



1  
00:00:00,480 --> 00:00:09,280

[Music]

2  
00:00:13,450 --> 00:00:11,110  
matter everybody knows that

3  
00:00:15,390 --> 00:00:13,460  
consciousness is deeply tangled or

4  
00:00:18,519 --> 00:00:15,400  
entangled with a lot of these other

5  
00:00:21,609 --> 00:00:18,529  
topics and and concepts quantum

6  
00:00:27,249 --> 00:00:21,619  
phenomena randomness sigh causality free

7  
00:00:29,080 --> 00:00:27,259  
will and it's one big tangled mess and I

8  
00:00:31,229 --> 00:00:29,090  
don't claim to be able to untangle all

9  
00:00:33,819 --> 00:00:31,239  
of that but at least we need to be

10  
00:00:36,210 --> 00:00:33,829  
constantly aware of how complex the

11  
00:00:39,220 --> 00:00:36,220  
problem is that we're dealing with

12  
00:00:42,070 --> 00:00:39,230  
it leads all of us myself included into

13  
00:00:46,270 --> 00:00:42,080

a lots of confusions about common

14

00:00:48,310 --> 00:00:46,280

concepts and so unfortunately what what

15

00:00:50,800 --> 00:00:48,320

seems to end up happening is a lot of

16

00:00:54,340 --> 00:00:50,810

the discussion is a word salad taken

17

00:00:56,260 --> 00:00:54,350

from this slide and and there's not

18

00:00:58,900 --> 00:00:56,270

nearly as much clarity as there needs to

19

00:01:00,850 --> 00:00:58,910

be for good traction I think how is

20

00:01:01,990 --> 00:01:00,860

consciousness like Las Vegas well it

21

00:01:06,280 --> 00:01:02,000

looks very different to different

22

00:01:07,929 --> 00:01:06,290

visitors it's exciting and attractive

23

00:01:10,480 --> 00:01:07,939

it's filled with bright lights and

24

00:01:12,219 --> 00:01:10,490

promise of great rewards it seems like

25

00:01:15,730 --> 00:01:12,229

there's a lot of neon around the concept

26  
00:01:19,030 --> 00:01:15,740  
of consciousness and and people see it

27  
00:01:23,200 --> 00:01:19,040  
as somehow very attractive a very

28  
00:01:25,120 --> 00:01:23,210  
central to the whole problem of how the

29  
00:01:26,500 --> 00:01:25,130  
human being functions and how our

30  
00:01:28,090 --> 00:01:26,510  
interactions with the world and how

31  
00:01:31,120 --> 00:01:28,100  
these phenomenon take place and so on

32  
00:01:32,800 --> 00:01:31,130  
and I'm just suggesting that we're

33  
00:01:36,070 --> 00:01:32,810  
putting a little too much emphasis on

34  
00:01:39,010 --> 00:01:36,080  
this some cases so this is neon lights

35  
00:01:40,810 --> 00:01:39,020  
in Las Vegas but it's strangely

36  
00:01:44,310 --> 00:01:40,820  
unsatisfying after a while and off and

37  
00:01:48,399 --> 00:01:44,320  
leaves you a bit poorer than before I

38  
00:01:51,310 --> 00:01:48,409

think our focus is somewhat misplaced or

39  
00:01:52,539 --> 00:01:51,320  
emphasis is misplaced some somewhat and

40  
00:01:57,880 --> 00:01:52,549  
of course whatever happens there stays

41  
00:02:00,640 --> 00:01:57,890  
there ok so the first thing that gives

42  
00:02:02,560 --> 00:02:00,650  
me a rash is people don't define what

43  
00:02:06,880 --> 00:02:02,570  
they're talking about with respect to

44  
00:02:09,039 --> 00:02:06,890  
consciousness and this is all pervasive

45  
00:02:12,010 --> 00:02:09,049  
really there's so many different

46  
00:02:14,620 --> 00:02:12,020  
definitions of consciousness

47  
00:02:17,290 --> 00:02:14,630  
do you have it when you're asleep does

48  
00:02:20,260 --> 00:02:17,300  
it require self-awareness do you have it

49  
00:02:22,270 --> 00:02:20,270  
in a coma does an animal have it are you

50  
00:02:24,810 --> 00:02:22,280  
talking really about mind or about soul

51  
00:02:28,420 --> 00:02:24,820  
or about the self the self identity or

52  
00:02:30,820 --> 00:02:28,430  
as some people say Chris left caught

53  
00:02:33,040 --> 00:02:30,830  
says it's basically the ability to

54  
00:02:38,230 --> 00:02:33,050  
discriminate and integrate information

55  
00:02:40,630 --> 00:02:38,240  
from sensory inputs this author Vemma

56  
00:02:44,350 --> 00:02:40,640  
listed greater than 40 definitions in

57  
00:02:47,170 --> 00:02:44,360  
the Journal of consciousness the Journal

58  
00:02:50,200 --> 00:02:47,180  
of consciousness studies a couple of

59  
00:02:52,390 --> 00:02:50,210  
years ago and talks that I've heard here

60  
00:02:56,290 --> 00:02:52,400  
so far with my admittedly biased

61  
00:02:59,770 --> 00:02:56,300  
viewpoint on this that had consciousness

62  
00:03:02,200 --> 00:02:59,780  
in their main subject content eight of

63  
00:03:04,780 --> 00:03:02,210

them and none of them really defined

64

00:03:08,260 --> 00:03:04,790

what they're meaning for consciousness

65

00:03:13,030 --> 00:03:08,270

was and what the concept meant in terms

66

00:03:14,860 --> 00:03:13,040

of their content so from this you get a

67

00:03:16,750 --> 00:03:14,870

lot of pessimism about consciousness

68

00:03:18,820 --> 00:03:16,760

people who are highly respected

69

00:03:21,340 --> 00:03:18,830

intelligent knowledgeable and certainly

70

00:03:23,140 --> 00:03:21,350

well-meaning say things like physics has

71

00:03:25,270 --> 00:03:23,150

to be replaced by new laws and there's

72

00:03:26,860 --> 00:03:25,280

something fundamentally missing and and

73

00:03:29,350 --> 00:03:26,870

nobody has a faintest idea what

74

00:03:31,180 --> 00:03:29,360

consciousness is and the slightest idea

75

00:03:34,420 --> 00:03:31,190

how anything material could be conscious

76

00:03:36,130 --> 00:03:34,430

sorry I'm just not buying all that and I

77

00:03:39,340 --> 00:03:36,140

think we already know quite a bit about

78

00:03:41,680 --> 00:03:39,350

consciousness in in the in the naive

79

00:03:45,040 --> 00:03:41,690

sense about it how it works in the brain

80

00:03:47,050 --> 00:03:45,050

and we know something more than is

81

00:03:50,080 --> 00:03:47,060

commonly recognized as I'll try to say

82

00:03:53,020 --> 00:03:50,090

about how conscious conscious

83

00:03:54,850 --> 00:03:53,030

functioning in the human brain brings

84

00:03:56,800 --> 00:03:54,860

about phenomenon that we think of as

85

00:03:58,620 --> 00:03:56,810

anomalous or so strange that

86

00:04:01,330 --> 00:03:58,630

consciousness must be something special

87

00:04:05,080 --> 00:04:01,340

so I think that these comments are just

88

00:04:09,000 --> 00:04:05,090

not justified Hawking says the brain is

89

00:04:11,500 --> 00:04:09,010

a computer but there's no afterlife so

90

00:04:13,150 --> 00:04:11,510

I'll go along with the first the brains

91

00:04:15,160 --> 00:04:13,160

pretty much a computer but there's more

92

00:04:18,640 --> 00:04:15,170

to it than we think and certainly he's

93

00:04:21,130 --> 00:04:18,650

not acknowledging the evidence for

94

00:04:22,540 --> 00:04:21,140

survival and reincarnation so forth

95

00:04:25,090 --> 00:04:22,550

which I happen to think is pretty strong

96

00:04:28,590 --> 00:04:25,100

so there's a real mixed bag

97

00:04:31,450 --> 00:04:28,600

there we might classify the phenomenon

98

00:04:34,810 --> 00:04:31,460

surrounding and connected to

99

00:04:38,500 --> 00:04:34,820

consciousness in in four levels starting

100

00:04:40,480 --> 00:04:38,510

out with Chalmers easy and hard problems

101  
00:04:43,120 --> 00:04:40,490  
the hard problem being how do we have

102  
00:04:45,460 --> 00:04:43,130  
experiences or an inner life or a sense

103  
00:04:48,010 --> 00:04:45,470  
of self and so on and the extraordinary

104  
00:04:50,110 --> 00:04:48,020  
phenomenon that people tend to get

105  
00:04:52,300 --> 00:04:50,120  
excited about which includes an ESP and

106  
00:04:54,730 --> 00:04:52,310  
and various psychic phenomenon then of

107  
00:04:58,150 --> 00:04:54,740  
course there beyond extraordinary

108  
00:05:00,070 --> 00:04:58,160  
experiences that many people in this

109  
00:05:02,710 --> 00:05:00,080  
group are familiar with and take

110  
00:05:04,930 --> 00:05:02,720  
seriously reincarnation hauntings medium

111  
00:05:08,950 --> 00:05:04,940  
communication and so forth these are not

112  
00:05:13,660 --> 00:05:08,960  
only obvious obviously challenging in

113  
00:05:15,880 --> 00:05:13,670

the extreme they also have the potential

114

00:05:17,440 --> 00:05:15,890

benefit of a lot of interesting hints

115

00:05:20,550 --> 00:05:17,450

and information about how the rest of it

116

00:05:24,220 --> 00:05:20,560

all works including the the simpler

117

00:05:28,570 --> 00:05:24,230

aspects of consciousness and so I think

118

00:05:30,370 --> 00:05:28,580

we shouldn't shy away from those given

119

00:05:32,110 --> 00:05:30,380

that viewpoint what is physics have to

120

00:05:34,750 --> 00:05:32,120

say about this and what's our opinion of

121

00:05:36,730 --> 00:05:34,760

it well these are these are kind of

122

00:05:39,040 --> 00:05:36,740

options that I hear from time to time

123

00:05:40,480 --> 00:05:39,050

physics is deeply wrong we're gonna have

124

00:05:44,770 --> 00:05:40,490

to rewrite it completely with new

125

00:05:46,930 --> 00:05:44,780

principles new new center focus fahsai

126  
00:05:48,760 --> 00:05:46,940  
or something it's incomplete some tweaks

127  
00:05:51,010 --> 00:05:48,770  
are necessary or maybe just a new point

128  
00:05:54,340 --> 00:05:51,020  
of view what we have or of course the

129  
00:05:55,660 --> 00:05:54,350  
extreme view that it's all correct and

130  
00:05:58,540 --> 00:05:55,670  
everything else is just a hallucination

131  
00:06:01,300 --> 00:05:58,550  
I come down somewhere in the middle here

132  
00:06:05,700 --> 00:06:01,310  
and I'll show a little bit of why I

133  
00:06:07,570 --> 00:06:05,710  
think some tweaks will make it much more

134  
00:06:10,540 --> 00:06:07,580  
powerful with respect to these

135  
00:06:13,440 --> 00:06:10,550  
interesting phenomena then most people

136  
00:06:16,090 --> 00:06:13,450  
would would think at this point

137  
00:06:17,590 --> 00:06:16,100  
unfortunately though this leads to lots

138  
00:06:20,110 --> 00:06:17,600

of misunderstandings about quantum

139

00:06:24,430 --> 00:06:20,120

mechanics and it's a screwy subject and

140

00:06:26,890 --> 00:06:24,440

it contradicts common sense typically

141

00:06:29,610 --> 00:06:26,900

but what needs to change is our idea of

142

00:06:32,440 --> 00:06:29,620

not of common sense not our

143

00:06:34,780 --> 00:06:32,450

interpretations of the physics

144

00:06:36,760 --> 00:06:34,790

and I don't mean we have to cancel

145

00:06:38,290 --> 00:06:36,770

common sense and start over anything we

146

00:06:40,720 --> 00:06:38,300

just need to tweak our common sense a

147

00:06:42,790 --> 00:06:40,730

little bit so people often say that

148

00:06:44,650 --> 00:06:42,800

super super position means that

149

00:06:46,870 --> 00:06:44,660

something can take two paths at once and

150

00:06:49,270 --> 00:06:46,880

the particle goes through both slits and

151

00:06:50,680 --> 00:06:49,280

that sort of thing well it's not true if

152

00:06:52,630 --> 00:06:50,690

the particle does not go through both

153

00:06:56,620 --> 00:06:52,640

slits and half particles do not go both

154

00:06:58,720 --> 00:06:56,630

through both slits and semi-transparent

155

00:07:01,480 --> 00:06:58,730

phantasms of two particles do not go

156

00:07:03,070 --> 00:07:01,490

through two slits like I think York was

157

00:07:06,040 --> 00:07:03,080

saying what goes through the two slits

158

00:07:07,870 --> 00:07:06,050

or the possibility of a particle goes

159

00:07:09,850 --> 00:07:07,880

through both slits when it gets to the

160

00:07:12,010 --> 00:07:09,860

screen at the end it ends up at one

161

00:07:14,380 --> 00:07:12,020

place the single particle only hits the

162

00:07:16,030 --> 00:07:14,390

screen at one place there may be an

163

00:07:18,460 --> 00:07:16,040

interference pattern of what's

164

00:07:20,050 --> 00:07:18,470

interfering as possibilities and the

165

00:07:21,660 --> 00:07:20,060

whole message of quantum mechanics if

166

00:07:24,060 --> 00:07:21,670

you want to look at it this way is that

167

00:07:26,970 --> 00:07:24,070

possibilities must be taken seriously

168

00:07:29,200 --> 00:07:26,980

possibilities matter

169

00:07:31,150 --> 00:07:29,210

similarly measurement implies that

170

00:07:33,220 --> 00:07:31,160

observation creates reality nothing's

171

00:07:35,830 --> 00:07:33,230

real the moon isn't there until we look

172

00:07:37,990 --> 00:07:35,840

it's just simply not true knowledge

173

00:07:40,110 --> 00:07:38,000

collapses the wave functions and human

174

00:07:43,600 --> 00:07:40,120

human knowledge or a conscious observer

175

00:07:46,060 --> 00:07:43,610

collapses the wave function not not so

176

00:07:48,160 --> 00:07:46,070

quantum mechanics says that an

177

00:07:50,650 --> 00:07:48,170

irreversible amplification of a

178

00:07:55,390 --> 00:07:50,660

microscopic quantum measurement to the

179

00:07:57,280 --> 00:07:55,400

macroscopic realm is is what constitutes

180

00:07:59,170 --> 00:07:57,290

a collapse of the wavefunction it is the

181

00:08:02,290 --> 00:07:59,180

collapsed it's not something that causes

182

00:08:05,020 --> 00:08:02,300

the collapse it is the collateral same

183

00:08:07,480 --> 00:08:05,030

thing or equivalently a recording of

184

00:08:10,000 --> 00:08:07,490

some quantum measurement a permanent

185

00:08:12,160 --> 00:08:10,010

recording of that measurement collapses

186

00:08:15,340 --> 00:08:12,170

the wavefunction spooky action and a

187

00:08:17,920 --> 00:08:15,350

distance this is what Einstein bosephus

188

00:08:20,610 --> 00:08:17,930

vociferously objected to for many years

189

00:08:23,320 --> 00:08:20,620

of course it's not true that that

190

00:08:25,270 --> 00:08:23,330

entanglement enabled spooky action at a

191

00:08:27,430 --> 00:08:25,280

distance what it does does enable is

192

00:08:31,170 --> 00:08:27,440

spooky correlation at a distance and

193

00:08:33,850 --> 00:08:31,180

again this is an important difference

194

00:08:36,160 --> 00:08:33,860

just in communication instantly it's

195

00:08:38,709 --> 00:08:36,170

just not not true you can't actually

196

00:08:41,320 --> 00:08:38,719

communicate with

197

00:08:43,950 --> 00:08:41,330

entanglement but as I'll show in a

198

00:08:45,970 --> 00:08:43,960

minute you can make it look like that

199

00:08:47,889 --> 00:08:45,980

entanglement enables sending a message

200

00:08:49,750 --> 00:08:47,899

back in time now you can't send a

201  
00:08:51,160 --> 00:08:49,760  
message back in time actually you can

202  
00:08:53,920 --> 00:08:51,170  
send a message back in time you just

203  
00:08:55,780 --> 00:08:53,930  
can't read it there this is really the

204  
00:08:58,260 --> 00:08:55,790  
way it works out

205  
00:09:00,910 --> 00:08:58,270  
Henry step for whom I have a lot of

206  
00:09:02,980 --> 00:09:00,920  
respect and affection says quantum

207  
00:09:05,170 --> 00:09:02,990  
mechanics is about consciousness quantum

208  
00:09:08,530 --> 00:09:05,180  
mechanics needs consciousness by virtue

209  
00:09:12,699 --> 00:09:08,540  
of its intrinsic structure sorry I just

210  
00:09:15,610 --> 00:09:12,709  
don't think that's that's correct and I

211  
00:09:17,920 --> 00:09:15,620  
listened to Henry a lot because he says

212  
00:09:20,740 --> 00:09:17,930  
things that I don't agree with and you

213  
00:09:23,230 --> 00:09:20,750

should always listen to your opponent's

214

00:09:24,880 --> 00:09:23,240

Anthony Leggett the ears here are two

215

00:09:27,490 --> 00:09:24,890

more really sensible statements

216

00:09:29,350 --> 00:09:27,500

Anthony Leggett says maybe somewhat more

217

00:09:30,670 --> 00:09:29,360

dance it may be somewhat dangerous to

218

00:09:32,410 --> 00:09:30,680

explain something one does not

219

00:09:34,120 --> 00:09:32,420

understand very well by invoking

220

00:09:38,980 --> 00:09:34,130

something that one does not understand

221

00:09:41,190 --> 00:09:38,990

at all and so on let's go on to psy

222

00:09:43,300 --> 00:09:41,200

phenomena and a little bit of physics

223

00:09:45,550 --> 00:09:43,310

people know that there are some

224

00:09:46,900 --> 00:09:45,560

phenomena where conscious intention

225

00:09:49,269 --> 00:09:46,910

seems to have an effect in the world

226  
00:09:51,340 --> 00:09:49,279  
here's the entangled situation where we

227  
00:09:53,860 --> 00:09:51,350  
created entangled pair send them off

228  
00:09:56,050 --> 00:09:53,870  
each one is a superposition that means

229  
00:09:58,030 --> 00:09:56,060  
there's two possibilities zero and one

230  
00:10:00,220 --> 00:09:58,040  
in this case and they don't get

231  
00:10:04,290 --> 00:10:00,230  
determined until we measure and when we

232  
00:10:07,199 --> 00:10:04,300  
measure them each of them appears random

233  
00:10:09,990 --> 00:10:07,209  
totally random but they're the same

234  
00:10:11,760 --> 00:10:10,000  
that's because of the entanglement but

235  
00:10:14,610 --> 00:10:11,770  
the way to look at this is that the

236  
00:10:16,350 --> 00:10:14,620  
measurement determines something that

237  
00:10:17,880 --> 00:10:16,360  
was less than fully determined in the

238  
00:10:21,090 --> 00:10:17,890

first place it was under constraint it

239

00:10:23,579 --> 00:10:21,100

could have been either 0 1 what happened

240

00:10:25,680 --> 00:10:23,589

at the measurement in the future caused

241

00:10:29,070 --> 00:10:25,690

the thing to be whatever it was in the

242

00:10:31,889 --> 00:10:29,080

first place namely 0 or 1 and thus the

243

00:10:34,860 --> 00:10:31,899

other one had to agree so now if we take

244

00:10:36,690 --> 00:10:34,870

a look at a sigh experiment that's very

245

00:10:38,850 --> 00:10:36,700

similar but flipped in time so the

246

00:10:42,900 --> 00:10:38,860

interactions in the future this is just

247

00:10:44,760 --> 00:10:42,910

like the BEM experiment there isn't any

248

00:10:46,110 --> 00:10:44,770

information that flows directly back and

249

00:10:48,150 --> 00:10:46,120

forth as far as we can tell

250

00:10:51,750 --> 00:10:48,160

instead there's a correlation being

251  
00:10:53,820 --> 00:10:51,760  
created by a bias from the future by the

252  
00:10:55,590 --> 00:10:53,830  
bias of the experimenter not what he

253  
00:10:57,329 --> 00:10:55,600  
thinks or what his unconscious thinks

254  
00:10:59,460 --> 00:10:57,339  
but what he actually does in the world

255  
00:11:01,949 --> 00:10:59,470  
how he conditions the future if you

256  
00:11:04,050 --> 00:11:01,959  
condition the future to accept more

257  
00:11:06,240 --> 00:11:04,060  
easily lots of hits you'll get more hits

258  
00:11:08,850 --> 00:11:06,250  
by virtue of this correlation it looks

259  
00:11:10,980 --> 00:11:08,860  
exactly like its information transfer in

260  
00:11:14,010 --> 00:11:10,990  
this case backwards from from the future

261  
00:11:18,410 --> 00:11:14,020  
to the past but it's just an effect of

262  
00:11:20,370 --> 00:11:18,420  
the correlation ok spinning a head

263  
00:11:22,290 --> 00:11:20,380

please don't tell us some of these

264

00:11:25,230 --> 00:11:22,300

things consciousness is required but in

265

00:11:27,600 --> 00:11:25,240

con mechanics and sorry phenomena deny

266

00:11:30,930 --> 00:11:27,610

materialism and so forth it's just it's

267

00:11:34,850 --> 00:11:30,940

it's making unwarranted assumptions or

268

00:11:38,400 --> 00:11:34,860

leaps but of course there are some

269

00:11:40,290 --> 00:11:38,410

phenomenon that people here are familiar

270

00:11:42,329 --> 00:11:40,300

with many of us are familiar with and

271

00:11:44,250 --> 00:11:42,339

I'm preaching to the choir but these are

272

00:11:47,760 --> 00:11:44,260

really interesting obviously psychometry

273

00:11:49,380 --> 00:11:47,770

and reincarnation and haunting would

274

00:11:52,230 --> 00:11:49,390

indicate or suggest some kind of

275

00:11:54,300 --> 00:11:52,240

imprinting of personality and memories

276

00:11:55,800 --> 00:11:54,310

in consciousness and even physical

277

00:11:58,860 --> 00:11:55,810

characteristics like birthmarks and

278

00:12:01,260 --> 00:11:58,870

scars so there's something terribly

279

00:12:04,319 --> 00:12:01,270

interesting going on here and the in at

280

00:12:06,990 --> 00:12:04,329

least in principle is separable if not

281

00:12:09,120 --> 00:12:07,000

separate from the physical brain so

282

00:12:10,470 --> 00:12:09,130

these are really

283

00:12:13,110 --> 00:12:10,480

things that interest me the most

284

00:12:15,390 --> 00:12:13,120

strongly indicated study is strongly

285

00:12:17,100 --> 00:12:15,400

indicated so the focus ought to be on

286

00:12:19,800 --> 00:12:17,110

these more careful definitions and

287

00:12:21,540 --> 00:12:19,810

understanding of physics research on the

288

00:12:24,030 --> 00:12:21,550

physics of sight phenomenon just not the

289

00:12:26,190 --> 00:12:24,040

psychology alone of sight phenomena and

290

00:12:28,230 --> 00:12:26,200

we have to be willing to confront these

291

00:12:30,990 --> 00:12:28,240

challenging phenomena from an

292

00:12:33,210 --> 00:12:31,000

externalized feet on the ground

293

00:12:35,610 --> 00:12:33,220

scientific viewpoint and build bridges

294

00:12:39,140 --> 00:12:35,620

to mainstream science much more than is

295

00:12:41,760 --> 00:12:39,150

is often being done today rather than

296

00:12:43,740 --> 00:12:41,770

insisting upon large replacements of

297

00:12:47,310 --> 00:12:43,750

whatever is going on in mainstream

298

00:12:50,880 --> 00:12:47,320

science or insertion of consciousness

299

00:12:53,820 --> 00:12:50,890

into the foundations for example of

300

00:12:56,780 --> 00:12:53,830

physics like matter and and energy I

301  
00:12:58,590 --> 00:12:56,790  
just don't think that's at all warranted

302  
00:13:02,490 --> 00:12:58,600  
consciousness at least at the highest

303  
00:13:05,300 --> 00:13:02,500  
level can be thought of as a form of a

304  
00:13:09,210 --> 00:13:05,310  
feedback loop or a set of very complex

305  
00:13:12,180 --> 00:13:09,220  
feedback self-referring loops and this

306  
00:13:16,290 --> 00:13:12,190  
is where identity begins to form and the

307  
00:13:18,330 --> 00:13:16,300  
the fundamental brain rhythms begin to

308  
00:13:20,940 --> 00:13:18,340  
form us through these large-scale very

309  
00:13:22,650 --> 00:13:20,950  
complex loops and we know a fair amount

310  
00:13:25,500 --> 00:13:22,660  
about that it certainly doesn't explain

311  
00:13:27,180 --> 00:13:25,510  
the whole story but we're getting there

312  
00:13:29,600 --> 00:13:27,190  
and if you don't think an artificial

313  
00:13:32,430 --> 00:13:29,610

system could have the same connectivity

314

00:13:34,260 --> 00:13:32,440

topology memory structure and so forth

315

00:13:35,400 --> 00:13:34,270

and then it for some reason it wouldn't

316

00:13:37,860 --> 00:13:35,410

be conscious it wouldn't have

317

00:13:40,440 --> 00:13:37,870

experiences then I would say the burden

318

00:13:43,200 --> 00:13:40,450

is with you to explain why that would be

319

00:13:45,780 --> 00:13:43,210

different okay repeating what I said

320

00:13:47,700 --> 00:13:45,790

basically some phenomena do suggest the

321

00:13:50,460 --> 00:13:47,710

separateness and I want to make one more

322

00:13:53,040 --> 00:13:50,470

point about the progress of science to

323

00:13:55,410 --> 00:13:53,050

me it's all about the history of science

324

00:13:58,110 --> 00:13:55,420

is all about relinquishing in different

325

00:14:00,180 --> 00:13:58,120

steps our specialness in the world we

326

00:14:02,160 --> 00:14:00,190

used to think that we the earth was set

327

00:14:03,720 --> 00:14:02,170

it was the center of everything you just

328

00:14:05,430 --> 00:14:03,730

look up and you see the stars and the

329

00:14:08,700 --> 00:14:05,440

Sun and all that going over we must be

330

00:14:10,770 --> 00:14:08,710

at the center not true of course we used

331

00:14:12,510 --> 00:14:10,780

to think that all these elements as we

332

00:14:14,670 --> 00:14:12,520

understood them were special but turned

333

00:14:17,910 --> 00:14:14,680

out they're all made out of much smaller

334

00:14:19,500 --> 00:14:17,920

items which are all identical motion

335

00:14:21,690 --> 00:14:19,510

states we used to think there's a real

336

00:14:23,250 --> 00:14:21,700

rest state or a coordinate system in the

337

00:14:25,110 --> 00:14:23,260

world gradually everything

338

00:14:29,820 --> 00:14:25,120

we tended to believe in associated with

339

00:14:33,270 --> 00:14:29,830

us in some way is has has been removed

340

00:14:35,370 --> 00:14:33,280

by a simpler and more elegant theory

341

00:14:39,420 --> 00:14:35,380

life there's no magic

342

00:14:41,430 --> 00:14:39,430

they'll on VTOL and so on so to me the

343

00:14:43,440 --> 00:14:41,440

logical extension the next step or one

344

00:14:46,080 --> 00:14:43,450

of the next steps we need to take along

345

00:14:48,630 --> 00:14:46,090

this path is I am not special my

346

00:14:52,620 --> 00:14:48,640

consciousness my egocentric view of

347

00:14:55,340 --> 00:14:52,630

everything which each of us has is not

348

00:14:58,110 --> 00:14:55,350

special it's not it's not important it's

349

00:15:00,480 --> 00:14:58,120

interesting it has important

350

00:15:02,280 --> 00:15:00,490

interactions and implications in the

351

00:15:04,110 --> 00:15:02,290

world but it's not the thing that we

352

00:15:07,980 --> 00:15:04,120

should have at the center of our

353

00:15:10,050 --> 00:15:07,990

viewpoint or our activities in science

354

00:15:11,910 --> 00:15:10,060

Stephen Jay Gould said it better than

355

00:15:14,640 --> 00:15:11,920

anyone the most important scientific

356

00:15:17,280 --> 00:15:14,650

revolutions all include as their only

357

00:15:19,110 --> 00:15:17,290

common feature the dethronement of human

358

00:15:21,540 --> 00:15:19,120

arrogance from one pedestal after

359

00:15:25,280 --> 00:15:21,550

another of previous convictions about

360

00:15:40,380 --> 00:15:32,610

okay well I think thank you we do have

361

00:15:43,080 --> 00:15:40,390

time for questions dick I agree with

362

00:15:45,240 --> 00:15:43,090

your general viewpoint that we need to

363

00:15:47,640 --> 00:15:45,250

clarify our definitions and we have and

364

00:15:51,420 --> 00:15:47,650

invoked a lot of fuzzy concepts in what

365

00:15:54,390 --> 00:15:51,430

we're doing but I disagree with your

366

00:15:57,120 --> 00:15:54,400

having taken one particular perspective

367

00:16:00,210 --> 00:15:57,130

on quantum mechanics as if that were the

368

00:16:02,580 --> 00:16:00,220

only one because still quantum mechanics

369

00:16:04,860 --> 00:16:02,590

is is poorly understood it gives results

370

00:16:09,030 --> 00:16:04,870

but it doesn't give reasons or

371

00:16:10,580 --> 00:16:09,040

mechanisms in particular the von Neumann

372

00:16:12,720 --> 00:16:10,590

perspective on quantum mechanics

373

00:16:15,690 --> 00:16:12,730

essentially says that the buck stops

374

00:16:18,600 --> 00:16:15,700

with consciousness and that's all where

375

00:16:23,930 --> 00:16:18,610

as you said for example you're right we

376

00:16:27,420 --> 00:16:23,940

don't agree that that if you have a

377

00:16:28,079 --> 00:16:27,430

phenomenon which you then record you

378

00:16:31,170 --> 00:16:28,089

know

379

00:16:33,299 --> 00:16:31,180

a permanent recording medium such as a

380

00:16:35,309 --> 00:16:33,309

tape or a computer memory or something

381

00:16:38,309 --> 00:16:35,319

like that at that point you've collapsed

382

00:16:41,009 --> 00:16:38,319

the wavefunction on the other hand there

383

00:16:42,360 --> 00:16:41,019

there are concepts and evidence that

384

00:16:45,210 --> 00:16:42,370

that's not true

385

00:16:48,090 --> 00:16:45,220

one piece of evidence is the famous

386

00:16:50,340 --> 00:16:48,100

Helmut Schmidt experiments in which he

387

00:16:52,139 --> 00:16:50,350

recorded information looks like you can

388

00:16:55,559 --> 00:16:52,149

always collapse let me just finish this

389

00:16:57,749 --> 00:16:55,569

and the next day he then modified the

390

00:17:02,460 --> 00:16:57,759

information that was recorded through

391

00:17:09,720 --> 00:17:02,470

some sort of interaction and we just

392

00:17:11,159 --> 00:17:09,730

don't know we just don't know you're

393

00:17:13,500 --> 00:17:11,169

right we disagree

394

00:17:15,449 --> 00:17:13,510

there's the quantum eraser experiments

395

00:17:16,949 --> 00:17:15,459

you know about I'm sure and there's

396

00:17:19,919 --> 00:17:16,959

various evidence that nothing's really

397

00:17:21,899 --> 00:17:19,929

permanent you can create a loop which is

398

00:17:23,639 --> 00:17:21,909

a memory element and then it feeds on

399

00:17:25,559 --> 00:17:23,649

itself you don't need the source any

400

00:17:26,939 --> 00:17:25,569

longer maybe that has something to do

401  
00:17:31,880 --> 00:17:26,949  
with it I don't know we ought to explore

402  
00:17:37,710 --> 00:17:31,890  
these things more fully Von Neumanns

403  
00:17:40,190 --> 00:17:37,720  
consciousness was his interest in

404  
00:17:43,529 --> 00:17:40,200  
consciousness as the ultimate endpoint

405  
00:17:47,700 --> 00:17:43,539  
might be true or a valid viewpoint from

406  
00:17:52,169 --> 00:17:47,710  
the point of view that for you it ends

407  
00:17:54,750 --> 00:17:52,179  
there but that doesn't mean that in the

408  
00:17:56,730 --> 00:17:54,760  
world in general that it's necessarily

409  
00:18:02,909 --> 00:17:56,740  
the endpoint or the right thing to focus

410  
00:18:05,490 --> 00:18:02,919  
on so to me that was one of those neon

411  
00:18:09,149 --> 00:18:05,500  
streets in Las Vegas that he went down

412  
00:18:13,440 --> 00:18:09,159  
and turned up to be a dead end or and in

413  
00:18:17,060 --> 00:18:13,450

the casino or something that didn't that

414

00:18:19,610 --> 00:18:17,070

didn't that wasn't satisfying to me

415

00:18:22,019 --> 00:18:19,620

except for the more or less trivial

416

00:18:27,990 --> 00:18:22,029

explanation that it's true for me when

417

00:18:37,529 --> 00:18:34,490

the the Helmut Schmidt experiments yeah

418

00:18:40,500 --> 00:18:37,539

well as I say it may be possible to go

419

00:18:43,080 --> 00:18:40,510

back and change the past but really what

420

00:18:44,820 --> 00:18:43,090

this theory says is that you can't

421

00:18:46,230 --> 00:18:44,830

change the past what you can do is

422

00:18:49,590 --> 00:18:46,240

change the way it turned out in the

423

00:18:51,240 --> 00:18:49,600

first place I wouldn't really shouldn't

424

00:18:52,529 --> 00:18:51,250

even say that you can influence the way

425

00:18:55,380 --> 00:18:52,539

it turned out in the first place

426  
00:18:59,149 --> 00:18:55,390  
that's the message of EPR in effect you

427  
00:19:00,750 --> 00:18:59,159  
started out with these two entangled

428  
00:19:02,519 --> 00:19:00,760  
particles each of which was a

429  
00:19:03,840 --> 00:19:02,529  
superposition but by measuring one of

430  
00:19:05,519 --> 00:19:03,850  
them you determined to the other

431  
00:19:07,110 --> 00:19:05,529  
backwards in time and then for it again

432  
00:19:11,060 --> 00:19:07,120  
this is like the coastal bird

433  
00:19:13,409 --> 00:19:11,070  
Beauregarde zig zag interpretation so a

434  
00:19:15,600 --> 00:19:13,419  
generalization of that same idea says to

435  
00:19:18,330 --> 00:19:15,610  
me that something that happens in the

436  
00:19:21,269 --> 00:19:18,340  
future can have an influence on a random

437  
00:19:27,019 --> 00:19:21,279  
in particular a random resource device

438  
00:19:28,830 --> 00:19:27,029

or set of data in the past by in effect

439

00:19:30,240 --> 00:19:28,840

deciding how it turned out in the first

440

00:19:31,470 --> 00:19:30,250

place when it was under constraint

441

00:19:33,899 --> 00:19:31,480

that's what a random number generator

442

00:19:35,789 --> 00:19:33,909

does it's under constrain things it's

443

00:19:38,190 --> 00:19:35,799

really ironic that the thing that we use

444

00:19:41,340 --> 00:19:38,200

to separate our experiments from the

445

00:19:45,000 --> 00:19:41,350

past is exactly that which allows us to

446

00:19:45,990 --> 00:19:45,010

affect the past from the future so

447

00:19:47,880 --> 00:19:46,000

that's how it explained those

448

00:19:52,640 --> 00:19:47,890

experiments I hope that was at least

449

00:19:59,750 --> 00:19:57,080

we have one more yes/no question Thanks

450

00:20:02,150 --> 00:19:59,760

a very interesting presentation just to

451

00:20:04,510 --> 00:20:02,160

clarify your position in your reading of

452

00:20:09,530 --> 00:20:04,520

the mainstream quantum mechanics is

453

00:20:10,840 --> 00:20:09,540

local realism empirically disproven yes

454

00:20:16,970 --> 00:20:10,850

or no

455

00:20:21,470 --> 00:20:16,980

both locality and realism I'd have to

456

00:20:25,640 --> 00:20:21,480

say yes but I'm not sure the matter is