04,190 --> 00:29:01,740
this impossible memory means that I'll

811
00:29:06,110 --> 00:29:04,200
probably never stop trying there are

812
00:29:07,970 --> 00:29:06,120
plenty of other examples of the Mandela

813
00:29:09,409 --> 00:29:07,980

effect that you can explore I'll be sure

814

00:29:11,090 --> 00:29:09,419

to include some links in the episode

815

00:29:13,250 --> 00:29:11,100

brief if you'd like to take a deeper

816

00:29:15,289 --> 00:29:13,260

dive if you've never looked into it

817

00:29:17,570 --> 00:29:15,299

before it's definitely a fun Rabbit Hole

818

00:29:20,090 --> 00:29:17,580

to go down there are tons of examples

819

00:29:22,010 --> 00:29:20,100

and if the ones I share didn't resonate

820

00:29:24,350 --> 00:29:22,020

and you found yourself thinking uh oh

821

00:29:26,810 --> 00:29:24,360

Kelly's lost it I'd encourage you to

822

00:29:28,730 --> 00:29:26,820

look up some other examples most people

823

00:29:31,190 --> 00:29:28,740

seem to share at least a few of these

824

00:29:32,750 --> 00:29:31,200

seemingly false memories and it's trippy

825

00:29:35,029 --> 00:29:32,760

when you realize that something that you

826

00:29:37,250 --> 00:29:35,039

were so certain of turns out to not be

827

00:29:38,930 --> 00:29:37,260

real especially when millions of other

828

00:29:40,070 --> 00:29:38,940

people around the world remember it that

829

00:29:42,409 --> 00:29:40,080

way as well

830

00:29:44,450 --> 00:29:42,419

and yet as intriguing as the Mandela

831

00:29:46,130 --> 00:29:44,460

effect is especially in the context of

832

00:29:48,169 --> 00:29:46,140

this conversation about the possibility

833

00:29:49,669 --> 00:29:48,179

that we live in a simulation it's

834

00:29:51,470 --> 00:29:49,679

important to recognize that there are

835

00:29:53,630 --> 00:29:51,480

plenty of other plausible explanations

836

00:29:56,269 --> 00:29:53,640

for the Mandela effect that don't rely

837

00:29:58,549 --> 00:29:56,279

on simulation Theory these explanations

838

00:30:01,149 --> 00:29:58,559

include false memories confabulation

839

00:30:03,830 --> 00:30:01,159

parallel universes and even time travel

840

00:30:05,570 --> 00:30:03,840

and obviously we have no real way to

841

00:30:06,590 --> 00:30:05,580

confirm the cause of this phenomenon one

842

00:30:08,690 --> 00:30:06,600

way or another

843

00:30:10,130 --> 00:30:08,700

but when we stack it up alongside the

844

00:30:13,669 --> 00:30:10,140

other evidence that we may be living in

845

00:30:15,529 --> 00:30:13,679

a simulation it is certainly eerie

846

00:30:17,269 --> 00:30:15,539

and there's one final piece of evidence

847

00:30:19,010 --> 00:30:17,279

that we might be living in a simulation

848

00:30:21,470 --> 00:30:19,020

that's worth mentioning

849

00:30:23,389 --> 00:30:21,480

it's a relatively recent idea that links

850

00:30:25,130 --> 00:30:23,399

the simulation hypothesis to our

851
00:30:27,830 --> 00:30:25,140
awareness of multiple plausible

852
00:30:29,750 --> 00:30:27,840
apocalypse scenarios by suggesting that

853
00:30:30,769 --> 00:30:29,760
we live in some kind of an ancestor

854
00:30:33,950 --> 00:30:30,779
simulator

855
00:30:35,810 --> 00:30:33,960
it goes like this perhaps the point of

856
00:30:37,490 --> 00:30:35,820
this simulation is to explore how

857
00:30:40,070 --> 00:30:37,500
civilization copes with the growing

858
00:30:42,169 --> 00:30:40,080
existential risks that we Face from

859
00:30:44,029 --> 00:30:42,179
nuclear Annihilation to the rise of AI

860
00:30:46,490 --> 00:30:44,039
we find ourselves on the brink of

861
00:30:48,529 --> 00:30:46,500
potential self-destruction so could this

862
00:30:50,750 --> 00:30:48,539
convergence the potential apocalyptic

863
00:30:52,909 --> 00:30:50,760

scenarios be the very thing that this

864

00:30:55,190 --> 00:30:52,919

simulation was created to study

865

00:30:57,710 --> 00:30:55,200

the idea is not as far-fetched as it may

866

00:30:59,690 --> 00:30:57,720

seem at first glance simulations are

867

00:31:02,269 --> 00:30:59,700

often used for testing scenarios and

868

00:31:04,190 --> 00:31:02,279

predicting outcomes for instance we

869

00:31:06,289 --> 00:31:04,200

routinely use flight simulators to train

870

00:31:08,149 --> 00:31:06,299

Pilots simulating various possible

871

00:31:10,310 --> 00:31:08,159

scenarios and problems that they may

872

00:31:12,590 --> 00:31:10,320

encounter while flying a plane

873

00:31:15,289 --> 00:31:12,600

similarly could our universe be a

874

00:31:17,210 --> 00:31:15,299

massive civilization simulator where an

875

00:31:18,830 --> 00:31:17,220

advanced Society tests how we handle

876

00:31:20,990 --> 00:31:18,840

existential threats

877

00:31:23,330 --> 00:31:21,000

in this context each potential

878

00:31:24,649 --> 00:31:23,340

apocalyptic scenario represents a

879

00:31:27,110 --> 00:31:24,659

significant challenge that we must

880

00:31:29,570 --> 00:31:27,120

navigate to ensure our survival a

881

00:31:31,250 --> 00:31:29,580

nuclear Holocaust a climate disaster the

882

00:31:33,649 --> 00:31:31,260

devastating potential of artificial

883

00:31:35,930 --> 00:31:33,659

super intelligence or even a deadly

884

00:31:37,730 --> 00:31:35,940

pandemic could each be seen as tests

885

00:31:39,649 --> 00:31:37,740

within the simulation

886

00:31:41,090 --> 00:31:39,659

an advanced civilization might be

887

00:31:43,430 --> 00:31:41,100

interested in running these scenarios

888

00:31:45,110 --> 00:31:43,440

for several reasons they could be

889

00:31:47,149 --> 00:31:45,120

examining historical possibilities

890

00:31:49,850 --> 00:31:47,159

exploring different outcomes to learn

891

00:31:51,830 --> 00:31:49,860

from past mistakes or testing how a

892

00:31:54,169 --> 00:31:51,840

society similar to their own might

893

00:31:56,149 --> 00:31:54,179

handle various existential threats

894

00:31:58,070 --> 00:31:56,159

it's even been suggested that it could

895

00:32:00,470 --> 00:31:58,080

have been created by some version of us

896

00:32:02,090 --> 00:32:00,480

in the future trying to understand what

897

00:32:03,649 --> 00:32:02,100

happened to their ancestors in the

898

00:32:05,090 --> 00:32:03,659

distant past

899

00:32:08,029 --> 00:32:05,100

so having looked at all the evidence

900

00:32:09,470 --> 00:32:08,039

what is the verdict do we in fact live

901
00:32:11,269 --> 00:32:09,480
in a simulation

902
00:32:13,730 --> 00:32:11,279
as compelling as some of the arguments

903
00:32:15,590 --> 00:32:13,740
for the simulation hypothesis are the

904
00:32:17,930 --> 00:32:15,600
reality is that we can't know for sure

905
00:32:20,450 --> 00:32:17,940
because the hypothesis isn't falsifiable

906
00:32:22,430 --> 00:32:20,460
if we're living in a simulation there's

907
00:32:24,470 --> 00:32:22,440
no definitive test we could perform that

908
00:32:26,990 --> 00:32:24,480
could potentially prove it false because

909
00:32:28,909 --> 00:32:27,000
any evidence we could collect is also a

910
00:32:32,049 --> 00:32:28,919
part of the supposed simulation and can

911
00:32:34,190 --> 00:32:32,059
be manipulated or explained Away by it

912
00:32:36,590 --> 00:32:34,200
non-falsifiable hypotheses aren't

913
00:32:38,570 --> 00:32:36,600

necessarily wrong or meaningless but

914

00:32:40,250 --> 00:32:38,580

they aren't scientifically valid because

915

00:32:41,510 --> 00:32:40,260

they can't be tested and potentially

916

00:32:43,070 --> 00:32:41,520

proven wrong

917

00:32:45,110 --> 00:32:43,080

so when it comes to whether or not we

918

00:32:47,570 --> 00:32:45,120

live in a simulation there's just no

919

00:32:49,610 --> 00:32:47,580

real way for us to know for sure

920

00:32:51,470 --> 00:32:49,620

And yet when we look at the evidence

921

00:32:53,450 --> 00:32:51,480

that has presented itself and when we

922

00:32:55,090 --> 00:32:53,460

look at our own history with Advanced

923

00:32:57,769 --> 00:32:55,100

and potentially dangerous technology

924

00:33:00,110 --> 00:32:57,779

it's hard not to wonder if the reality

925

00:33:02,510 --> 00:33:00,120

in which we find ourselves might be much

926
00:33:04,490 --> 00:33:02,520
different and much spookier than we've

927
00:33:06,529 --> 00:33:04,500
been led to believe

928
00:33:08,029 --> 00:33:06,539
and perhaps there's another possibility

929
00:33:10,190 --> 00:33:08,039
that we can consider

930
00:33:12,769 --> 00:33:10,200
what if the universe isn't a simulation

931
00:33:15,710 --> 00:33:12,779
per se but a hologram

932
00:33:17,570 --> 00:33:15,720
now before your mind leaps to Star Trek

933
00:33:20,509 --> 00:33:17,580
style Holograms or even the ones you've

934
00:33:22,250 --> 00:33:20,519
seen on a credit card remember this the

935
00:33:24,409 --> 00:33:22,260
theory is a bit more complex and

936
00:33:26,690 --> 00:33:24,419
Abstract than those examples but I'll do

937
00:33:28,490 --> 00:33:26,700
my best to keep it digestible

938
00:33:30,889 --> 00:33:28,500

let's start with talking about what a

939

00:33:33,169 --> 00:33:30,899

hologram is and how it works

940

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

a hologram is a three-dimensional image

941

00:33:36,950 --> 00:33:34,799

produced through a process called

942

00:33:38,630 --> 00:33:36,960

holography unlike traditional

943

00:33:40,250 --> 00:33:38,640

photography which captures a

944

00:33:42,529 --> 00:33:40,260

two-dimensional representation of a

945

00:33:43,970 --> 00:33:42,539

scene holography records the light

946

00:33:45,470 --> 00:33:43,980

scattered from an object and then

947

00:33:47,330 --> 00:33:45,480

presents it in such a way that it

948

00:33:50,450 --> 00:33:47,340

appears as if the object is still there

949

00:33:52,310 --> 00:33:50,460

giving the viewer a 3D experience

950

00:33:53,149 --> 00:33:52,320

let's dig a bit deeper into how this

951
00:33:54,710 --> 00:33:53,159
works

952
00:33:57,230 --> 00:33:54,720
first let's talk about the key

953
00:33:58,549 --> 00:33:57,240
ingredient light when you look at an

954
00:34:00,110 --> 00:33:58,559
apple you're seeing the light that

955
00:34:02,450 --> 00:34:00,120
bounces off the apple and enters your

956
00:34:04,909 --> 00:34:02,460
eye a traditional photograph captures

957
00:34:07,250 --> 00:34:04,919
this light on a 2d surface but it loses

958
00:34:08,869 --> 00:34:07,260
the depth of the image this is because

959
00:34:10,730 --> 00:34:08,879
it doesn't capture the light's phase

960
00:34:13,129 --> 00:34:10,740
information which is about the wave's

961
00:34:15,589 --> 00:34:13,139
position in their oscillation cycle

962
00:34:17,570 --> 00:34:15,599
ography on the other hand captures both

963
00:34:20,149 --> 00:34:17,580

the intensity and the phase of the light

964

00:34:22,369 --> 00:34:20,159

wave it does this by splitting a laser

965

00:34:24,290 --> 00:34:22,379

beam into two separate beams the

966

00:34:26,389 --> 00:34:24,300

reference beam which remains untouched

967

00:34:28,790 --> 00:34:26,399

and the object beam which bounces off

968

00:34:30,950 --> 00:34:28,800

the object for making a hologram of

969

00:34:33,109 --> 00:34:30,960

when these two beams meet again on a

970

00:34:35,389 --> 00:34:33,119

piece of photographic film they create

971

00:34:37,190 --> 00:34:35,399

an interference pattern that records the

972

00:34:39,829 --> 00:34:37,200

phase and amplitude of the light waves

973

00:34:41,149 --> 00:34:39,839

thus preserving the 3D information of

974

00:34:42,889 --> 00:34:41,159

the object

975

00:34:45,230 --> 00:34:42,899

now imagine you're looking at a

976
00:34:47,210 --> 00:34:45,240
holographic sticker on a credit card as

977
00:34:48,950 --> 00:34:47,220
you tilt the card back and forth you see

978
00:34:51,349 --> 00:34:48,960
the image change is if you're viewing it

979
00:34:53,450 --> 00:34:51,359
from different angles that's because the

980
00:34:55,790 --> 00:34:53,460
Hologram has recorded the lights 3D

981
00:34:57,829 --> 00:34:55,800
information allowing you to experience

982
00:35:00,770 --> 00:34:57,839
different perspectives just as you would

983
00:35:03,530 --> 00:35:00,780
with a real object yet despite their 3D

984
00:35:05,810 --> 00:35:03,540
appearance Holograms are physically 2D

985
00:35:07,730 --> 00:35:05,820
structures the depth you see doesn't

986
00:35:09,770 --> 00:35:07,740
come from the actual physical depth in

987
00:35:12,170 --> 00:35:09,780
the image but from the way your brain

988
00:35:14,089 --> 00:35:12,180

interprets the recorded light waves

989

00:35:15,290 --> 00:35:14,099

and if that doesn't totally make sense

990

00:35:17,390 --> 00:35:15,300

or if you're having a hard time

991

00:35:19,370 --> 00:35:17,400

visualizing how that works don't stress

992

00:35:21,109 --> 00:35:19,380

about it the most important thing to

993

00:35:23,930 --> 00:35:21,119

remember is that a hologram is created

994

00:35:25,370 --> 00:35:23,940

by recording 3D information onto a 2d

995

00:35:27,470 --> 00:35:25,380

surface

996

00:35:29,930 --> 00:35:27,480

okay so now that we more or less

997

00:35:31,490 --> 00:35:29,940

understand how a hologram Works what

998

00:35:33,589 --> 00:35:31,500

does it mean to say that the universe

999

00:35:35,690 --> 00:35:33,599

itself might be a hologram

1000

00:35:37,730 --> 00:35:35,700

the concept of a holographic Universe

1001
00:35:40,130 --> 00:35:37,740
also known as the holographic principle

1002
00:35:42,829 --> 00:35:40,140
was initially proposed by physicist

1003
00:35:44,750 --> 00:35:42,839
Leonard suskind in the late 20th century

1004
00:35:46,609 --> 00:35:44,760
based on the work of fellow physicists

1005
00:35:48,109 --> 00:35:46,619
who were attempting to reconcile the

1006
00:35:49,190 --> 00:35:48,119
theories of quantum mechanics and

1007
00:35:51,530 --> 00:35:49,200
gravity

1008
00:35:53,810 --> 00:35:51,540
the seed of the idea actually came from

1009
00:35:55,970 --> 00:35:53,820
Research into black holes Stephen

1010
00:35:57,950 --> 00:35:55,980
Hawking the famous theoretical physicist

1011
00:36:00,230 --> 00:35:57,960
discovered that black holes aren't

1012
00:36:02,510 --> 00:36:00,240
completely black they emit what's now

1013
00:36:04,370 --> 00:36:02,520

known as Hawking radiation and can

1014

00:36:07,310 --> 00:36:04,380

eventually evaporate away

1015

00:36:09,050 --> 00:36:07,320

this leads to a paradox if a black hole

1016

00:36:10,609 --> 00:36:09,060

evaporates what happens to the

1017

00:36:13,069 --> 00:36:10,619

information about the matter it

1018

00:36:15,230 --> 00:36:13,079

swallowed according to the principles of

1019

00:36:16,730 --> 00:36:15,240

quantum mechanics this information can't

1020

00:36:18,589 --> 00:36:16,740

be destroyed

1021

00:36:21,470 --> 00:36:18,599

to resolve this black hole information

1022

00:36:23,450 --> 00:36:21,480

Paradox suskin proposed the idea that

1023

00:36:25,730 --> 00:36:23,460

all of the information swallowed by a

1024

00:36:27,829 --> 00:36:25,740

black hole is actually stored in a

1025

00:36:29,870 --> 00:36:27,839

two-dimensional form on its surface area

1026

00:36:31,790 --> 00:36:29,880

its Event Horizon

1027

00:36:34,069 --> 00:36:31,800

if the information about everything that

1028

00:36:35,990 --> 00:36:34,079

falls into a black hole is stored in 2D

1029

00:36:37,130 --> 00:36:36,000

on its surface then it's possible the

1030

00:36:40,490 --> 00:36:37,140

same could be true for the whole

1031

00:36:42,770 --> 00:36:40,500

universe this implies our 3D reality is

1032

00:36:44,930 --> 00:36:42,780

a projection of information stored on a

1033

00:36:46,250 --> 00:36:44,940

distant 2D surface kind of like a

1034

00:36:49,190 --> 00:36:46,260

hologram

1035

00:36:51,109 --> 00:36:49,200

pretty wild idea right the key Point

1036

00:36:54,050 --> 00:36:51,119

here is not to think about the universe

1037

00:36:56,810 --> 00:36:54,060

as a physical hologram but rather as a

1038

00:36:58,849 --> 00:36:56,820

mathematical one it's a new way to

1039

00:37:00,710 --> 00:36:58,859

mathematically describe the universe and

1040

00:37:01,609 --> 00:37:00,720

its workings at the most fundamental

1041

00:37:03,770 --> 00:37:01,619

level

1042

00:37:06,470 --> 00:37:03,780

even if the holographic principle is

1043

00:37:09,290 --> 00:37:06,480

correct we wouldn't necessarily feel the

1044

00:37:11,930 --> 00:37:09,300

universe as a 2d surface we would still

1045

00:37:14,089 --> 00:37:11,940

perceive our reality as 3D much like we

1046

00:37:15,890 --> 00:37:14,099

see a holograph on a credit card is 3D

1047

00:37:17,990 --> 00:37:15,900

even though it's flat

1048

00:37:19,790 --> 00:37:18,000

to make things even weirder the

1049

00:37:22,370 --> 00:37:19,800

holographic principle implies that

1050

00:37:24,589 --> 00:37:22,380

gravity in space-time itself could be

1051
00:37:26,750 --> 00:37:24,599
emergent properties coming out of the

1052
00:37:29,690 --> 00:37:26,760
underlying Quantum information

1053
00:37:31,609 --> 00:37:29,700
that idea in and of itself represents a

1054
00:37:33,589 --> 00:37:31,619
profound paradigm shift in how we

1055
00:37:35,810 --> 00:37:33,599
understand the universe and it's one

1056
00:37:37,730 --> 00:37:35,820
that will keep coming back to as we move

1057
00:37:40,069 --> 00:37:37,740
into part three of this series

1058
00:37:42,170 --> 00:37:40,079
the holographic principle is frankly

1059
00:37:44,270 --> 00:37:42,180
mind-blowing and the deeper you dive

1060
00:37:46,730 --> 00:37:44,280
into this possibility the more profound

1061
00:37:48,710 --> 00:37:46,740
the implications become it's worth

1062
00:37:50,750 --> 00:37:48,720
taking a quick tour through what the

1063
00:37:52,609 --> 00:37:50,760

reality of a holographic Universe could

1064

00:37:53,569 --> 00:37:52,619

mean for the nature of reality as we

1065

00:37:56,089 --> 00:37:53,579

know it

1066

00:37:57,710 --> 00:37:56,099

and if you find these ideas intriguing a

1067

00:37:59,510 --> 00:37:57,720

lot of what I'm about to discuss is

1068

00:38:01,790 --> 00:37:59,520

drawn from a phenomenal book by Michael

1069

00:38:04,730 --> 00:38:01,800

Talbot called the holographic Universe

1070

00:38:06,650 --> 00:38:04,740

the Revolutionary theory of reality it's

1071

00:38:08,030 --> 00:38:06,660

a super fun read and it does a great job

1072

00:38:10,370 --> 00:38:08,040

of breaking down some of the more

1073

00:38:11,750 --> 00:38:10,380

challenging Concepts I'll link to it in

1074

00:38:13,490 --> 00:38:11,760

the episode brief

1075

00:38:15,230 --> 00:38:13,500

so let's get into it

1076

00:38:17,210 --> 00:38:15,240

first of all one major difference

1077

00:38:19,490 --> 00:38:17,220

between the holographic principle and

1078

00:38:22,190 --> 00:38:19,500

various simulation theories is that it

1079

00:38:23,930 --> 00:38:22,200

eliminates the need for a programmer as

1080

00:38:25,609 --> 00:38:23,940

we've discussed simulation theories

1081

00:38:27,829 --> 00:38:25,619

suggests that our entire reality

1082

00:38:30,170 --> 00:38:27,839

including the universe itself is an

1083

00:38:32,270 --> 00:38:30,180

artificial construct an advanced

1084

00:38:34,250 --> 00:38:32,280

computer simulation created by a more

1085

00:38:35,569 --> 00:38:34,260

sophisticated technologically advanced

1086

00:38:37,609 --> 00:38:35,579

civilization

1087

00:38:39,890 --> 00:38:37,619

basically in this model there is a

1088

00:38:42,770 --> 00:38:39,900

puppeteer or rather a super Advanced

1089

00:38:44,810 --> 00:38:42,780

programmer the simulation Theory implies

1090

00:38:45,829 --> 00:38:44,820

intentionality and design behind our

1091

00:38:47,930 --> 00:38:45,839

reality

1092

00:38:50,510 --> 00:38:47,940

however the holographic Universe

1093

00:38:52,609 --> 00:38:50,520

hypothesis as we've discussed suggests

1094

00:38:54,530 --> 00:38:52,619

our 3D reality is a kind of projection

1095

00:38:55,670 --> 00:38:54,540

from a 2d surface at the edge of the

1096

00:38:57,829 --> 00:38:55,680

universe

1097

00:38:59,870 --> 00:38:57,839

but here's the crucial point in the

1098

00:39:02,390 --> 00:38:59,880

holographic Universe hypothesis there's

1099

00:39:04,670 --> 00:39:02,400

no Puppeteer pulling the strings the

1100

00:39:06,589 --> 00:39:04,680

projection happens naturally as a result

1101
00:39:09,890 --> 00:39:06,599
of the way the universe fundamentally

1102
00:39:11,930 --> 00:39:09,900
works it's a natural process it's just

1103
00:39:14,210 --> 00:39:11,940
how the universe operates and it doesn't

1104
00:39:16,430 --> 00:39:14,220
necessarily require any intentionality

1105
00:39:19,069 --> 00:39:16,440
or Creator though I'd argue that it

1106
00:39:20,990 --> 00:39:19,079
doesn't necessarily preclude one either

1107
00:39:22,849 --> 00:39:21,000
another stunning implication of the

1108
00:39:24,710 --> 00:39:22,859
holographic Universe model is that

1109
00:39:27,349 --> 00:39:24,720
everything that exists is interconnected

1110
00:39:29,089 --> 00:39:27,359
on a deep and profound level and that

1111
00:39:30,950 --> 00:39:29,099
any divisions between things are

1112
00:39:32,089 --> 00:39:30,960
illusions created by our limited

1113
00:39:34,490 --> 00:39:32,099

perspective

1114

00:39:37,250 --> 00:39:34,500

to understand why this is we need to

1115

00:39:39,170 --> 00:39:37,260

return briefly to how a hologram works

1116

00:39:41,210 --> 00:39:39,180

in a hologram all of the information

1117

00:39:43,670 --> 00:39:41,220

necessary to create the entire

1118

00:39:46,069 --> 00:39:43,680

holographic projection is contained

1119

00:39:47,329 --> 00:39:46,079

within each individual part or region of

1120

00:39:49,790 --> 00:39:47,339

the hologram

1121

00:39:52,490 --> 00:39:49,800

this means that every piece of the

1122

00:39:54,470 --> 00:39:52,500

Hologram holds the complete blueprint or

1123

00:39:55,490 --> 00:39:54,480

encoding for the entire holographic

1124

00:39:57,770 --> 00:39:55,500

image

1125

00:39:59,510 --> 00:39:57,780

similarly in the holographic Universe

1126
00:40:01,609 --> 00:39:59,520
model the information that makes up our

1127
00:40:03,589 --> 00:40:01,619
reality is encoded throughout the fabric

1128
00:40:05,210 --> 00:40:03,599
of the universe much like the

1129
00:40:08,089 --> 00:40:05,220
interference pattern on the holographic

1130
00:40:09,890 --> 00:40:08,099
plate each individual part or region of

1131
00:40:12,530 --> 00:40:09,900
the universe contains the complete

1132
00:40:14,930 --> 00:40:12,540
information necessary to reconstruct the

1133
00:40:16,730 --> 00:40:14,940
entire holographic projection

1134
00:40:19,130 --> 00:40:16,740
and once again if you're having trouble

1135
00:40:21,470 --> 00:40:19,140
visualizing that don't worry here's

1136
00:40:23,510 --> 00:40:21,480
another way to think about it imagine a

1137
00:40:25,190 --> 00:40:23,520
holographic image of a flower if you

1138
00:40:27,530 --> 00:40:25,200

were to cut the Hologram into smaller

1139

00:40:30,230 --> 00:40:27,540

pieces each fragment would still contain

1140

00:40:31,910 --> 00:40:30,240

the encoding for the entire flower each

1141

00:40:34,010 --> 00:40:31,920

fragment when illuminated would

1142

00:40:36,770 --> 00:40:34,020

reconstruct the full image of the flower

1143

00:40:38,630 --> 00:40:36,780

albeit with reduced Clarity due to the

1144

00:40:41,089 --> 00:40:38,640

loss of some information

1145

00:40:42,950 --> 00:40:41,099

in the same way if we were to zoom in on

1146

00:40:45,589 --> 00:40:42,960

a specific part of the universe such as

1147

00:40:47,510 --> 00:40:45,599

a single atom or a human being that

1148

00:40:49,490 --> 00:40:47,520

localized region would contain the

1149

00:40:52,190 --> 00:40:49,500

information necessary to describe the

1150

00:40:54,109 --> 00:40:52,200

entirety of the universe the holographic

1151
00:40:56,569 --> 00:40:54,119
model suggests that the universe is

1152
00:40:58,790 --> 00:40:56,579
fundamentally interconnected and every

1153
00:40:59,990 --> 00:40:58,800
part reflects the whole in its encoded

1154
00:41:02,030 --> 00:41:00,000
information

1155
00:41:04,490 --> 00:41:02,040
this fascinating aspect of the

1156
00:41:06,650 --> 00:41:04,500
holographic model of the universe brings

1157
00:41:09,770 --> 00:41:06,660
to mind the words of the 13th century

1158
00:41:12,829 --> 00:41:09,780
Persian poet Rumi you are not a drop in

1159
00:41:14,810 --> 00:41:12,839
the ocean you are the ocean in a drop

1160
00:41:16,310 --> 00:41:14,820
another intriguing aspect of the

1161
00:41:18,770 --> 00:41:16,320
interconnectedness implied by the

1162
00:41:21,589 --> 00:41:18,780
holographic Universe hypothesis is that

1163
00:41:23,690 --> 00:41:21,599

it further implies a non-local universe

1164

00:41:25,790 --> 00:41:23,700

what's so intriguing about this is that

1165

00:41:27,890 --> 00:41:25,800

it could provide an explanation for some

1166

00:41:30,050 --> 00:41:27,900

of the spookier and seemingly impossible

1167

00:41:31,670 --> 00:41:30,060

aspects of quantum mechanics

1168

00:41:33,589 --> 00:41:31,680

let's start with the idea of

1169

00:41:35,270 --> 00:41:33,599

non-locality because it's not super

1170

00:41:36,950 --> 00:41:35,280

intuitive if you haven't explored this

1171

00:41:38,569 --> 00:41:36,960

idea before

1172

00:41:40,550 --> 00:41:38,579

when we say that the universe is

1173

00:41:42,470 --> 00:41:40,560

non-local what we mean is that it

1174

00:41:45,290 --> 00:41:42,480

operates beyond the limitations of

1175

00:41:47,210 --> 00:41:45,300

locality or physical distance in other

1176

00:41:49,069 --> 00:41:47,220

words events and phenomena in the

1177

00:41:51,890 --> 00:41:49,079

universe can be connected and influence

1178

00:41:54,230 --> 00:41:51,900

each other instantaneously regardless of

1179

00:41:56,390 --> 00:41:54,240

the spatial separation between them

1180

00:41:57,770 --> 00:41:56,400

this is so counterintuitive to us

1181

00:41:59,390 --> 00:41:57,780

because it flies in the face of

1182

00:42:01,849 --> 00:41:59,400

everything we think we know about our

1183

00:42:04,130 --> 00:42:01,859

reality and how it works in our everyday

1184

00:42:06,530 --> 00:42:04,140

experience we tend to think of cause and

1185

00:42:08,930 --> 00:42:06,540

effect as a linear progression if event

1186

00:42:11,030 --> 00:42:08,940

what happens in one location its influence

1187

00:42:12,470 --> 00:42:11,040

can only reach neighboring locations

1188

00:42:14,089 --> 00:42:12,480

over time

1189

00:42:15,890 --> 00:42:14,099

think of how the light from the sun

1190

00:42:18,109 --> 00:42:15,900

takes eight minutes to reach the Earth

1191

00:42:19,370 --> 00:42:18,119

or how if you throw a rock into a lake

1192

00:42:21,290 --> 00:42:19,380

it will take a few moments for those

1193

00:42:23,690 --> 00:42:21,300

ripples to reach the shore

1194

00:42:25,609 --> 00:42:23,700

this is the principle of local causality

1195

00:42:27,829 --> 00:42:25,619

where causes and effects are limited by

1196

00:42:30,650 --> 00:42:27,839

the speed of light and information can

1197

00:42:32,690 --> 00:42:30,660

only travel at or below this speed

1198

00:42:34,010 --> 00:42:32,700

however the concept of non-locality

1199

00:42:36,410 --> 00:42:34,020

challenges this conventional

1200

00:42:38,750 --> 00:42:36,420

understanding in the realm of quantum

1201
00:42:40,190 --> 00:42:38,760
physics non-locality refers to the

1202
00:42:42,710 --> 00:42:40,200
instantaneous connection between

1203
00:42:45,530 --> 00:42:42,720
particles or systems even when they are

1204
00:42:48,230 --> 00:42:45,540
separated by vast distances or what

1205
00:42:50,030 --> 00:42:48,240
Einstein famously referred to as spooky

1206
00:42:52,609 --> 00:42:50,040
action at a distance

1207
00:42:54,770 --> 00:42:52,619
this means that changes in one particle

1208
00:42:56,810 --> 00:42:54,780
can instantaneously affect the state of

1209
00:42:59,030 --> 00:42:56,820
another regardless of how much distance

1210
00:43:01,550 --> 00:42:59,040
is in between them one of the most

1211
00:43:04,250 --> 00:43:01,560
famous examples of non-locality is

1212
00:43:06,170 --> 00:43:04,260
quantum entanglement when two particles

1213
00:43:07,970 --> 00:43:06,180

become entangled their properties such

1214

00:43:10,970 --> 00:43:07,980

as spin or polarization become

1215

00:43:12,349 --> 00:43:10,980

correlated this correlation remains even

1216

00:43:14,690 --> 00:43:12,359

when the particles are physically

1217

00:43:16,790 --> 00:43:14,700

separated by large distances

1218

00:43:18,710 --> 00:43:16,800

if the state of one entangled particle

1219

00:43:21,349 --> 00:43:18,720

is measured or manipulated the other

1220

00:43:23,290 --> 00:43:21,359

entangled particle instantaneously knows

1221

00:43:26,329 --> 00:43:23,300

and adjusts its state accordingly

1222

00:43:28,609 --> 00:43:26,339

irrespective of the spatial separation

1223

00:43:30,470 --> 00:43:28,619

this instantaneous communication between

1224

00:43:32,150 --> 00:43:30,480

entangled particles is a direct

1225

00:43:34,609 --> 00:43:32,160

challenge to everything we know about

1226

00:43:36,410 --> 00:43:34,619

cause and effect and it suggests a

1227

00:43:39,589 --> 00:43:36,420

deeper underlying interconnectedness

1228

00:43:41,030 --> 00:43:39,599

that transcends space and time it

1229

00:43:43,130 --> 00:43:41,040

implies that information is shared

1230

00:43:45,109 --> 00:43:43,140

between the entangled particles faster

1231

00:43:47,569 --> 00:43:45,119

than the speed of light which as we've

1232

00:43:48,589 --> 00:43:47,579

discussed shouldn't be possible and yet

1233

00:43:51,050 --> 00:43:48,599

it is

1234

00:43:52,970 --> 00:43:51,060

the concept of non-locality is baked

1235

00:43:55,550 --> 00:43:52,980

into the holographic Universe hypothesis

1236

00:43:57,650 --> 00:43:55,560

it suggests that this interconnectedness

1237

00:43:59,990 --> 00:43:57,660

isn't just a weird feature of quantum

1238

00:44:02,329 --> 00:44:00,000

mechanics but is a reflection of the

1239

00:44:03,050 --> 00:44:02,339

very nature and fabric of reality as a

1240

00:44:04,970 --> 00:44:03,060

whole

1241

00:44:06,710 --> 00:44:04,980

because just like in our example of the

1242

00:44:09,050 --> 00:44:06,720

Hologram of the flower that can be cut

1243

00:44:11,750 --> 00:44:09,060

into tiny pieces and each piece can

1244

00:44:13,790 --> 00:44:11,760

still generate the entire hologram the

1245

00:44:15,890 --> 00:44:13,800

holographic model proposes that the

1246

00:44:17,930 --> 00:44:15,900

information that makes up our reality is

1247

00:44:20,630 --> 00:44:17,940

distributed throughout the entirety of

1248

00:44:22,609 --> 00:44:20,640

the universe and therefore any changes

1249

00:44:24,829 --> 00:44:22,619

or influences on that information can

1250

00:44:27,410 --> 00:44:24,839

have non-local effects

1251
00:44:29,750 --> 00:44:27,420
to visualize this imagine a hologram

1252
00:44:31,250 --> 00:44:29,760
projected into space if you were to

1253
00:44:33,230 --> 00:44:31,260
modify a specific part of the

1254
00:44:34,849 --> 00:44:33,240
holographic plate it would

1255
00:44:36,829 --> 00:44:34,859
instantaneously affect the entire

1256
00:44:38,930 --> 00:44:36,839
holographic projection

1257
00:44:41,030 --> 00:44:38,940
similarly in the holographic Universe

1258
00:44:42,770 --> 00:44:41,040
hypothesis any changes or interactions

1259
00:44:45,050 --> 00:44:42,780
with the underlying holographic

1260
00:44:47,089 --> 00:44:45,060
information would have the potential to

1261
00:44:49,609 --> 00:44:47,099
Ripple throughout the entire fabric of

1262
00:44:51,050 --> 00:44:49,619
reality transcending the limitations of

1263
00:44:53,030 --> 00:44:51,060

space and time

1264

00:44:55,130 --> 00:44:53,040

what's so attractive to me at least

1265

00:44:57,410 --> 00:44:55,140

about this model is that it proposes a

1266

00:44:59,210 --> 00:44:57,420

view of reality we're in the strangest

1267

00:45:01,670 --> 00:44:59,220

and most seemingly impossible features

1268

00:45:04,069 --> 00:45:01,680

of quantum mechanics aren't bizarre

1269

00:45:05,870 --> 00:45:04,079

anomalies that we have to accept without

1270

00:45:08,450 --> 00:45:05,880

having any way to understand or account

1271

00:45:10,970 --> 00:45:08,460

for them in this model these things

1272

00:45:13,130 --> 00:45:10,980

become obvious and integral parts of the

1273

00:45:14,870 --> 00:45:13,140

fabric of reality itself

1274

00:45:16,670 --> 00:45:14,880

frankly it's exactly the sort of

1275

00:45:19,010 --> 00:45:16,680

paradigm shift that we've needed for the

1276

00:45:21,470 --> 00:45:19,020

past Century that's not enough to prove

1277

00:45:23,030 --> 00:45:21,480

that it's necessarily true but at the

1278

00:45:25,730 --> 00:45:23,040

very least it bodes well for the

1279

00:45:28,190 --> 00:45:25,740

durability of this Theory

1280

00:45:29,930 --> 00:45:28,200

and this idea has even more profound

1281

00:45:31,849 --> 00:45:29,940

implications when we consider the

1282

00:45:32,630 --> 00:45:31,859

implications for Consciousness and the

1283

00:45:34,430 --> 00:45:32,640

mind

1284

00:45:36,770 --> 00:45:34,440

again we come back to Rumi's words

1285

00:45:39,050 --> 00:45:36,780

reminding us that we are not a drop in

1286

00:45:41,270 --> 00:45:39,060

the ocean but the ocean in a drop

1287

00:45:43,370 --> 00:45:41,280

with the holographic model suggests is

1288

00:45:45,589 --> 00:45:43,380

the possibility that the Mind itself is

1289

00:45:47,329 --> 00:45:45,599

a holographic processor that is

1290

00:45:48,470 --> 00:45:47,339

inextricably linked to the Hologram

1291

00:45:50,809 --> 00:45:48,480

itself

1292

00:45:52,730 --> 00:45:50,819

for example while a hologram is created

1293

00:45:54,109 --> 00:45:52,740

by encoding information onto a

1294

00:45:56,990 --> 00:45:54,119

two-dimensional surface such as a

1295

00:45:58,970 --> 00:45:57,000

holographic plate the mind also encodes

1296

00:46:01,130 --> 00:45:58,980

information through our senses which

1297

00:46:02,089 --> 00:46:01,140

capture and transmit sensory data to the

1298

00:46:03,950 --> 00:46:02,099

brain

1299

00:46:05,809 --> 00:46:03,960

the sensory information is then

1300

00:46:08,390 --> 00:46:05,819

processed and interpreted by the brain

1301

00:46:10,309 --> 00:46:08,400

your experience of reality isn't a

1302

00:46:12,470 --> 00:46:10,319

direct experience but rather the

1303

00:46:14,270 --> 00:46:12,480

translation of coded information

1304

00:46:15,950 --> 00:46:14,280

when you see a flower the visual

1305

00:46:18,290 --> 00:46:15,960

information is encoded through the

1306

00:46:20,150 --> 00:46:18,300

sensory input of your eyes this

1307

00:46:21,710 --> 00:46:20,160

information is then transmitted to the

1308

00:46:23,809 --> 00:46:21,720

brain where it is decoded and

1309

00:46:25,490 --> 00:46:23,819

interpreted allowing you to perceive the

1310

00:46:28,670 --> 00:46:25,500

flower as a three-dimensional object

1311

00:46:30,410 --> 00:46:28,680

with specific colors shapes and textures

1312

00:46:32,450 --> 00:46:30,420

as you'll recall from part one of this

1313

00:46:34,309 --> 00:46:32,460

series we don't currently have a great

1314

00:46:36,710 --> 00:46:34,319

explanation for how that perception of

1315

00:46:38,210 --> 00:46:36,720

our environment actually works and while

1316

00:46:40,130 --> 00:46:38,220

the holographic model of the mind

1317

00:46:41,390 --> 00:46:40,140

doesn't solve all of our problems with

1318

00:46:43,490 --> 00:46:41,400

regard to the experience of

1319

00:46:45,710 --> 00:46:43,500

Consciousness it at least helps us make

1320

00:46:48,050 --> 00:46:45,720

some considerable progress

1321

00:46:49,790 --> 00:46:48,060

and perhaps the most profound and

1322

00:46:52,069 --> 00:46:49,800

challenging aspect of the holographic

1323

00:46:53,690 --> 00:46:52,079

model is that it also suggests that the

1324

00:46:56,270 --> 00:46:53,700

mind is not limited by physical

1325

00:46:58,970 --> 00:46:56,280

boundaries allowing for non-local

1326
00:47:01,250 --> 00:46:58,980
information exchange this means that the

1327
00:47:03,050 --> 00:47:01,260
mind can access information Beyond its

1328
00:47:05,329 --> 00:47:03,060
immediate surroundings or even beyond

1329
00:47:07,849 --> 00:47:05,339
the confines of space and time

1330
00:47:10,790 --> 00:47:07,859
for instance consider experiences like

1331
00:47:12,290 --> 00:47:10,800
Intuition or sudden insights these often

1332
00:47:14,930 --> 00:47:12,300
involve the Mind accessing information

1333
00:47:16,609 --> 00:47:14,940
or making connections that go beyond the

1334
00:47:18,470 --> 00:47:16,619
linear thought process

1335
00:47:20,329 --> 00:47:18,480
the holographic nature of the Mind

1336
00:47:22,270 --> 00:47:20,339
suggests that this non-local information

1337
00:47:24,650 --> 00:47:22,280
exchange is possible because

1338
00:47:26,450 --> 00:47:24,660

Consciousness is interconnected with the

1339

00:47:28,430 --> 00:47:26,460

holographic fabric of the universe

1340

00:47:30,170 --> 00:47:28,440

allowing for the integration of

1341

00:47:31,730 --> 00:47:30,180

information from a broader field of

1342

00:47:33,470 --> 00:47:31,740

consciousness

1343

00:47:36,109 --> 00:47:33,480

but that's not all that the holographic

1344

00:47:37,430 --> 00:47:36,119

model of the Mind allows for if it turns

1345

00:47:39,230 --> 00:47:37,440

out that the mind and the universe

1346

00:47:41,390 --> 00:47:39,240

behave in the same manner as a hologram

1347

00:47:43,370 --> 00:47:41,400

then suddenly we have to completely

1348

00:47:45,770 --> 00:47:43,380

rethink what is possible and what is

1349

00:47:47,270 --> 00:47:45,780

impossible and we quickly find that many

1350

00:47:48,950 --> 00:47:47,280

of the things that we've written off and

1351
00:47:51,770 --> 00:47:48,960
relegated to the realm of the woo

1352
00:47:53,750 --> 00:47:51,780
suddenly make perfect sense in the

1353
00:47:55,250 --> 00:47:53,760
holographic view Consciousness is not

1354
00:47:57,589 --> 00:47:55,260
confined to the boundaries of the

1355
00:48:00,170 --> 00:47:57,599
individual brain but is interconnected

1356
00:48:02,809 --> 00:48:00,180
with the holographic field of reality

1357
00:48:05,030 --> 00:48:02,819
in that Paradigm things like telepathy

1358
00:48:08,089 --> 00:48:05,040
precognition and other SCI phenomena

1359
00:48:10,730 --> 00:48:08,099
cease to be spooky and become logical

1360
00:48:12,829 --> 00:48:10,740
and natural results of the cosmic order

1361
00:48:15,109 --> 00:48:12,839
these experiences can be explained by

1362
00:48:17,150 --> 00:48:15,119
non-local information exchange something

1363
00:48:19,609 --> 00:48:17,160

that quantum mechanics has already shown

1364

00:48:21,109 --> 00:48:19,619

us to be possible in the same way that

1365

00:48:23,390 --> 00:48:21,119

two entangled particles can share

1366

00:48:25,730 --> 00:48:23,400

information instantaneously this model

1367

00:48:28,670 --> 00:48:25,740

suggests that the Mind may also be able

1368

00:48:30,109 --> 00:48:28,680

to access non-local information in ways

1369

00:48:32,809 --> 00:48:30,119

that are considered to be impossible

1370

00:48:34,370 --> 00:48:32,819

under our current paradigm

1371

00:48:37,010 --> 00:48:34,380

and that's where we'll leave it until

1372

00:48:39,230 --> 00:48:37,020

next time because frankly from here the

1373

00:48:41,690 --> 00:48:39,240

ideas only get more challenging and more

1374

00:48:43,910 --> 00:48:41,700

profound and as I'm hoping you can sense

1375

00:48:46,490 --> 00:48:43,920

this line of questioning has led us

1376

00:48:48,530 --> 00:48:46,500

inexorably to a Tipping Point

1377

00:48:50,630 --> 00:48:48,540

we've dismantled our old ways of viewing

1378

00:48:52,370 --> 00:48:50,640

the world and through the process of

1379

00:48:54,650 --> 00:48:52,380

interrogating our most fundamental

1380

00:48:57,290 --> 00:48:54,660

assumptions we've stumbled upon some

1381

00:49:00,290 --> 00:48:57,300

tantalizing Clues hinting at a profound

1382

00:49:02,390 --> 00:49:00,300

new way of thinking we find ourselves on

1383

00:49:04,430 --> 00:49:02,400

the precipice of a radical paradigm

1384

00:49:06,770 --> 00:49:04,440

shift that has the potential to

1385

00:49:09,349 --> 00:49:06,780

integrate the most impossible aspects of

1386

00:49:13,550 --> 00:49:09,359

our reality from quantum mechanics to

1387

00:49:14,840 --> 00:49:13,560

anomalous experience and yes even UFOs

1388

00:49:21,670 --> 00:49:14,850

until next time