



Carlo Rovelli



Marvin Solit

1
00:00:31,010 --> 00:00:28,850
hi everybody I'm very grateful to build

2
00:00:34,310 --> 00:00:31,020
and Margaret and all the helpers who put

3
00:00:37,790 --> 00:00:34,320
this together got us together thank you

4
00:00:41,270 --> 00:00:37,800
a lot of work they tell me they'll never

5
00:00:45,229 --> 00:00:41,280
do it again but you never know so here

6
00:00:47,689 --> 00:00:45,239
we are and I'm going to talk about what

7
00:00:53,060 --> 00:00:47,699
I'm going to talk about and from Dover

8
00:00:54,740 --> 00:00:53,070
New Hampshire this is my email and I'm

9
00:00:58,490 --> 00:00:54,750
going to talk about the vertical or

10
00:01:04,370 --> 00:00:58,500
spiral structure of light and space how

11
00:01:08,660 --> 00:01:04,380
light travels through space um and it's

12
00:01:12,170 --> 00:01:08,670
a helix I want to go over the things I

13
00:01:14,510 --> 00:01:12,180

would like to tell you in case I don't

14

00:01:16,430 --> 00:01:14,520

get around to it where I run out of time

15

00:01:19,490 --> 00:01:16,440

so these are the things I'm going to

16

00:01:21,560 --> 00:01:19,500

tell you about the vortex how light

17

00:01:26,690 --> 00:01:21,570

travels through space and it does that

18

00:01:29,300 --> 00:01:26,700

because base has a spiral grade that's

19

00:01:31,999 --> 00:01:29,310

can be debated it has been for a long

20

00:01:38,350 --> 00:01:32,009

time I want to tell you about the heart

21

00:01:43,100 --> 00:01:38,360

the heart has a vertical field in it

22

00:01:45,830 --> 00:01:43,110

light and electricity spiral through the

23

00:01:48,440 --> 00:01:45,840

heart and the heart the design of the

24

00:01:53,859 --> 00:01:48,450

heart thanks to a Spanish cardiologist

25

00:01:58,309 --> 00:01:53,869

by the name of torrid wasp GU ASP is a

26

00:02:03,880 --> 00:01:58,319

double spiral and it has the form of

27

00:02:07,900 --> 00:02:03,890

this famous animation from MC Escher

28

00:02:12,610 --> 00:02:07,910

which is a scalar field and Tenant and

29

00:02:15,949 --> 00:02:12,620

it only has one surface and such a

30

00:02:19,210 --> 00:02:15,959

surface means that the heart acts as a

31

00:02:26,479 --> 00:02:19,220

bi-directional sending and receiving

32

00:02:28,370 --> 00:02:26,489

scalar field antenna I'm going to talk

33

00:02:32,030 --> 00:02:28,380

about this device which I carry in my

34

00:02:33,620 --> 00:02:32,040

pocket I was in Barcelona and a friend

35

00:02:37,280 --> 00:02:33,630

of mine introduced me to an elderly

36

00:02:39,199 --> 00:02:37,290

gentleman who had developed a device to

37

00:02:42,350 --> 00:02:39,209

people from environmental

38

00:02:46,580 --> 00:02:42,360

electromagnetic fields it was tested in

39

00:02:49,759 --> 00:02:46,590

four or five Spanish universities it was

40

00:02:52,130 --> 00:02:49,769

discovered that it really balances the

41

00:02:55,280 --> 00:02:52,140

body's fields it does very good things

42

00:02:56,899 --> 00:02:55,290

to your physiology nobody could

43

00:02:58,789 --> 00:02:56,909

understand how it worked

44

00:03:03,649 --> 00:02:58,799

none of the scientists could understand

45

00:03:08,509 --> 00:03:03,659

it Jim can you explain this they said oh

46

00:03:11,690 --> 00:03:08,519

yeah I had any idea but what I

47

00:03:15,559 --> 00:03:11,700

discovered after a lot of looking at

48

00:03:17,300 --> 00:03:15,569

this image on the face of it that it's

49

00:03:18,440 --> 00:03:17,310

something called the Flower of Life I

50

00:03:21,470 --> 00:03:18,450

had never heard of the Flower of Life

51
00:03:24,920 --> 00:03:21,480
before it's a very interesting design

52
00:03:29,050 --> 00:03:24,930
it's the design on my shirt I'm gonna

53
00:03:31,550 --> 00:03:29,060
get a yarmulke with that design because

54
00:03:34,759 --> 00:03:31,560
you'll see you'll see why I think the

55
00:03:37,119 --> 00:03:34,769
the morphic field spirals down through

56
00:03:42,439 --> 00:03:37,129
the crown chakra and through the heart

57
00:03:44,629 --> 00:03:42,449
that's my guess going to talk about

58
00:03:50,080 --> 00:03:44,639
briefly mentioned this school in the

59
00:03:53,869 --> 00:03:50,090
Himalayas that is designed alone the

60
00:03:56,300 --> 00:03:53,879
Flower of Life sacred geometry it's a

61
00:03:59,180 --> 00:03:56,310
very happy school Tibetan hundreds of

62
00:04:02,349 --> 00:03:59,190
Tibetan children go there and they have

63
00:04:06,860 --> 00:04:02,359

a good time learning their traditional

64

00:04:09,259 --> 00:04:06,870

language and so on and if any of you

65

00:04:12,259 --> 00:04:09,269

happen to stumble over a box full of

66

00:04:17,210 --> 00:04:12,269

money would like to get rid of it these

67

00:04:20,710 --> 00:04:17,220

people could use some support it has won

68

00:04:25,159 --> 00:04:20,720

many awards it's one of the top ten

69

00:04:31,070 --> 00:04:25,169

architectural designs in the world for

70

00:04:33,140 --> 00:04:31,080

school I was talking about the Flower of

71

00:04:36,290 --> 00:04:33,150

Life at a conference at the Healing

72

00:04:38,779 --> 00:04:36,300

Touch conference and I put up this slide

73

00:04:41,680 --> 00:04:38,789

the hidden energy science sacred

74

00:04:44,689 --> 00:04:41,690

geometry by Robert J Gilbert I

75

00:04:46,399 --> 00:04:44,699

recommended this article and I heard

76

00:04:51,210 --> 00:04:46,409

this rustling in the back of the room as

77

00:04:56,880 --> 00:04:51,220

I said that Robert J Gilbert

78

00:04:58,290 --> 00:04:56,890

walked into the room give me a break it

79

00:05:03,540 --> 00:04:58,300

all started with a question from the

80

00:05:06,480 --> 00:05:03,550

student students said dr. Rocha how much

81

00:05:09,650 --> 00:05:06,490

of the body is matter and how much is

82

00:05:17,430 --> 00:05:15,420

well it's 95 percent empty space five

83

00:05:20,100 --> 00:05:17,440

percent matter but if you look at that

84

00:05:23,030 --> 00:05:20,110

five percent that's matter ninety-five

85

00:05:26,940 --> 00:05:23,040

percent of that is empty space and if

86

00:05:32,810 --> 00:05:26,950

you look at the other five percent that

87

00:05:39,750 --> 00:05:36,180

terms I guess something to do with terms

88

00:05:42,870 --> 00:05:39,760

so and then I found the proton which has

89

00:05:45,960 --> 00:05:42,880

a spin and it looks like a thing but it

90

00:05:49,080 --> 00:05:45,970

isn't it's mainly empty space and inside

91

00:05:51,870 --> 00:05:49,090

of it two up quarks and one down quark

92

00:05:57,750 --> 00:05:51,880

and if you look a little closer the

93

00:06:00,810 --> 00:05:57,760

quarks are connected by gluons and if

94

00:06:02,940 --> 00:06:00,820

you look further the gluons and quarks

95

00:06:06,300 --> 00:06:02,950

and so on are connected together in a

96

00:06:12,570 --> 00:06:06,310

sort of 10 Segrest matrix and all these

97

00:06:15,000 --> 00:06:12,580

little balls are full of nothing so

98

00:06:18,000 --> 00:06:15,010

there's an interesting book that helped

99

00:06:20,070 --> 00:06:18,010

out called void the strange physics of

100

00:06:24,840 --> 00:06:20,080

nothing and it goes through the history

101
00:06:28,260 --> 00:06:24,850
of our beliefs in the fabric of space or

102
00:06:31,500 --> 00:06:28,270
the non fabric of space and it was very

103
00:06:35,190 --> 00:06:31,510
helpful I'm very interested in the work

104
00:06:39,090 --> 00:06:35,200
of Rupert Sheldrake the morphic field

105
00:06:41,969 --> 00:06:39,100
I like people I'm very interested in the

106
00:06:44,850 --> 00:06:41,979
people that everyone else agrees are

107
00:06:48,990 --> 00:06:44,860
crazy because those are the people who

108
00:06:52,500 --> 00:06:49,000
have really good ideas and Sheldrake has

109
00:06:57,990 --> 00:06:52,510
a fantastic idea which I'll tell you

110
00:07:00,659 --> 00:06:58,000
about Einstein said if the concept isn't

111
00:07:01,010 --> 00:07:00,669
it first absurd it doesn't stand a

112
00:07:03,890 --> 00:07:01,020
chance

113
00:07:06,439 --> 00:07:03,900

so I feel very comfortable with you

114

00:07:08,930 --> 00:07:06,449

people because you'd have lots of absurd

115

00:07:13,839 --> 00:07:08,940

ideas and I look forward to learning

116

00:07:17,119 --> 00:07:13,849

more about them Sheldrake says in his

117

00:07:21,080 --> 00:07:17,129

writings that consciousness and memory

118

00:07:22,969 --> 00:07:21,090

are not in the brain and of course

119

00:07:24,860 --> 00:07:22,979

everybody knows this is where we

120

00:07:28,219 --> 00:07:24,870

remember things and consciousness is

121

00:07:31,129 --> 00:07:28,229

everybody points in their head Carl Jung

122

00:07:33,529 --> 00:07:31,139

said psyche is not in the head or the

123

00:07:36,589 --> 00:07:33,539

brain and there are lots of very

124

00:07:38,980 --> 00:07:36,599

distinguished scholars who say the same

125

00:07:47,629 --> 00:07:43,820

Sheldrake says it this way compares it

126

00:07:49,760 --> 00:07:47,639

compares your memory with your TV I

127

00:07:51,740 --> 00:07:49,770

can't study your TV and determine what

128

00:07:54,559 --> 00:07:51,750

programs you watched last night they're

129

00:07:58,070 --> 00:07:54,569

not there they've not left a trace the

130

00:08:00,469 --> 00:07:58,080

main brain may be like a TV a receiver

131

00:08:03,080 --> 00:08:00,479

that Tunes into the memory Channel but

132

00:08:04,850 --> 00:08:03,090

the show is not stored there so there's

133

00:08:07,520 --> 00:08:04,860

a lot of interest in the possibility

134

00:08:10,670 --> 00:08:07,530

that space the quantum vacuum is this

135

00:08:12,640 --> 00:08:10,680

actual storehouse of memory and I think

136

00:08:16,610 --> 00:08:12,650

there's a lot of merit to that idea

137

00:08:19,459 --> 00:08:16,620

Sheldrake's concepts more for genetic

138

00:08:22,129 --> 00:08:19,469

fields give rise to all forms this is

139

00:08:25,370 --> 00:08:22,139

really important people can criticize

140

00:08:28,249 --> 00:08:25,380

him all they want but his ideas touch

141

00:08:32,540 --> 00:08:28,259

upon one of the great unsolved problems

142

00:08:35,779 --> 00:08:32,550

in biology how did I form into this

143

00:08:38,889 --> 00:08:35,789

thing from a single cell how does that

144

00:08:42,440 --> 00:08:38,899

work we've spent decades studying

145

00:08:45,199 --> 00:08:42,450

morphogenesis developmental biology we

146

00:08:48,710 --> 00:08:45,209

still don't understand it this at least

147

00:08:51,260 --> 00:08:48,720

is an idea it's a start and he might

148

00:08:53,810 --> 00:08:51,270

just be right matter assumes form when

149

00:08:55,280 --> 00:08:53,820

it resonates with the field the fields

150

00:08:57,829 --> 00:08:55,290

involved are not classical

151
00:09:00,829 --> 00:08:57,839
electromagnetic fields I questioned that

152
00:09:03,850 --> 00:09:00,839
statement for a long time because I said

153
00:09:06,380 --> 00:09:03,860
how do you know it's not a classical

154
00:09:11,000 --> 00:09:06,390
electromagnetic field and then I learned

155
00:09:13,340 --> 00:09:11,010
about scalar fields scalar fields so

156
00:09:17,270 --> 00:09:13,350
that's and I

157
00:09:19,610 --> 00:09:17,280
that story to Sheldrake himself and he

158
00:09:23,810 --> 00:09:19,620
went out bought Constantine miles book

159
00:09:24,290 --> 00:09:23,820
on scalar fields this is an amazing

160
00:09:26,150 --> 00:09:24,300
statement

161
00:09:28,940 --> 00:09:26,160
morphic genetic fields are derived from

162
00:09:33,350 --> 00:09:28,950
the body's own past actions and from the

163
00:09:36,620 --> 00:09:33,360

structures and actions of ancestors what

164

00:09:38,330 --> 00:09:36,630

a fantastic idea he just might be right

165

00:09:41,540 --> 00:09:38,340

about that and there are others who

166

00:09:47,270 --> 00:09:41,550

agree with fields act across space and

167

00:09:50,090 --> 00:09:47,280

time I'll tell you about Carlo Rivoli's

168

00:09:54,620 --> 00:09:50,100

model of space marvin solet's model of

169

00:09:58,430 --> 00:09:54,630

space and some others beginning

170

00:10:02,450 --> 00:09:58,440

aristotle decart and limits considered

171

00:10:05,840 --> 00:10:02,460

space to be a plenum a fullness lots of

172

00:10:08,270 --> 00:10:05,850

stuff in space newton tossed that idea

173

00:10:11,630 --> 00:10:08,280

out he did not need space to have any

174

00:10:19,190 --> 00:10:11,640

structure to operate his laws of gravity

175

00:10:21,580 --> 00:10:19,200

and a couple of decades of pumping air

176
00:10:24,740 --> 00:10:21,590
out of a container with a vacuum pump

177
00:10:27,530 --> 00:10:24,750
creating emptiness confirmed that

178
00:10:29,810 --> 00:10:27,540
there's nothing in there what we now

179
00:10:32,470 --> 00:10:29,820
know that the vacuum is a very busy

180
00:10:34,640 --> 00:10:32,480
place lots of things going on there

181
00:10:38,420 --> 00:10:34,650
James Clerk Maxwell

182
00:10:41,270 --> 00:10:38,430
one of the most important papers in the

183
00:10:43,850 --> 00:10:41,280
history of physics the publication of

184
00:10:46,340 --> 00:10:43,860
Maxwell's equations for light

185
00:10:49,160 --> 00:10:46,350
he felt that space had to have a

186
00:10:54,350 --> 00:10:49,170
structure to support the electromagnetic

187
00:10:57,320 --> 00:10:54,360
wave Einstein and Minkowski came along

188
00:11:02,620 --> 00:10:57,330

line Stein said space has a fabric and

189

00:11:07,910 --> 00:11:02,630

it's a curved fabric and Einstein

190

00:11:14,000 --> 00:11:07,920

Minkowski space-time space-time they go

191

00:11:17,990 --> 00:11:14,010

together Paul Dirac he developed a model

192

00:11:20,570 --> 00:11:18,000

of the vacuum as an infinite sea for

193

00:11:22,410 --> 00:11:20,580

particles and energy this came to be

194

00:11:26,670 --> 00:11:22,420

called the Dirac sea he got the

195

00:11:32,009 --> 00:11:26,680

both rise in 1933 and here's the Dirac

196

00:11:36,949 --> 00:11:32,019

sea well you've got waves in it of

197

00:11:39,870 --> 00:11:36,959

course this is 10^{-23}

198

00:11:42,090 --> 00:11:39,880

centimeters this is a very very very

199

00:11:43,650 --> 00:11:42,100

very small nobody can see what's going

200

00:11:46,110 --> 00:11:43,660

on here with the most powerful

201
00:11:49,860 --> 00:11:46,120
microscope we have to guess what's going

202
00:11:52,620 --> 00:11:49,870
on but basically what Dirac said is the

203
00:11:54,600 --> 00:11:52,630
direct seed ether the quantum vacuum the

204
00:11:57,480 --> 00:11:54,610
quantum plenum or whatever it is is

205
00:12:00,389 --> 00:11:57,490
constantly emitting positrons and

206
00:12:03,170 --> 00:12:00,399
electrons which immediately annihilate

207
00:12:08,819 --> 00:12:03,180
each other in 10^{-35} seconds

208
00:12:10,350 --> 00:12:08,829
and I think a lot of physicists all

209
00:12:12,900 --> 00:12:10,360
physicists don't agree about anything

210
00:12:16,579 --> 00:12:12,910
but I think a lot of physicists agree

211
00:12:19,110 --> 00:12:16,589
about this Roger sir Roger Penrose

212
00:12:21,329 --> 00:12:19,120
conceived of space as a spin net with

213
00:12:25,889 --> 00:12:21,339

empty space contains structure and

214

00:12:29,850 --> 00:12:25,899

energy and information as children is

215

00:12:35,269 --> 00:12:29,860

trying to tell us mark Cummings says

216

00:12:38,569 --> 00:12:35,279

it's not a quantum vacuum it's a quantum

217

00:12:42,030 --> 00:12:38,579

plenum it's an abundance it's a full

218

00:12:45,090 --> 00:12:42,040

here are his principles the plenum is an

219

00:12:47,280 --> 00:12:45,100

absolute fullness it provides the energy

220

00:12:50,550 --> 00:12:47,290

that keeps electrons moving in their

221

00:12:54,480 --> 00:12:50,560

orbitals in the atom it provides energy

222

00:12:58,439 --> 00:12:54,490

for metabolism and movement the geometry

223

00:13:02,550 --> 00:12:58,449

of organic bonds our organic chemistry

224

00:13:05,790 --> 00:13:02,560

induces a flux from the plenum into life

225

00:13:08,870 --> 00:13:05,800

it's an infinitely coherent field of

226

00:13:11,970 --> 00:13:08,880

luminosity Wow

227

00:13:15,389 --> 00:13:11,980

meaning that and one of the things that

228

00:13:17,880 --> 00:13:15,399

mark cummings says is if you could see

229

00:13:20,370 --> 00:13:17,890

the light in this room it would totally

230

00:13:23,519 --> 00:13:20,380

blind you there's an enormous amount of

231

00:13:27,629 --> 00:13:23,529

light in this room but it's all coherent

232

00:13:30,509 --> 00:13:27,639

in such a way that every bit of energy

233

00:13:31,829 --> 00:13:30,519

going this way is exactly balanced with

234

00:13:33,840 --> 00:13:31,839

energy going that way

235

00:13:34,170 --> 00:13:33,850

so it all balances out so it doesn't

236

00:13:36,180 --> 00:13:34,180

look

237

00:13:38,310 --> 00:13:36,190

like anything is happening shift the

238

00:13:40,680 --> 00:13:38,320

balance a little bit of a little bit and

239

00:13:44,420 --> 00:13:40,690

an enormous amount of light comes out as

240

00:13:49,280 --> 00:13:47,310

space is a fluorescing with vacuum

241

00:13:51,600 --> 00:13:49,290

photons

242

00:13:53,970 --> 00:13:51,610

it's the embedding space for

243

00:13:59,130 --> 00:13:53,980

electromagnetism electromagnetism is

244

00:14:01,380 --> 00:13:59,140

embedded in the quantum plenum it's the

245

00:14:08,430 --> 00:14:01,390

source of the inner light of the

246

00:14:10,740 --> 00:14:08,440

spiritual traditions carla Ravalli his

247

00:14:14,310 --> 00:14:10,750

famous bestseller seven brief lessons in

248

00:14:18,769 --> 00:14:14,320

physics illustrates the quantum vacuum

249

00:14:22,019 --> 00:14:18,779

is a fabric of space-time and he

250

00:14:24,720 --> 00:14:22,029

imagines enlarging a bit of the fabric

251
00:14:26,360 --> 00:14:24,730
and it has a structure what that

252
00:14:28,800 --> 00:14:26,370
structure is I'm going to tell you

253
00:14:32,240 --> 00:14:28,810
here's some more models Milo Wolf's

254
00:14:35,010 --> 00:14:32,250
model from his wave theory of matter

255
00:14:38,970 --> 00:14:35,020
electrons standing waves he says that

256
00:14:41,940 --> 00:14:38,980
every electron is in communication with

257
00:14:44,010 --> 00:14:41,950
every other electron in the universe and

258
00:14:47,550 --> 00:14:44,020
they're standing waves going back and

259
00:14:49,290 --> 00:14:47,560
forth and the structure of the electron

260
00:14:53,190 --> 00:14:49,300
is absolutely dependent on this

261
00:14:55,010 --> 00:14:53,200
interchange Martin Bohm walled loop

262
00:14:58,920 --> 00:14:55,020
quantum gravity

263
00:15:02,790 --> 00:14:58,930

Marvin Solon one of my mentors holistic

264

00:15:06,320 --> 00:15:02,800

geometry a great man not very well known

265

00:15:10,500 --> 00:15:06,330

but he did incredible work wholeness

266

00:15:12,600 --> 00:15:10,510

intensity tensegrities the balancing of

267

00:15:15,630 --> 00:15:12,610

counteracting forces of tension and

268

00:15:18,900 --> 00:15:15,640

compression which gives structures their

269

00:15:20,610 --> 00:15:18,910

shapes strength and flexibility it's

270

00:15:23,519 --> 00:15:20,620

through the mechanism of tensegrities

271

00:15:25,110 --> 00:15:23,529

that hold us persists in the parts and

272

00:15:27,780 --> 00:15:25,120

it's through the mechanism of

273

00:15:33,240 --> 00:15:27,790

tensegrities that wholeness can be

274

00:15:36,120 --> 00:15:33,250

restored Marvin and his colleague

275

00:15:39,630 --> 00:15:36,130

William day developed a model for the

276

00:15:42,350 --> 00:15:39,640

electromagnetic field derived from ten

277

00:15:47,280 --> 00:15:42,360

Segrest geometry begin with a pre wave

278

00:15:55,560 --> 00:15:52,700

the red shows the wave the blue the

279

00:15:57,360 --> 00:15:55,570

magnetic field the green the electric

280

00:16:01,050 --> 00:15:57,370

field they're perpendicular to each

281

00:16:03,090 --> 00:16:01,060

other and they can give rise to the

282

00:16:07,740 --> 00:16:03,100

particle we have come to know and love

283

00:16:10,740 --> 00:16:07,750

is the photon interesting ideas oldest

284

00:16:13,640 --> 00:16:10,750

is a starting point with the limitations

285

00:16:16,560 --> 00:16:13,650

of perception all we can see are parts

286

00:16:18,990 --> 00:16:16,570

Marvin presents a geometric creation

287

00:16:21,510 --> 00:16:19,000

story which demonstrates that the

288

00:16:24,150 --> 00:16:21,520

connection between the parts and the

289

00:16:29,490 --> 00:16:24,160

whole exists this is the role of

290

00:16:31,260 --> 00:16:29,500

geometry find or foundation for new

291

00:16:34,530 --> 00:16:31,270

directions find

292

00:16:38,220 --> 00:16:34,540

or he will find the work of Marvin Solon

293

00:16:42,090 --> 00:16:38,230

and segregate the starting point rose

294

00:16:44,880 --> 00:16:42,100

from a sculptor Kenneth Snelson fitting

295

00:16:47,970 --> 00:16:44,890

together compressing compression

296

00:16:50,690 --> 00:16:47,980

resistance structures called struts with

297

00:16:55,170 --> 00:16:50,700

tension resisting structures called

298

00:16:58,710 --> 00:16:55,180

tendons and Buckminster Fuller used this

299

00:16:59,550 --> 00:16:58,720

model to design the geodesic dome and

300

00:17:02,160 --> 00:16:59,560

many other things

301
00:17:04,620 --> 00:17:02,170
Thor was a designer architect engineer

302
00:17:07,890 --> 00:17:04,630
mathematician philosopher and poet he

303
00:17:15,150 --> 00:17:07,900
had 2,000 patents he was thrown out of

304
00:17:17,880 --> 00:17:15,160
Harvard twice clever guy tensegrities a

305
00:17:19,890 --> 00:17:17,890
universal set of building rules that

306
00:17:22,500 --> 00:17:19,900
guides the design of organic and

307
00:17:25,080 --> 00:17:22,510
man-made structures from simple carbon

308
00:17:27,480 --> 00:17:25,090
compounds to complex cells and tissues

309
00:17:30,240 --> 00:17:27,490
so here you can see a man-made structure

310
00:17:33,000 --> 00:17:30,250
a crane this is a tensegrities structure

311
00:17:37,730 --> 00:17:33,010
this is the head of the femur very

312
00:17:41,580 --> 00:17:37,740
similar structure resisting compression

313
00:17:43,610 --> 00:17:41,590

and tension a wonderful article by

314

00:17:49,610 --> 00:17:43,620

donald engler the architecture of life

315

00:17:55,980 --> 00:17:54,960

1998 extending tensegrities to the

316

00:17:58,800 --> 00:17:55,990

cellular level

317

00:17:59,550 --> 00:17:58,810

the tensegrities system is defined by a

318

00:18:02,940 --> 00:17:59,560

continuous

319

00:18:04,770 --> 00:18:02,950

tensional network tendons supported by a

320

00:18:08,730 --> 00:18:04,780

discontinuous set of compressive

321

00:18:10,860 --> 00:18:08,740

elements struts it's a very good model

322

00:18:14,430 --> 00:18:10,870

for the structure of the human body

323

00:18:19,470 --> 00:18:14,440

because a tense Vickery structure will

324

00:18:23,970 --> 00:18:19,480

absorb shock will withstand heavy loads

325

00:18:26,130 --> 00:18:23,980

and will if you pluck one of the tendons

326

00:18:29,160 --> 00:18:26,140

the vibrations travel through the whole

327

00:18:33,420 --> 00:18:29,170

structure that's also a good model for

328

00:18:35,940 --> 00:18:33,430

the structure of space this is bio

329

00:18:38,010 --> 00:18:35,950

tensegrities there's now a bio

330

00:18:42,540 --> 00:18:38,020

tensegrities special interest group that

331

00:18:46,130 --> 00:18:42,550

meets in the US and europe people who

332

00:18:50,610 --> 00:18:46,140

are fascinated by this and steve levin a

333

00:18:53,630 --> 00:18:50,620

Northup enoch surgeon recognized that

334

00:18:56,250 --> 00:18:53,640

the intervertebral discs are not

335

00:18:58,830 --> 00:18:56,260

compression resistance structures like

336

00:19:01,740 --> 00:18:58,840

we think they are this fine is not a

337

00:19:04,940 --> 00:19:01,750

stack of blocks like it's described in

338

00:19:06,210 --> 00:19:04,950

the medical school it's actually the

339

00:19:13,110 --> 00:19:06,220

vertebra

340

00:19:17,060 --> 00:19:13,120

below and this is done through the soft

341

00:19:19,890 --> 00:19:17,070

tissues the ligaments close to the spine

342

00:19:20,910 --> 00:19:19,900

this is Tom Clements who's built a

343

00:19:25,920 --> 00:19:20,920

number of models

344

00:19:28,260 --> 00:19:25,930

he's on salt spring island amazing

345

00:19:31,560 --> 00:19:28,270

models very valuable models this is a

346

00:19:33,480 --> 00:19:31,570

model a complete tensegrities skeleton

347

00:19:36,090 --> 00:19:33,490

that can walk sit stretch and contour

348

00:19:39,240 --> 00:19:36,100

it'll stand self-supporting with all the

349

00:19:42,390 --> 00:19:39,250

compression elements the bones floating

350

00:19:46,380 --> 00:19:42,400

in the web of tension it is woven around

351

00:19:53,790 --> 00:19:46,390

it from top to bottom it can go for a

352

00:19:56,430 --> 00:19:53,800

walk and inverse famous article very

353

00:19:58,200 --> 00:19:56,440

good article highly recommended now a

354

00:20:01,090 --> 00:19:58,210

turning point in all of this happened

355

00:20:04,180 --> 00:20:01,100

when I met Rudy shields I met him at the

356

00:20:08,490 --> 00:20:04,190

Foundation for New Directions where

357

00:20:11,710 --> 00:20:08,500

Marvin solet presided for many years and

358

00:20:14,080 --> 00:20:11,720

Rudy shield is one the top

359

00:20:17,440 --> 00:20:14,090

astrophysicists cosmologists in the

360

00:20:22,870 --> 00:20:17,450

world he's the chairman of the cosmology

361

00:20:24,549 --> 00:20:22,880

department Harvard he operates that the

362

00:20:25,480 --> 00:20:24,559

harvard-smithsonian Center for

363

00:20:27,279 --> 00:20:25,490

Astrophysics

364

00:20:30,220 --> 00:20:27,289

he's the editor of the Journal of

365

00:20:34,390 --> 00:20:30,230

cosmology and he's the director of this

366

00:20:38,200 --> 00:20:34,400

60-inch telecast telescope on Mount

367

00:20:41,110 --> 00:20:38,210

Hopkins in Arizona the largest telescope

368

00:20:44,740 --> 00:20:41,120

in the world that is exclusively devoted

369

00:20:48,399 --> 00:20:44,750

to spectroscopy of different stars and

370

00:20:52,440 --> 00:20:48,409

galaxies galaxies he has a lot of ideas

371

00:20:55,060 --> 00:20:52,450

about what's going on out there we had a

372

00:20:58,840 --> 00:20:55,070

little gathering to watch the film

373

00:21:02,560 --> 00:20:58,850

thrive at Marvin's Institute there in

374

00:21:06,250 --> 00:21:02,570

Cambridge and Rudy field got up and in

375

00:21:10,090 --> 00:21:06,260

response to a question he said forget

376

00:21:12,970 --> 00:21:10,100

about dark matter and dark energy we had

377

00:21:15,909 --> 00:21:12,980

to conceive those to make our equations

378

00:21:21,419 --> 00:21:15,919

balance and balance but that's not

379

00:21:28,419 --> 00:21:24,039

when I got back up off the floor I said

380

00:21:30,830 --> 00:21:28,429

dr. Scholl's do you talk like that in

381

00:21:36,300 --> 00:21:33,870

well he said yes as a matter of fact we

382

00:21:39,020 --> 00:21:36,310

have just published it's a very thick

383

00:21:42,350 --> 00:21:39,030

book that's been published in the

384

00:21:45,780 --> 00:21:42,360

Journal of cosmology quantum physics

385

00:21:48,990 --> 00:21:45,790

evolution brain and mind consciousness

386

00:21:54,180 --> 00:21:49,000

and the universe I got this book highly

387

00:22:01,290 --> 00:21:54,190

recommended and it's all about the ideas

388

00:22:04,200 --> 00:22:01,300

of space and cosmology 2011 Rudy shield

389

00:22:06,860 --> 00:22:04,210

thinks that black holes are rare

390

00:22:09,390 --> 00:22:06,870

memories for story because of their

391

00:22:12,060 --> 00:22:09,400

relativistically continuous contraction

392

00:22:14,700 --> 00:22:12,070

and continuous acquisition of more mass

393

00:22:17,280 --> 00:22:14,710

black holes can serve as nature's hard

394

00:22:20,310 --> 00:22:17,290

drives holding copies of the quantum

395

00:22:24,300 --> 00:22:20,320

holograms generated by each new moment

396

00:22:27,380 --> 00:22:24,310

of human experience as well as each new

397

00:22:31,230 --> 00:22:27,390

event occurring to nonliving objects

398

00:22:33,450 --> 00:22:31,240

everything is recorded in black holes in

399

00:22:36,600 --> 00:22:33,460

the edge of the black hole this is a

400

00:22:40,020 --> 00:22:36,610

fantastic idea how can my thought how

401
00:22:43,830 --> 00:22:40,030
can my words how can my wave to you get

402
00:22:47,160 --> 00:22:43,840
stored in a black hole and with scalar

403
00:22:50,340 --> 00:22:47,170
fields it's trivial because they travel

404
00:22:53,280 --> 00:22:50,350
if they have a velocity it's billion

405
00:22:56,850 --> 00:22:53,290
times the speed of light my thoughts my

406
00:22:59,010 --> 00:22:56,860
words my actions can reach every black

407
00:23:02,310 --> 00:22:59,020
hole in the universe in a very very

408
00:23:04,980 --> 00:23:02,320
short time and if I need to extract

409
00:23:08,240 --> 00:23:04,990
information from that storage vast

410
00:23:12,210 --> 00:23:08,250
storage vault it comes very fast

411
00:23:14,910 --> 00:23:12,220
Russians have worked out and it's

412
00:23:17,880 --> 00:23:14,920
another story but the velocity of scalar

413
00:23:24,360 --> 00:23:17,890

fields so here's the cosmic hard drive

414

00:23:31,350 --> 00:23:24,370

it's a black hole one of the things that

415

00:23:35,190 --> 00:23:31,360

happened was okay Marvin was working on

416

00:23:39,210 --> 00:23:35,200

the Platonic solids and he developed a

417

00:23:42,210 --> 00:23:39,220

model of a tensegrities structure from

418

00:23:43,299 --> 00:23:42,220

which you could derive all of the all

419

00:23:47,440 --> 00:23:43,309

five of the Pluto

420

00:23:49,989 --> 00:23:47,450

excellence marvin was ill he had that he

421

00:23:55,029 --> 00:23:49,999

was having kidney failure he had to go

422

00:23:58,210 --> 00:23:55,039

have support kidney dialysis he didn't

423

00:24:01,239 --> 00:23:58,220

like that was unpleasant he decided he

424

00:24:09,930 --> 00:24:01,249

was done with that he quit his dialysis

425

00:24:17,919 --> 00:24:14,230

Vladimir Ginsburg Vladimir Ginsburg said

426

00:24:21,039 --> 00:24:17,929

Marvin your discovery of the origin of

427

00:24:24,389 --> 00:24:21,049

the platonic solids is the most

428

00:24:28,019 --> 00:24:24,399

important discovery in geometry since

429

00:24:32,710 --> 00:24:28,029

Plato and Pythagoras

430

00:24:36,810 --> 00:24:32,720

well that acknowledgment made Marvin

431

00:24:41,680 --> 00:24:36,820

feel his life was complete so he left us

432

00:24:44,499 --> 00:24:41,690

immediately Lattimer Ginsberg has

433

00:24:47,259 --> 00:24:44,509

written five books on the spiral grain

434

00:24:50,259 --> 00:24:47,269

of the universe I don't think anybody

435

00:24:59,560 --> 00:24:50,269

reads them except me maybe some of you

436

00:25:02,830 --> 00:24:59,570

they're very interesting books spiral

437

00:25:05,799 --> 00:25:02,840

grain of the universe it's a concept

438

00:25:08,649 --> 00:25:05,809

that has arisen again and again and

439

00:25:12,820 --> 00:25:08,659

again in physics the greatest minds of

440

00:25:17,639 --> 00:25:12,830

physics have preoccupied lots of their

441

00:25:21,580 --> 00:25:17,649

time thinking about work to vortex

442

00:25:24,460 --> 00:25:21,590

Michael Faraday and James Clark Maxwell

443

00:25:25,930 --> 00:25:24,470

spent a lot of time in Cambridge I wish

444

00:25:28,720 --> 00:25:25,940

I could go back and listen to their

445

00:25:31,480 --> 00:25:28,730

conversations discussing the fabric of

446

00:25:35,379 --> 00:25:31,490

space and how the electromagnetic wave

447

00:25:37,960 --> 00:25:35,389

is a vortex the big problem facing

448

00:25:40,389 --> 00:25:37,970

physics is the very very tiny scale of

449

00:25:43,720 --> 00:25:40,399

the fabric of space if there is less

450

00:25:45,970 --> 00:25:43,730

fabric it's way beyond the resolution of

451
00:25:48,970 --> 00:25:45,980
any microscope it can only be measured

452
00:25:51,190 --> 00:25:48,980
or estimated indirectly the scale where

453
00:25:53,230 --> 00:25:51,200
relativity meets quantum mechanics meets

454
00:25:55,310 --> 00:25:53,240
gravity is called the Planck length

455
00:26:00,050 --> 00:25:55,320
which is one point

456
00:26:04,730 --> 00:26:00,060
times 10 to the minus 35 meters or 0.00

457
00:26:08,810 --> 00:26:04,740
lotta zeros meters we can't see that the

458
00:26:12,020 --> 00:26:08,820
fabric is a million million times

459
00:26:12,580 --> 00:26:12,030
smaller than an electron that's pretty

460
00:26:16,760 --> 00:26:12,590
small

461
00:26:20,360 --> 00:26:16,770
well we wrote a paper about the vertical

462
00:26:22,760 --> 00:26:20,370
structure of light in space and we think

463
00:26:26,630 --> 00:26:22,770

we figured out the structure of space

464

00:26:30,980 --> 00:26:26,640

from biology and my collaborator is my

465

00:26:33,830 --> 00:26:30,990

child bride Noor and there we are and we

466

00:26:37,220 --> 00:26:33,840

wrote this in the Journal of vortex

467

00:26:39,770 --> 00:26:37,230

science and technology here's the

468

00:26:43,550 --> 00:26:39,780

discovery this has been known for a long

469

00:26:45,350 --> 00:26:43,560

time the cornea is the layer right under

470

00:26:48,260 --> 00:26:45,360

the it's layer of connective tissue

471

00:26:50,300 --> 00:26:48,270

right underneath the corneal epithelium

472

00:26:52,640 --> 00:26:50,310

the epithelium is the thin layer of

473

00:26:55,070 --> 00:26:52,650

cells that gets scratched if you scratch

474

00:26:57,970 --> 00:26:55,080

your eye and it heals in two days

475

00:27:01,130 --> 00:26:57,980

beneath that is a very tough layer

476
00:27:04,540 --> 00:27:01,140
composed of collagen fibers and they are

477
00:27:07,730 --> 00:27:04,550
arranged in the plywood like structure

478
00:27:10,640 --> 00:27:07,740
there's a layer with the fibers going in

479
00:27:13,130 --> 00:27:10,650
one direction next layer the fibers go

480
00:27:14,840 --> 00:27:13,140
to the mother direction next layer a

481
00:27:18,050 --> 00:27:14,850
different direction and so on as you see

482
00:27:21,020 --> 00:27:18,060
here it makes for a very strong

483
00:27:22,880 --> 00:27:21,030
structure and it makes for a transparent

484
00:27:26,210 --> 00:27:22,890
structure and the reason it's

485
00:27:31,190 --> 00:27:26,220
transparent is because the geometry is

486
00:27:35,210 --> 00:27:31,200
perfect for a vortexing photon to make

487
00:27:41,650 --> 00:27:35,220
its way through the corneal stroma to

488
00:27:52,160 --> 00:27:48,200

and it turns out that if the spacing of

489

00:27:55,190 --> 00:27:52,170

the corneal stroma is distorted for

490

00:27:59,180 --> 00:27:55,200

example if you put a poison in the eye

491

00:28:04,100 --> 00:27:59,190

and poisons the cells that hydrate the

492

00:28:05,720 --> 00:28:04,110

stroma the stroma becomes opaque so this

493

00:28:08,750 --> 00:28:05,730

arrange of this geometry is very

494

00:28:13,400 --> 00:28:08,760

important to vision and getting light

495

00:28:17,000 --> 00:28:13,410

through it and studies have shown that

496

00:28:19,250 --> 00:28:17,010

the vortex the light vortex is a

497

00:28:24,710 --> 00:28:19,260

right-handed helix and it's a

498

00:28:27,230 --> 00:28:24,720

right-handed helix for both eyes now the

499

00:28:30,590 --> 00:28:27,240

reason that is really remarkable is that

500

00:28:33,860 --> 00:28:30,600

we have bilateral symmetry in our bodies

501
00:28:37,430 --> 00:28:33,870
this is a law of biology bilateral

502
00:28:39,560 --> 00:28:37,440
symmetry bilateral symmetry means my

503
00:28:46,640 --> 00:28:39,570
right hand and my left hand are not the

504
00:28:51,020 --> 00:28:46,650
same they are symmetrical this is a

505
00:28:53,690 --> 00:28:51,030
violation of that law of physics why is

506
00:28:56,870 --> 00:28:53,700
it like that how does it get to be like

507
00:29:01,400 --> 00:28:56,880
that it means that for us to see light

508
00:29:08,090 --> 00:29:01,410
the light has to be going is a

509
00:29:13,720 --> 00:29:08,100
right-handed helix into our eyes there

510
00:29:19,240 --> 00:29:16,390
and what happens and this is another

511
00:29:22,720 --> 00:29:19,250
story all together but we're going to

512
00:29:26,980 --> 00:29:22,730
have dr. Paul later in the conference he

513
00:29:31,170 --> 00:29:26,990

is my absolute hero his work is the most

514

00:29:34,480 --> 00:29:31,180

important work for me in the last decade

515

00:29:37,840 --> 00:29:34,490

why for me because I'm interested in two

516

00:29:43,000 --> 00:29:37,850

things that haven't been explained how

517

00:29:46,680 --> 00:29:43,010

is it that I can with my hand 18 inches

518

00:29:50,680 --> 00:29:46,690

away from your body how can I do healing

519

00:29:52,600 --> 00:29:50,690

without touching and at the same time

520

00:29:56,080 --> 00:29:52,610

the amount of energy has to be very very

521

00:29:59,410 --> 00:29:56,090

very very low it turns out it's just the

522

00:30:03,220 --> 00:29:59,420

right amount of energy and how are

523

00:30:06,340 --> 00:30:03,230

people disturbed by a cell tower that's

524

00:30:09,070 --> 00:30:06,350

a mile away why do they feel ill when

525

00:30:11,410 --> 00:30:09,080

they go under a high tension line not

526

00:30:15,580 --> 00:30:11,420

everybody is like that but there is an

527

00:30:18,340 --> 00:30:15,590

increasing epidemic of electromagnetic

528

00:30:24,210 --> 00:30:18,350

sensitivity actually electromagnetic

529

00:30:27,490 --> 00:30:24,220

illness in Sweden it's recognized as a

530

00:30:31,590 --> 00:30:27,500

health condition by the government it's

531

00:30:36,850 --> 00:30:31,600

a condition that you can get government

532

00:30:45,210 --> 00:30:36,860

funds for so what is going on is this is

533

00:30:50,350 --> 00:30:48,730

serpentine receptors and this kind of

534

00:30:52,390 --> 00:30:50,360

receptor is found throughout the body

535

00:30:54,340 --> 00:30:52,400

there are thousands of receptors like

536

00:30:56,410 --> 00:30:54,350

that look like this this is a cell

537

00:31:00,670 --> 00:30:56,420

membrane this one goes back and forth

538

00:31:06,450 --> 00:31:00,680

across the cell membrane seven times the

539

00:31:10,150 --> 00:31:06,460

one that dr. Paul will talk about is the

540

00:31:12,100 --> 00:31:10,160

voltage-gated calcium channel which has

541

00:31:17,440 --> 00:31:12,110

a protein that goes back and forth I

542

00:31:20,320 --> 00:31:17,450

think 14 times maybe it's 23 other it

543

00:31:23,770 --> 00:31:20,330

just is an amazing structure and what I

544

00:31:24,880 --> 00:31:23,780

think is the way our bodies are

545

00:31:34,470 --> 00:31:24,890

regulated

546

00:31:40,450 --> 00:31:36,700

the story that you read in the

547

00:31:43,210 --> 00:31:40,460

physiology texts it's well over a

548

00:31:43,750 --> 00:31:43,220

hundred years old and it's holding us

549

00:31:49,500 --> 00:31:43,760

back

550

00:31:53,620 --> 00:31:49,510

the story is hormones and other

551
00:31:55,920 --> 00:31:53,630
information molecules stick themselves

552
00:32:02,160 --> 00:31:55,930
into receptors on cell membranes and

553
00:32:05,530 --> 00:32:02,170
activate the cell I believe first of all

554
00:32:07,630 --> 00:32:05,540
this idea it's called the lock and key

555
00:32:09,820 --> 00:32:07,640
model everybody can get it because

556
00:32:12,580 --> 00:32:09,830
everybody's put a key in a lock turned

557
00:32:15,430 --> 00:32:12,590
it open the door it's easy to understand

558
00:32:18,100 --> 00:32:15,440
and it's probably just a part of the

559
00:32:20,530 --> 00:32:18,110
story what I think happens is the

560
00:32:23,050 --> 00:32:20,540
hormones vibrate and the mid

561
00:32:25,480 --> 00:32:23,060
electromagnetic fields that activate

562
00:32:27,580 --> 00:32:25,490
receptors on the cell surface and they

563
00:32:30,400 --> 00:32:27,590

may actually go through the cell

564

00:32:33,160 --> 00:32:30,410

membrane to the cell interior and may do

565

00:32:36,220 --> 00:32:33,170

things inside the cell as well

566

00:32:43,360 --> 00:32:36,230

these are alpha helixes these are all

567

00:32:47,040 --> 00:32:43,370

alpha helixes so the idea is that these

568

00:32:52,420 --> 00:32:47,050

alpha helixes facilitate the entry of

569

00:32:54,220 --> 00:32:52,430

vertical light into the cells we don't

570

00:32:57,750 --> 00:32:54,230

think this way because of good ol

571

00:33:01,090 --> 00:32:57,760

Lucretius he had an idea of critius and

572

00:33:03,670 --> 00:33:01,100

Democritus and Epicurus and those old

573

00:33:06,010 --> 00:33:03,680

Greeks had this idea atoms being

574

00:33:07,660 --> 00:33:06,020

billiard ball like particles solid

575

00:33:11,170 --> 00:33:07,670

particles we know that atoms are not

576

00:33:13,930 --> 00:33:11,180

solid particles here's this is from a

577

00:33:16,690 --> 00:33:13,940

textbook popular textbook of

578

00:33:19,180 --> 00:33:16,700

biochemistry and it's got an error it

579

00:33:21,220 --> 00:33:19,190

says if you look at the Alpha helix if

580

00:33:24,430 --> 00:33:21,230

you look down through the alpha helix

581

00:33:26,500 --> 00:33:24,440

it looks like it's hollow in this ball

582

00:33:29,470 --> 00:33:26,510

and stick model but we know that that's

583

00:33:33,070 --> 00:33:29,480

wrong it's not hollow because if you use

584

00:33:36,090 --> 00:33:33,080

a space-filling ball mullick model the

585

00:33:37,840 --> 00:33:36,100

space in the middle is full of stuff

586

00:33:41,169 --> 00:33:37,850

that's wrong

587

00:33:45,430 --> 00:33:41,179

this textbook is wrong because what's

588

00:33:48,220 --> 00:33:45,440

inside these spheres is nothing there's

589

00:33:49,680 --> 00:33:48,230

nothing in there so light can of course

590

00:33:53,650 --> 00:33:49,690

go right through that

591

00:33:56,140 --> 00:33:53,660

so the space-filling models which I have

592

00:33:59,080 --> 00:33:56,150

loved and used to demonstrate chemistry

593

00:34:00,820 --> 00:33:59,090

to students for years gives you a

594

00:34:07,720 --> 00:34:00,830

picture of what an atom or molecule

595

00:34:09,940 --> 00:34:07,730

looks like totally bogus so there's the

596

00:34:12,609 --> 00:34:09,950

photon spiraling through space through

597

00:34:14,710 --> 00:34:12,619

the alpha helix in the cell membrane and

598

00:34:16,960 --> 00:34:14,720

it's interesting here's the calcium

599

00:34:20,730 --> 00:34:16,970

gated potassium potassium channel and

600

00:34:24,369 --> 00:34:20,740

look at how they and this is done with

601
00:34:27,220 --> 00:34:24,379
different diffraction technologies look

602
00:34:30,940 --> 00:34:27,230
how the word of the vortices the Gila

603
00:34:34,240 --> 00:34:30,950
C's are all different angles this looks

604
00:34:36,790 --> 00:34:34,250
to me this is a guess this is a perfect

605
00:34:40,300 --> 00:34:36,800
design to collect light coming from

606
00:34:43,180 --> 00:34:40,310
molecules signal molecules that many

607
00:34:45,909 --> 00:34:43,190
different angles to the surface of the

608
00:34:49,629 --> 00:34:45,919
cell membrane that's what it looks like

609
00:34:53,530 --> 00:34:49,639
to me now this idea that the alpha

610
00:34:57,910 --> 00:34:53,540
helixes might be like pipes is well

611
00:35:00,310 --> 00:34:57,920
known in botany animal physiologist

612
00:35:04,390 --> 00:35:00,320
wouldn't pay any attention to botany

613
00:35:06,280 --> 00:35:04,400

that's plant stuff your guys are over

614

00:35:06,730 --> 00:35:06,290

there in the botany department stay

615

00:35:11,730 --> 00:35:06,740

there

616

00:35:15,570 --> 00:35:11,740

called the FICO bellossom and the

617

00:35:18,880 --> 00:35:15,580

botanists accept the idea that these are

618

00:35:22,359 --> 00:35:18,890

elegantly designed life pipes that they

619

00:35:25,870 --> 00:35:22,369

enable the cyanobacteria blue green

620

00:35:29,530 --> 00:35:25,880

algae and red algae to funnel excitation

621

00:35:36,220 --> 00:35:29,540

energy to the reaction center very

622

00:35:38,230 --> 00:35:36,230

quickly less than 100 picoseconds so

623

00:35:46,200 --> 00:35:38,240

this is an idea that's accepted in

624

00:35:52,260 --> 00:35:49,200

this is the device I told you about in

625

00:35:53,940 --> 00:35:52,270

front of the device it took me a while I

626

00:35:58,010 --> 00:35:53,950

just wrote a paper it was just published

627

00:36:00,329 --> 00:35:58,020

a few days ago about this I these people

628

00:36:02,190 --> 00:36:00,339

they said can you figure out how this

629

00:36:05,940 --> 00:36:02,200

works it took me a while to figure it

630

00:36:12,089 --> 00:36:05,950

out but I think that this design is a

631

00:36:15,420 --> 00:36:12,099

fundamental I wear it I had a muscle

632

00:36:18,480 --> 00:36:15,430

muscle testing done by a highly

633

00:36:21,680 --> 00:36:18,490

sophisticated muscle tester and I am

634

00:36:25,109 --> 00:36:21,690

stronger when I wear this shirt

635

00:36:27,539 --> 00:36:25,119

especially if it's coward I have a black

636

00:36:32,640 --> 00:36:27,549

and white one not quite as good this one

637

00:36:35,720 --> 00:36:32,650

is very good and so this facilitates I

638

00:36:39,170 --> 00:36:35,730

believe the exchange between my body and

639

00:36:42,240 --> 00:36:39,180

the morphic field the bi-directional

640

00:36:48,170 --> 00:36:42,250

exchange of energy and information with

641

00:36:57,680 --> 00:36:51,980

the the sacred geometry this is five

642

00:37:03,930 --> 00:37:00,079

scientists down through the ages

643

00:37:06,599 --> 00:37:03,940

philosophers mystics architects all

644

00:37:09,299 --> 00:37:06,609

kinds of people many scientists have

645

00:37:12,779 --> 00:37:09,309

just gone away from the lab and just

646

00:37:17,640 --> 00:37:12,789

thought about Phi the golden meeting or

647

00:37:20,640 --> 00:37:17,650

the golden ratio recently it's been

648

00:37:23,640 --> 00:37:20,650

discovered that it exists at the quantum

649

00:37:29,670 --> 00:37:23,650

scale so this completes the cycle of the

650

00:37:32,539 --> 00:37:29,680

cycle of the story there are two papers

651
00:37:35,430 --> 00:37:32,549
this one and this one

652
00:37:40,589 --> 00:37:35,440
welcome criticality and an icing chain

653
00:37:45,200 --> 00:37:40,599
this is experimental evidence for five

654
00:37:49,789 --> 00:37:45,210
operating at the quantum scale may 1 ho

655
00:37:53,039 --> 00:37:49,799
Layton the one they won't home and a

656
00:37:55,880 --> 00:37:53,049
Egyptian scientists and Giuseppe metallo

657
00:37:58,510 --> 00:37:55,890
who's from the wonderful physics

658
00:38:01,570 --> 00:37:58,520
Institute in Milano

659
00:38:04,610 --> 00:38:01,580
collaborated on this paper is space-time

660
00:38:08,690 --> 00:38:04,620
fractal and quantum coherent in the

661
00:38:11,660 --> 00:38:08,700
golden mean it looks like it is this is

662
00:38:15,880 --> 00:38:11,670
the story of how Sheldrake's morphic

663
00:38:20,030 --> 00:38:15,890

field and how memory and learning and

664

00:38:25,780 --> 00:38:20,040

experiences are stored in the field and

665

00:38:29,060 --> 00:38:25,790

it is the scalar field of the heart and

666

00:38:32,810 --> 00:38:29,070

other things so this is the reference

667

00:38:36,020 --> 00:38:32,820

for it this is the school I told you

668

00:38:38,870 --> 00:38:36,030

about the award-winning school died on

669

00:38:45,290 --> 00:38:38,880

sacred geometry if you ever get to de

670

00:38:47,090 --> 00:38:45,300

bet Tibet check it out and the best

671

00:38:48,650 --> 00:38:47,100

Asian building the best education

672

00:38:51,400 --> 00:38:48,660

building the best green building in the

673

00:38:53,270 --> 00:38:51,410

world architecture Awards in 2002

674

00:38:57,140 --> 00:38:53,280

nominated as one of the 10 most

675

00:39:00,980 --> 00:38:57,150

beautiful schools in the world I want to

676

00:39:04,070 --> 00:39:00,990

go well my time is up and I have time

677

00:39:06,740 --> 00:39:04,080

for questions and I've enjoyed spending

678

00:39:16,110 --> 00:39:06,750

this time with you and I hope I've given

679

00:39:21,990 --> 00:39:18,780

one thing I couldn't understand with

680

00:39:23,070 --> 00:39:22,000

regard to light I see the spiral nature

681

00:39:26,180 --> 00:39:23,080

that you're talking about

682

00:39:28,550 --> 00:39:26,190

is this meant to replace the

683

00:39:30,900 --> 00:39:28,560

conventional understanding of

684

00:39:32,880 --> 00:39:30,910

electromagnetic waves by Maxwell's

685

00:39:35,630 --> 00:39:32,890

equations in such or is it meant to

686

00:39:39,120 --> 00:39:35,640

supplement it here's what happens

687

00:39:42,330 --> 00:39:39,130

Maxwell and Faraday spent many many

688

00:39:44,460 --> 00:39:42,340

hours of the many months talking about

689

00:39:48,450 --> 00:39:44,470

the nature of the electromagnetic field

690

00:39:53,310 --> 00:39:48,460

and Maxwell eventually published his

691

00:39:57,180 --> 00:39:53,320

paper which had twenty equations my

692

00:40:01,590 --> 00:39:57,190

times up had twenty equations describing

693

00:40:04,560 --> 00:40:01,600

the electromagnetic field and a number

694

00:40:09,030 --> 00:40:04,570

of what happened to Maxwell is he died

695

00:40:10,980 --> 00:40:09,040

in an early age in his early 50s and he

696

00:40:14,460 --> 00:40:10,990

had some people who didn't like his

697

00:40:17,100 --> 00:40:14,470

equations and so they deleted most of

698

00:40:19,580 --> 00:40:17,110

them leaving us with the four equations

699

00:40:23,880 --> 00:40:19,590

that are taught in physics classes today

700

00:40:26,510 --> 00:40:23,890

we that has been a great disaster for

701
00:40:29,220 --> 00:40:26,520
medicine and physics and biology

702
00:40:33,060 --> 00:40:29,230
we haven't been thinking about these

703
00:40:36,300 --> 00:40:33,070
equations what they didn't like the idea

704
00:40:40,130 --> 00:40:36,310
of the scalar field because it doesn't

705
00:40:41,960 --> 00:40:40,140
have a velocity it travels infinitely

706
00:40:44,790 --> 00:40:41,970
everywhere in the universe

707
00:40:47,040 --> 00:40:44,800
instantaneously same like that so they

708
00:40:51,660 --> 00:40:47,050
deleted it we're getting back to looking

709
00:40:55,770 --> 00:40:51,670
at that so the electromagnetic field in

710
00:40:58,860 --> 00:40:55,780
in his final paper Maxwell left out the

711
00:41:01,920 --> 00:40:58,870
vortex they in spent any many many

712
00:41:06,630 --> 00:41:01,930
months talking about the vortex they

713
00:41:09,760 --> 00:41:06,640

left it out so you're talking about a

714

00:41:12,700 --> 00:41:09,770

complement to what now exists as

715

00:41:14,380 --> 00:41:12,710

Maxwell's poor equations exactly and

716

00:41:17,590 --> 00:41:14,390

people are going back and looking at

717

00:41:20,200 --> 00:41:17,600

those original equations and they're

718

00:41:22,900 --> 00:41:20,210

very valuable and very important they

719

00:41:25,720 --> 00:41:22,910

help us understand you know it is said

720

00:41:28,840 --> 00:41:25,730

often that prayer and distant healing

721

00:41:32,110 --> 00:41:28,850

can't work because there's no physical

722

00:41:33,790 --> 00:41:32,120

basis for it I'm sorry there is a

723

00:41:39,120 --> 00:41:33,800

physical basis for it

724

00:41:43,270 --> 00:41:39,130

ah since nobody else is lining up at the

725

00:41:46,300 --> 00:41:43,280

microphone right now the something that

726

00:41:53,500 --> 00:41:46,310

I had trouble understanding in your talk

727

00:41:56,140 --> 00:41:53,510

is that the spiraling structure that you

728

00:41:58,900 --> 00:41:56,150

refer to which is characteristic of

729

00:42:02,680 --> 00:41:58,910

circularly polarized light that's only

730

00:42:08,920 --> 00:42:02,690

one of numerous possible polarization

731

00:42:11,470 --> 00:42:08,930

bases but leaving that aside the length

732

00:42:13,320 --> 00:42:11,480

of the spiral the pitch of the spiral if

733

00:42:15,700 --> 00:42:13,330

you're accustomed to thinking of screws

734

00:42:19,210 --> 00:42:15,710

depends on the wavelength of the light

735

00:42:23,440 --> 00:42:19,220

and our cornea passes more or less

736

00:42:27,070 --> 00:42:23,450

uniformly light of wavelength spanning a

737

00:42:31,120 --> 00:42:27,080

full octave red light is about twice the

738

00:42:35,580 --> 00:42:31,130

wavelength of violet light I don't see

739

00:42:38,830 --> 00:42:35,590

how is the structure of the layering in

740

00:42:41,290 --> 00:42:38,840

the of fibers in the cornea is so

741

00:42:43,990 --> 00:42:41,300

critical to transmission of light how it

742

00:42:46,390 --> 00:42:44,000

can possibly turn past life of more than

743

00:42:47,830 --> 00:42:46,400

one critical wavelength that fits the

744

00:42:53,620 --> 00:42:47,840

structure could you elucidate that

745

00:42:58,590 --> 00:42:53,630

please what fabulous question thank I've

746

00:43:04,360 --> 00:43:01,900

that's as far as I forgot what a good

747

00:43:08,160 --> 00:43:04,370

line oh well I can't we'll have an

748

00:43:14,520 --> 00:43:08,170

answer I'm working on it sounds like

749

00:43:19,630 --> 00:43:14,530

some politicians together so thanks I'll

750

00:43:23,110 --> 00:43:19,640

get back to you whenever you ask my

751

00:43:25,750 --> 00:43:23,120

questions a lot simpler and I was just

752

00:43:27,340 --> 00:43:25,760

wondering I spent four months living and

753

00:43:29,590 --> 00:43:27,350

working up at the school quite go to

754

00:43:31,000 --> 00:43:29,600

school as the electrical engineer and

755

00:43:33,670 --> 00:43:31,010

have worked on it for quite a few years

756

00:43:36,250 --> 00:43:33,680

and I was just wondering you know and

757

00:43:37,930 --> 00:43:36,260

just was he touched it so briefly I just

758

00:43:40,210 --> 00:43:37,940

wondering if he could just expand like

759

00:43:42,640 --> 00:43:40,220

you know what what you refer to it with

760

00:43:45,160 --> 00:43:42,650

making what your what your link or if

761

00:43:49,120 --> 00:43:45,170

you've had any work that's been directly

762

00:43:51,190 --> 00:43:49,130

associated with the school in Ladakh the

763

00:43:53,440 --> 00:43:51,200

one that you mentioned the I think it's

764

00:43:55,900 --> 00:43:53,450

like your second last slide so you've

765

00:44:01,330 --> 00:43:55,910

been there I have I lived worked as the

766

00:44:04,990 --> 00:44:01,340

electric engineer for it and it was

767

00:44:07,300 --> 00:44:05,000

pretty good well the fellow who

768

00:44:09,640 --> 00:44:07,310

organized the breath of life conference

769

00:44:15,700 --> 00:44:09,650

in London a couple of weeks ago and

770

00:44:21,730 --> 00:44:15,710

Jerry and I both there his name is

771

00:44:32,160 --> 00:44:21,740

Michael anyway he made this school

772

00:44:35,220 --> 00:44:32,170

happen you know and it's an example of

773

00:44:39,730 --> 00:44:35,230

when you get your mind set on something

774

00:44:42,880 --> 00:44:39,740

if you're if it's your purpose and to me

775

00:44:47,250 --> 00:44:42,890

the real purpose of healing work is to

776

00:44:53,310 --> 00:44:47,260

help people manifest their destiny in

777

00:44:56,950 --> 00:44:53,320

the sufis tradition it's called kismet

778

00:44:59,320 --> 00:44:56,960

destiny and most of the people we see

779

00:45:01,570 --> 00:44:59,330

around us are not following their

780

00:45:02,740 --> 00:45:01,580

destiny and when you are following your

781

00:45:05,140 --> 00:45:02,750

destiny

782

00:45:07,960 --> 00:45:05,150

the way I like to say it is the winds

783

00:45:11,020 --> 00:45:07,970

will fill your sails and that's what

784

00:45:13,890 --> 00:45:11,030

happened with Michael Kern he has the

785

00:45:17,470 --> 00:45:13,900

Dalai Lama behind him against wealthy

786

00:45:19,210 --> 00:45:17,480

people in England behind him and he's

787

00:45:22,480 --> 00:45:19,220

getting contributions from all over the

788

00:45:24,040 --> 00:45:22,490

world that's I think that is that is

789

00:45:25,450 --> 00:45:24,050

true but I think they still I think

790

00:45:29,520 --> 00:45:25,460

that's they they're still really