



1  
00:00:23,979 --> 00:00:16,080

[Music]

2  
00:00:27,130 --> 00:00:23,989

I'd like to share with you some ideas

3  
00:00:29,709 --> 00:00:27,140

about biomedical science its strengths

4  
00:00:31,630 --> 00:00:29,719

and some of its weaknesses and we do

5  
00:00:34,720 --> 00:00:31,640

that in the context that we can of the

6  
00:00:38,860 --> 00:00:34,730

goals of the Society for scientific

7  
00:00:42,460 --> 00:00:38,870

exploration the second one being that we

8  
00:00:47,440 --> 00:00:42,470

will seek out and explore and explain

9  
00:00:50,640 --> 00:00:47,450

those world view hidden world views

10  
00:00:53,680 --> 00:00:50,650

restrictive world views and hidden

11  
00:00:57,040 --> 00:00:53,690

theoretical assumptions that get in the

12  
00:00:59,860 --> 00:00:57,050

way of ordinary science and and that

13  
00:01:01,840 --> 00:00:59,870

also tend to take theory and bring it

14

00:01:06,359 --> 00:01:01,850

into dogma that's part of the mission

15

00:01:09,100 --> 00:01:06,369

that stated for our organization and the

16

00:01:10,600 --> 00:01:09,110

strengths of biomedical medicine were

17

00:01:11,709 --> 00:01:10,610

illustrated in the New York Times this

18

00:01:13,450 --> 00:01:11,719

morning I don't know how many of you

19

00:01:15,489 --> 00:01:13,460

have read it but there was a first in

20

00:01:17,529 --> 00:01:15,499

biomedical science right up the road at

21

00:01:19,330 --> 00:01:17,539

San Francisco Medical Center where a

22

00:01:21,849 --> 00:01:19,340

young man was dying in the coma with a

23

00:01:23,770 --> 00:01:21,859

fever and all the tests could not be

24

00:01:24,969 --> 00:01:23,780

done and they decided to do something

25

00:01:27,849 --> 00:01:24,979

they had not done before

26

00:01:31,300 --> 00:01:27,859

and identified the DNA of the bacteria

27

00:01:33,129 --> 00:01:31,310

in the young man's tissues were able to

28

00:01:33,879 --> 00:01:33,139

initiate treatment and he's doing just

29

00:01:37,569 --> 00:01:33,889

fine thank you

30

00:01:39,370 --> 00:01:37,579

so I think we can see the notion all the

31

00:01:41,559 --> 00:01:39,380

technology we're all aware of the

32

00:01:44,679 --> 00:01:41,569

strengths and we can kind of imagine

33

00:01:47,410 --> 00:01:44,689

that started back in in the early 20th

34

00:01:49,510 --> 00:01:47,420

century in 1900 the leading universities

35

00:01:54,489 --> 00:01:49,520

med schools in the world were in Vienna

36

00:01:56,410 --> 00:01:54,499

and Berlin and our American of people

37

00:01:59,620 --> 00:01:56,420

went over and studied there and brought

38

00:02:02,260 --> 00:01:59,630

that information back to Harvard and and

39

00:02:04,300 --> 00:02:02,270

Johns Hopkins and spread to all the

40

00:02:06,010 --> 00:02:04,310

medical schools and became the standard

41

00:02:09,940 --> 00:02:06,020

we shortly thereafter passed laws in

42

00:02:11,770 --> 00:02:09,950

this country and that is that medical

43

00:02:13,990 --> 00:02:11,780

schools had to be attached to University

44

00:02:17,500 --> 00:02:14,000

than that was to again to maintain that

45

00:02:18,330 --> 00:02:17,510

scientific rigor that we needed to be

46

00:02:21,710 --> 00:02:18,340

sure that

47

00:02:28,800 --> 00:02:21,720

people were not dying unnecessarily from

48

00:02:30,920 --> 00:02:28,810

from quacks the and so that didn't grew

49

00:02:33,510 --> 00:02:30,930

well we got peer review after that and

50

00:02:35,070 --> 00:02:33,520

we all know that to get grants we need

51  
00:02:38,220 --> 00:02:35,080  
peer review that we will be using the

52  
00:02:40,680 --> 00:02:38,230  
scientific method empirically and

53  
00:02:42,479 --> 00:02:40,690  
properly and to get published in

54  
00:02:44,390 --> 00:02:42,489  
journals the journals take great pride

55  
00:02:47,430 --> 00:02:44,400  
in saying that they are peer reviewed

56  
00:02:49,949 --> 00:02:47,440  
journals and so that science is here to

57  
00:02:52,440 --> 00:02:49,959  
say it's wonderful but let's now then

58  
00:02:56,160 --> 00:02:52,450  
step back and look at maybe some of the

59  
00:02:58,650 --> 00:02:56,170  
weaknesses of that science and sort of

60  
00:03:00,690 --> 00:02:58,660  
like this man on the tightrope who in

61  
00:03:03,449 --> 00:03:00,700  
the paradox holds up the end of the

62  
00:03:05,430 --> 00:03:03,459  
tightrope with his hand as he walks the

63  
00:03:07,770 --> 00:03:05,440

tightrope it's that kind of self

64

00:03:11,610 --> 00:03:07,780

referential paradox that we'll be

65

00:03:13,410 --> 00:03:11,620

looking at and you know back in 1900 I

66

00:03:16,830 --> 00:03:13,420

suggest there were two seeds that were

67

00:03:19,350 --> 00:03:16,840

planted that started to then would

68

00:03:23,490 --> 00:03:19,360

gradually develop into the weaknesses of

69

00:03:26,780 --> 00:03:23,500

this biomedical science and I might say

70

00:03:29,310 --> 00:03:26,790

that the first of these was mathematical

71

00:03:31,710 --> 00:03:29,320

Bertrand Russell was busy finishing up

72

00:03:34,530 --> 00:03:31,720

his perfect mathematics the principal

73

00:03:37,770 --> 00:03:34,540

math Mathematica with his mentor Alfred

74

00:03:41,069 --> 00:03:37,780

North Whitehead and it was ready to go

75

00:03:44,280 --> 00:03:41,079

to press and he suddenly realized that

76  
00:03:47,879 --> 00:03:44,290  
it contained an error that permeated the

77  
00:03:51,000 --> 00:03:47,889  
entire work from front to back and he

78  
00:03:54,539 --> 00:03:51,010  
expressed that error in set theory like

79  
00:03:58,520 --> 00:03:54,549  
this a set of all sets that do not

80  
00:04:03,330 --> 00:03:58,530  
contain themselves both cannot and must

81  
00:04:04,920 --> 00:04:03,340  
perish belong to that set and he stated

82  
00:04:06,660 --> 00:04:04,930  
it in the vernacular for us what man

83  
00:04:08,670 --> 00:04:06,670  
shaves the barber in a town in which the

84  
00:04:10,920 --> 00:04:08,680  
barber shaved the men who do not shave

85  
00:04:13,650 --> 00:04:10,930  
themselves and so that it went back to

86  
00:04:16,440 --> 00:04:13,660  
the ancient Parmenides and zeno of the

87  
00:04:17,610 --> 00:04:16,450  
ancient Greek the loggers paragraph of

88  
00:04:23,000 --> 00:04:17,620

the liars

89

00:04:28,260 --> 00:04:23,010

apparently firstly paradox

90

00:04:30,660 --> 00:04:28,270

then people people didn't like this they

91

00:04:33,540 --> 00:04:30,670

wanted it to go away and they tried

92

00:04:35,190 --> 00:04:33,550

everything they could do and even though

93

00:04:36,150 --> 00:04:35,200

white-eyed wrote an axiom that says you

94

00:04:38,010 --> 00:04:36,160

can't think that way

95

00:04:39,900 --> 00:04:38,020

the problem was that you can't think

96

00:04:43,410 --> 00:04:39,910

that way and so it didn't make it quite

97

00:04:45,840 --> 00:04:43,420

go away along comes 20 some years later

98

00:04:48,510 --> 00:04:45,850

a young man Kurt Bedell University of

99

00:04:51,560 --> 00:04:48,520

Vienna and he wants to make that paradox

100

00:04:55,350 --> 00:04:51,570

go away real bad he's going to get his

101  
00:04:57,960 --> 00:04:55,360  
his reputation that way and he works in

102  
00:05:01,580 --> 00:04:57,970  
works and in 1931 he comes out with a

103  
00:05:04,620 --> 00:05:01,590  
paper that later won him the Nobel Prize

104  
00:05:07,080 --> 00:05:04,630  
and actually had proved the opposite of

105  
00:05:08,940 --> 00:05:07,090  
what he set out to prove in his

106  
00:05:11,790 --> 00:05:08,950  
incompleteness theorem he demonstrated

107  
00:05:15,630 --> 00:05:11,800  
to us that that paradox will never go

108  
00:05:18,690 --> 00:05:15,640  
away and this was attitude later by Alan

109  
00:05:20,909 --> 00:05:18,700  
Turing the later computer the inventor

110  
00:05:24,540 --> 00:05:20,919  
of the computer who pointed out

111  
00:05:26,640 --> 00:05:24,550  
mathematically that not only were there

112  
00:05:29,820 --> 00:05:26,650  
problems that nothing eyes could not

113  
00:05:32,670 --> 00:05:29,830

solve there were an infinite number of

114

00:05:35,850 --> 00:05:32,680

problems that mathematics and logic

115

00:05:37,770 --> 00:05:35,860

could not solve this went further with

116

00:05:40,710 --> 00:05:37,780

Lorenz who was trying to predict the

117

00:05:42,680 --> 00:05:40,720

weather with computers and this highly

118

00:05:45,300 --> 00:05:42,690

complex system that remains

119

00:05:48,600 --> 00:05:45,310

unpredictable today for a great deal of

120

00:05:50,670 --> 00:05:48,610

it and he programmed the computer a

121

00:05:52,620 --> 00:05:50,680

little bit off and the computer word and

122

00:05:55,290 --> 00:05:52,630

word and made up its own mathematics and

123

00:05:57,600 --> 00:05:55,300

this began the notion of emergent theory

124

00:06:00,810 --> 00:05:57,610

coming out of chaos of highly complex

125

00:06:03,420 --> 00:06:00,820

systems that the events emerge that are

126

00:06:08,760 --> 00:06:03,430

unpredictable by ordinary science or

127

00:06:11,070 --> 00:06:08,770

from what came before them and and so

128

00:06:12,840 --> 00:06:11,080

this whole idea of emergent phenomenon I

129

00:06:15,180 --> 00:06:12,850

wrote about it once in a paper on

130

00:06:17,490 --> 00:06:15,190

miracle healing is a miracle healing and

131

00:06:19,530 --> 00:06:17,500

emergence out of chaos that are not

132

00:06:23,190 --> 00:06:19,540

measurable by science it's an

133

00:06:26,370 --> 00:06:23,200

interesting idea the second now seed

134

00:06:30,029 --> 00:06:26,380

that may have been planted in 1904 the

135

00:06:31,800 --> 00:06:30,039

weakness was our friend Max Planck and

136

00:06:33,659 --> 00:06:31,810

he was sitting at an outdoor cafe in

137

00:06:35,090 --> 00:06:33,669

Munich and talking to his friend

138

00:06:36,400 --> 00:06:35,100

Heinrich Rubin

139

00:06:38,750 --> 00:06:36,410  
they were trying to figure out the

140

00:06:40,910 --> 00:06:38,760  
blackbody problem which every all the

141

00:06:43,310 --> 00:06:40,920  
physicists at the time we're trying to

142

00:06:46,460 --> 00:06:43,320  
do and keep finding he had a sudden idea

143

00:06:48,740 --> 00:06:46,470  
that if he entered a constant in which

144

00:06:50,630 --> 00:06:48,750  
he called H which would be the smallest

145

00:06:53,570 --> 00:06:50,640  
unit of energy or a matter that could

146

00:06:56,360 --> 00:06:53,580  
exist that he solved the problem he

147

00:06:58,610 --> 00:06:56,370  
later won a prize for that also and he

148

00:07:02,840 --> 00:06:58,620  
wrote it on a postcard and it's in some

149

00:07:04,640 --> 00:07:02,850  
Museum in Europe and we see that we

150

00:07:06,350 --> 00:07:04,650  
remembered now that you know that the

151  
00:07:08,060 --> 00:07:06,360  
double slit experience had been raised

152  
00:07:10,130 --> 00:07:08,070  
and talked about this morning came out

153  
00:07:12,680 --> 00:07:10,140  
of that and we came out with four ideas

154  
00:07:15,230 --> 00:07:12,690  
Amit Goswami has enumerate them for us

155  
00:07:17,810 --> 00:07:15,240  
quantum particle can be in two places at

156  
00:07:19,880 --> 00:07:17,820  
the same time a quantum particle can be

157  
00:07:22,000 --> 00:07:19,890  
here and appear over there without

158  
00:07:24,260 --> 00:07:22,010  
traversing the intervening space a

159  
00:07:27,490 --> 00:07:24,270  
quantum particle cannot be said to exist

160  
00:07:29,690 --> 00:07:27,500  
in space-time until it is observed and

161  
00:07:36,470 --> 00:07:29,700  
quantum particles can affect one another

162  
00:07:38,450 --> 00:07:36,480  
at a distance instantaneously and now

163  
00:07:40,850 --> 00:07:38,460

last July we all celebrated the higgs

164

00:07:44,390 --> 00:07:40,860

boson with people at CERN and they're

165

00:07:47,620 --> 00:07:44,400

telling us paradoxically that something

166

00:07:51,020 --> 00:07:47,630

can come from nothing and the universe

167

00:07:52,000 --> 00:07:51,030

we could postulate is created from

168

00:07:55,040 --> 00:07:52,010

nothing

169

00:07:57,290 --> 00:07:55,050

maybe that's what existed before the Big

170

00:08:00,230 --> 00:07:57,300

Bang and now we have quantum computers

171

00:08:02,900 --> 00:08:00,240

and one of the differences in quantum

172

00:08:05,000 --> 00:08:02,910

computers is a paradox that is that in

173

00:08:08,060 --> 00:08:05,010

our ordinary computers computations

174

00:08:11,000 --> 00:08:08,070

depend upon the multiple bytes being on

175

00:08:14,030 --> 00:08:11,010

or in a quantum computer

176

00:08:18,410 --> 00:08:14,040

it relies upon some of the qubits being

177

00:08:20,960 --> 00:08:18,420

both on and off at the same time and so

178

00:08:24,710 --> 00:08:20,970

I'm just bringing us a little bit up to

179

00:08:31,040 --> 00:08:24,720

date to that to to proceed with these

180

00:08:34,040 --> 00:08:31,050

seeds yes here is the picture of the

181

00:08:37,790 --> 00:08:34,050

quantum computer that we can see how

182

00:08:39,440 --> 00:08:37,800

confusing that can be but and now it

183

00:08:41,900 --> 00:08:39,450

looks like this paradox is here to stay

184

00:08:43,730 --> 00:08:41,910

we can look at that we blink and we see

185

00:08:47,949 --> 00:08:43,740

two faces looking at one another

186

00:08:49,790 --> 00:08:47,959

blinkin we see a candlestick and we

187

00:08:52,699 --> 00:08:49,800

neuroscience now tells us that that

188

00:08:55,100 --> 00:08:52,709

happens with a way of electrical energy

189

00:08:56,690 --> 00:08:55,110

in the brain it's not just some local we

190

00:08:59,030 --> 00:08:56,700

don't sit and measured and say well this

191

00:09:01,250 --> 00:08:59,040

in that point and well far apart it

192

00:09:03,620 --> 00:09:01,260

clicks it clicks and that's being

193

00:09:06,740 --> 00:09:03,630

brought more up-to-date now by a recent

194

00:09:09,590 --> 00:09:06,750

book by Eric Kandel about a view of art

195

00:09:15,320 --> 00:09:09,600

and the neuroscience of viewing art this

196

00:09:20,329 --> 00:09:15,330

notion of the highly complex nature of

197

00:09:22,430 --> 00:09:20,339

our thinking now this fellow here seems

198

00:09:24,889 --> 00:09:22,440

to me kind of grumpy and I've decided

199

00:09:28,460 --> 00:09:24,899

that he must be the chairman of the peer

200

00:09:31,970 --> 00:09:28,470

review committee and he does not like

201  
00:09:35,740 --> 00:09:31,980  
what I am saying right now and he tells

202  
00:09:38,360 --> 00:09:35,750  
me that I cannot I have to take in

203  
00:09:41,019 --> 00:09:38,370  
complexity theory and boil it down to

204  
00:09:44,840 --> 00:09:41,029  
ordinary science so that it makes sense

205  
00:09:47,510 --> 00:09:44,850  
and he will not allow me to get a grant

206  
00:09:51,579 --> 00:09:47,520  
because I want to say that I want to

207  
00:09:53,930 --> 00:09:51,589  
include the the paradox and the

208  
00:09:57,470 --> 00:09:53,940  
complexity and emergence I want to

209  
00:09:59,449 --> 00:09:57,480  
include that in my method not just how

210  
00:10:02,420 --> 00:09:59,459  
that goal to explain it but to include

211  
00:10:06,350 --> 00:10:02,430  
it in the method and he says I cannot do

212  
00:10:09,710 --> 00:10:06,360  
that and he doesn't seem to realize that

213  
00:10:11,900 --> 00:10:09,720

when we study randomness as soon as we

214

00:10:15,350 --> 00:10:11,910

bring order to randomness it is no

215

00:10:17,960 --> 00:10:15,360

longer random and so how can we include

216

00:10:21,980 --> 00:10:17,970

randomness in our method keep it there

217

00:10:23,930 --> 00:10:21,990

just like when the heliocentric notion

218

00:10:27,500 --> 00:10:23,940

of the universe showed up back in the

219

00:10:31,579 --> 00:10:27,510

17th century and so we don't have to go

220

00:10:33,260 --> 00:10:31,589

far people like people Langmuir John aya

221

00:10:34,310 --> 00:10:33,270

nightís dr. schooler up at the

222

00:10:37,340 --> 00:10:34,320

University of Washington have all

223

00:10:41,930 --> 00:10:37,350

pointed out the inconsistencies in

224

00:10:44,960 --> 00:10:41,940

biomedical science mysterious decline

225

00:10:53,060 --> 00:10:44,970

effects and and verbal over shattering

226

00:10:55,640 --> 00:10:53,070

kind of words that they use but yes and

227

00:10:57,049 --> 00:10:55,650

and you know I sort of laugh when I read

228

00:10:58,099 --> 00:10:57,059

the New York Times a lot of days

229

00:10:59,869 --> 00:10:58,109

because there's an article on the front

230

00:11:02,089 --> 00:10:59,879

page that says in the study we did last

231

00:11:04,429 --> 00:11:02,099

year it's no longer true stop taking

232

00:11:05,839 --> 00:11:04,439

your statins and now another study is

233

00:11:07,729 --> 00:11:05,849

true and then on the third page is

234

00:11:10,189 --> 00:11:07,739

another study and I say how can I

235

00:11:12,919 --> 00:11:10,199

believe this study if I couldn't believe

236

00:11:18,469 --> 00:11:12,929

the other study there's a weakness there

237

00:11:22,459 --> 00:11:18,479

in biomedical science and so let's go on

238

00:11:23,899 --> 00:11:22,469

and see if we can look at some things

239

00:11:27,349 --> 00:11:23,909

that have come out of it that are kind

240

00:11:29,209 --> 00:11:27,359

of interesting and maybe hopeful Freud

241

00:11:30,949 --> 00:11:29,219

came along in 1900 that's when he

242

00:11:33,589 --> 00:11:30,959

published the interpretation of dreams

243

00:11:35,349 --> 00:11:33,599

and he brought in that unconscious and I

244

00:11:37,509 --> 00:11:35,359

sometimes think he was the first

245

00:11:40,549 --> 00:11:37,519

complementary and alternative

246

00:11:42,319 --> 00:11:40,559

practitioner in the modern era because

247

00:11:45,229 --> 00:11:42,329

though he was treating the physical

248

00:11:46,669 --> 00:11:45,239

symptoms with psychological and there

249

00:11:48,379 --> 00:11:46,679

were not logic they were not a

250

00:11:50,539 --> 00:11:48,389

measurable phenomenon there was

251  
00:11:53,089 --> 00:11:50,549  
conversation she called it the talking

252  
00:11:55,699 --> 00:11:53,099  
sure and the paralysis disappears

253  
00:11:58,039 --> 00:11:55,709  
not because you measure it or find some

254  
00:12:00,679 --> 00:11:58,049  
scientific study that shows that if you

255  
00:12:02,899 --> 00:12:00,689  
say this word because it simply coalesce

256  
00:12:05,749 --> 00:12:02,909  
as in the from the unconscious to the

257  
00:12:08,299 --> 00:12:05,759  
consciousness of a human being and so

258  
00:12:12,289 --> 00:12:08,309  
there that puts us in a place of looking

259  
00:12:14,389 --> 00:12:12,299  
a little closer at phenomena now when

260  
00:12:16,549 --> 00:12:14,399  
the company and alternative medicine

261  
00:12:18,559 --> 00:12:16,559  
became totally respectable in the United

262  
00:12:20,299 --> 00:12:18,569  
States in the 90s when the National

263  
00:12:24,309 --> 00:12:20,309

Institute of Health this established

264

00:12:27,519 --> 00:12:24,319

that department and the first and

265

00:12:31,699 --> 00:12:27,529

founding a chairman of that organization

266

00:12:34,819 --> 00:12:31,709

said we are going to prove once and for

267

00:12:38,149 --> 00:12:34,829

all whether these alternative medical

268

00:12:39,649 --> 00:12:38,159

practices work and the New England

269

00:12:41,359 --> 00:12:39,659

Journal of Medicine and the Journal of

270

00:12:43,969 --> 00:12:41,369

the American Medical Association both

271

00:12:48,339 --> 00:12:43,979

came out with heavy heavy editorials

272

00:12:50,869 --> 00:12:48,349

saying that there is no such thing as

273

00:12:53,299 --> 00:12:50,879

alternative medicine there is only that

274

00:12:57,349 --> 00:12:53,309

medicine that is proved by science and

275

00:13:00,409 --> 00:12:57,359

that medicine that is not and what do we

276  
00:13:01,849 --> 00:13:00,419  
have now we have complementary and

277  
00:13:04,129 --> 00:13:01,859  
alternative medicine in almost every

278  
00:13:06,820 --> 00:13:04,139  
Medical School in the country lots of

279  
00:13:11,560 --> 00:13:06,830  
grants for it lots of activity going on

280  
00:13:13,930 --> 00:13:11,570  
and when asked there was a lovely new

281  
00:13:17,380 --> 00:13:13,940  
book out but our article in Atlantic

282  
00:13:20,350 --> 00:13:17,390  
Monthly by David Friedman and he went

283  
00:13:23,230 --> 00:13:20,360  
into an interviewed alternative healers

284  
00:13:26,860 --> 00:13:23,240  
and university center and they all

285  
00:13:29,590 --> 00:13:26,870  
agreed that the evidence that of all the

286  
00:13:32,200 --> 00:13:29,600  
research that has been done thousands of

287  
00:13:36,240 --> 00:13:32,210  
studies it's hard to find a study that

288  
00:13:39,580 --> 00:13:36,250

has a statistically significant outcome

289

00:13:41,080 --> 00:13:39,590

so then he asked them at the end the

290

00:13:45,250 --> 00:13:41,090

experts he said well why are you keep

291

00:13:54,940 --> 00:13:45,260

doing this and they said it probably

292

00:13:59,080 --> 00:13:54,950

works and you know and it's and it's

293

00:14:02,370 --> 00:13:59,090

being used and it's just kind of

294

00:14:07,300 --> 00:14:02,380

marvelous if you ask the average

295

00:14:15,640 --> 00:14:07,310

ordinary mainstream medical biomedical

296

00:14:17,860 --> 00:14:15,650

scientist or practicing healer they will

297

00:14:19,840 --> 00:14:17,870

say that evidence-based really means the

298

00:14:24,370 --> 00:14:19,850

old meaning of science that it's

299

00:14:29,680 --> 00:14:24,380

statistically significant 0.05 factor

300

00:14:31,300 --> 00:14:29,690

and so that but if you ask alternative

301

00:14:35,800 --> 00:14:31,310

practitioners and I've asked a lot of

302

00:14:37,330 --> 00:14:35,810

them at various meetings while we say we

303

00:14:39,850 --> 00:14:37,340

can fudge that a little bit and say that

304

00:14:44,920 --> 00:14:39,860

something is promising partly because

305

00:14:46,270 --> 00:14:44,930

it's not harming anybody and these

306

00:14:48,580 --> 00:14:46,280

departments all over the country are

307

00:14:50,440 --> 00:14:48,590

flourishing I think it's wonderful but

308

00:14:53,230 --> 00:14:50,450

again just to point out that we had to

309

00:14:56,800 --> 00:14:53,240

enter the paradox in order to proceed

310

00:15:00,280 --> 00:14:56,810

with the treatment and the public in

311

00:15:04,720 --> 00:15:00,290

many ways demands it and so do some of

312

00:15:10,350 --> 00:15:04,730

the benefactors now the other thing that

313

00:15:14,740 --> 00:15:10,360

happened in 1900 about this is that the

314

00:15:17,010 --> 00:15:14,750

man named Santiago Ramon ha ha a neuro

315

00:15:18,950 --> 00:15:17,020

histology is one of the first ones

316

00:15:21,050 --> 00:15:18,960

demonstrated the sinner

317

00:15:23,500 --> 00:15:21,060

and in your own and he was an artist

318

00:15:26,870 --> 00:15:23,510

also and this is a drawing of his from

319

00:15:28,310 --> 00:15:26,880

looking through the microscope and it's

320

00:15:29,690 --> 00:15:28,320

sort of interesting to me that at the

321

00:15:33,050 --> 00:15:29,700

same time it was in Edmund Husserl

322

00:15:36,830 --> 00:15:33,060

published his first volume of logical

323

00:15:40,130 --> 00:15:36,840

investigations and pointed out perhaps

324

00:15:42,560 --> 00:15:40,140

what is to humans the most serious self

325

00:15:44,690 --> 00:15:42,570

referential paradox of all and that is

326

00:15:48,470 --> 00:15:44,700

the only way we can study the mind is by

327

00:15:51,500 --> 00:15:48,480

using the mind and here we are in that

328

00:15:53,900 --> 00:15:51,510

paradox as I say it's with us and it's

329

00:15:58,130 --> 00:15:53,910

nice that we're able to fudge it and say

330

00:15:59,810 --> 00:15:58,140

hey I think so there's hardly a hero

331

00:16:03,740 --> 00:15:59,820

around who hasn't someday had an

332

00:16:05,200 --> 00:16:03,750

intuitive notion and Carl Jung would

333

00:16:09,590 --> 00:16:05,210

call it synchronicity

334

00:16:11,510 --> 00:16:09,600

but anyway so that we now have we now

335

00:16:14,180 --> 00:16:11,520

know that we have hundreds of billions

336

00:16:16,040 --> 00:16:14,190

of those neurons in our brain right and

337

00:16:17,840 --> 00:16:16,050

we know that each one of those has tens

338

00:16:19,910 --> 00:16:17,850

of thousands of connections to others

339

00:16:23,840 --> 00:16:19,920

and many of those connections go around

340

00:16:26,360 --> 00:16:23,850

in loop de loop and Hofstadter's latest

341

00:16:29,150 --> 00:16:26,370

book is called I am a strange loop and

342

00:16:32,600 --> 00:16:29,160

he feels that consciousness is itself

343

00:16:35,510 --> 00:16:32,610

that loop Oddity loop of the brain that

344

00:16:39,140 --> 00:16:35,520

comes back on itself in an infinite

345

00:16:42,050 --> 00:16:39,150

regression almost and so it looks to me

346

00:16:43,700 --> 00:16:42,060

like um it's all here to stay there is a

347

00:16:46,610 --> 00:16:43,710

Jeffrey's at Andover has a book that

348

00:16:49,370 --> 00:16:46,620

just came out called the quantum brain

349

00:16:53,630 --> 00:16:49,380

and he goes into these ideas in detail

350

00:16:57,940 --> 00:16:53,640

about what's happening at the synapse he

351

00:17:00,920 --> 00:16:57,950

and the and and dr. Eric Kandel both

352

00:17:04,310 --> 00:17:00,930

demonstrated the one who does the images

353

00:17:06,290 --> 00:17:04,320

of looking at art and the massive brain

354

00:17:09,470 --> 00:17:06,300

function that occurs as you look at art

355

00:17:13,880 --> 00:17:09,480

and and see it as image and perhaps

356

00:17:15,290 --> 00:17:13,890

metaphor and are saying that the you

357

00:17:17,540 --> 00:17:15,300

know there's a delay of the synapse

358

00:17:20,720 --> 00:17:17,550

that's been measured in a guy named Lai

359

00:17:23,960 --> 00:17:20,730

bet years ago and we know that there are

360

00:17:24,690 --> 00:17:23,970

delays along the way as those various

361

00:17:27,270 --> 00:17:24,700

connections

362

00:17:29,340 --> 00:17:27,280

made and especially in the speed of the

363

00:17:33,390 --> 00:17:29,350

loop-de-loop and how long it takes us to

364

00:17:38,900 --> 00:17:33,400

grasp that the idea there but that it's

365

00:17:41,340 --> 00:17:38,910

too fast to be explained by our ordinary

366

00:17:45,120 --> 00:17:41,350

proteins that transport subatomic

367

00:17:48,780 --> 00:17:45,130

particles across the membrane peptides

368

00:17:51,450 --> 00:17:48,790

and also some ions that carry that that

369

00:17:58,440 --> 00:17:51,460

is too fast and and a Czechoslovakian

370

00:18:01,380 --> 00:17:58,450

man what's his name - and he has come

371

00:18:04,260 --> 00:18:01,390

out with a lovely paper that outlines a

372

00:18:08,120 --> 00:18:04,270

potential way to look at that in a flow

373

00:18:19,230 --> 00:18:08,130

chart that would help us to understand

374

00:18:23,130 --> 00:18:19,240

so now then I'm just gonna I want to

375

00:18:26,960 --> 00:18:23,140

raise the question with you in the in

376

00:18:30,570 --> 00:18:26,970

this sense of the the goals of the

377

00:18:35,270 --> 00:18:30,580

Society for scientific exploration that

378

00:18:38,640 --> 00:18:35,280

we talked about earlier and could it be

379

00:18:41,220 --> 00:18:38,650

the reason that complexity looks so

380

00:18:42,960 --> 00:18:41,230

weird to us and emergent phenomenon and

381

00:18:44,550 --> 00:18:42,970

seems so and we're trying to bring it

382

00:18:46,620 --> 00:18:44,560

back down to science to understand it

383

00:18:50,100 --> 00:18:46,630

but the reason that it looks like it

384

00:18:53,000 --> 00:18:50,110

needs a resolution is because we're

385

00:18:54,780 --> 00:18:53,010

looking at it through a rational lens

386

00:18:57,510 --> 00:18:54,790

we're not doing it through the

387

00:19:04,530 --> 00:18:57,520

unconscious the way sudden apparition it

388

00:19:06,420 --> 00:19:04,540

and so that that lens then allows us to

389

00:19:11,000 --> 00:19:06,430

view it from the point of view of

390

00:19:14,490 --> 00:19:11,010

ordinary rational logical mathematics

391

00:19:18,090 --> 00:19:14,500

and that the reason quantum seems so

392

00:19:20,400 --> 00:19:18,100

weird to us especially when it comes to

393

00:19:24,840 --> 00:19:20,410

healing we have to try to reduce it down

394

00:19:28,260 --> 00:19:24,850

to ordinary science what do we do with

395

00:19:34,260 --> 00:19:28,270

it but anyway just to say that could it

396

00:19:35,850 --> 00:19:34,270

be that that this aspect of modern

397

00:19:39,010 --> 00:19:35,860

biomedical sign

398

00:19:42,940 --> 00:19:39,020

that lens that we use to look at it with

399

00:19:46,720 --> 00:19:42,950

that that in itself a restrictive

400

00:19:52,360 --> 00:19:46,730

worldview and a hidden theoretical

401  
00:19:54,040 --> 00:19:52,370  
assumption called scientism and so I'll

402  
00:19:57,340 --> 00:19:54,050  
leave without were ready for questions

403  
00:19:59,380 --> 00:19:57,350  
I'll just tell you that I feel like that

404  
00:20:04,300 --> 00:19:59,390  
dandelion in the midst of a big field of

405  
00:20:05,860 --> 00:20:04,310  
wild garlic and I will try if there are

406  
00:20:09,270 --> 00:20:05,870  
questions I will try to answer them

407  
00:20:12,250 --> 00:20:09,280  
unequivocally always holding in my heart

408  
00:20:15,850 --> 00:20:12,260  
that in a quantum computer depends upon

409  
00:20:25,480 --> 00:20:15,860  
some of its qubits being both on and off

410  
00:20:27,310 --> 00:20:25,490  
at the same time are there no question

411  
00:20:29,830 --> 00:20:27,320  
would anyone want to raise their hands

412  
00:20:31,960 --> 00:20:29,840  
well then I'll just mention something to

413  
00:20:33,730 --> 00:20:31,970

you I think this would be kind of fun

414

00:20:36,430 --> 00:20:33,740

enjoy ourselves

415

00:20:38,110 --> 00:20:36,440

I was at an institute of noetic science

416

00:20:42,060 --> 00:20:38,120

meeting and Palm Springs some years ago

417

00:20:44,710 --> 00:20:42,070

and the opening speaker in order to

418

00:20:47,230 --> 00:20:44,720

emphasize the serious and the scientific

419

00:20:50,890 --> 00:20:47,240

nature of the meeting said in her

420

00:20:54,820 --> 00:20:50,900

opening speech remember the words of the

421

00:21:00,010 --> 00:20:54,830

great poet Roque who said love the

422

00:21:01,750 --> 00:21:00,020

questions live the answers and at when

423

00:21:04,330 --> 00:21:01,760

the open mic came I had to get up and

424

00:21:07,090 --> 00:21:04,340

say oh I hate to say this but real Kay

425

00:21:09,970 --> 00:21:07,100

did not say love the questions live the

426

00:21:13,240 --> 00:21:09,980

answers he said love the questions live

427

00:21:16,390 --> 00:21:13,250

the questions and it brings to mind

428

00:21:19,990 --> 00:21:16,400

myself that if we use that poetic notion

429

00:21:22,720 --> 00:21:20,000

then the poetic aspect of it we probably

430

00:21:25,240 --> 00:21:22,730

would in the country be taking half as

431

00:21:29,700 --> 00:21:25,250

many pills as we take every day if we

432

00:21:34,170 --> 00:21:29,710

loved the questions thank you

433

00:21:40,040 --> 00:21:34,180

[Applause]