1
00:00:03,300 --> 00:00:09,140
[Music]

2
00:00:15,140 --> 00:00:12,560
I call myself an experimental quantum

3
00:00:18,109 --> 00:00:15,150
biologist and I'm not going to talk

4
00:00:20,720 --> 00:00:18,119
about consciousness so I'm a transition

5
00:00:24,730 --> 00:00:20,730
speaker to the topic of the next theme

6
00:00:32,089 --> 00:00:24,740
as starting tomorrow so this is a a

7
00:00:37,790 --> 00:00:32,099
preliminary talk thank you oh I get a

8
00:00:41,119 --> 00:00:37,800
real winner and I'm not gonna actually

9
00:00:43,039 --> 00:00:41,129
talk today about quantum biology or

10
00:00:45,710 --> 00:00:43,049
consciousness but I'm going to talk more

11
00:00:47,180 --> 00:00:45,720
about quantum chemistry when I talk

12
00:00:49,729 --> 00:00:47,190
about some experiments I did a while

13
00:00:52,369 --> 00:00:49,739

back quite similar to what Dean Radin

14
00:00:54,439 --> 00:00:52,379
talked about yesterday but opposite he

15
00:00:56,750 --> 00:00:54,449
talked about well I'm going to talk

16
00:00:59,660 --> 00:00:56,760
about the effects of a quantum system on

17
00:01:02,660 --> 00:00:59,670
a biological system and he talked about

18
00:01:05,899 --> 00:01:02,670
the effects of biological systems on

19
00:01:09,140 --> 00:01:05,909
quantum systems so in that sense it's a

20
00:01:11,030 --> 00:01:09,150
kind of mirror image so I'm gonna start

21
00:01:13,130 --> 00:01:11,040
with the introduction that was the

22
00:01:15,410 --> 00:01:13,140
introduction ok now I can go forward

23
00:01:18,590 --> 00:01:15,420
except slides not going forward do I

24
00:01:31,190 --> 00:01:18,600
have to will it to go forward do I have

25
00:01:34,220 --> 00:01:31,200
to will it to go backwards wasn't me so

26
00:01:36,770 --> 00:01:34,230
in the way of the introduction I if you

27
00:01:39,980 --> 00:01:36,780
read the abstract you will see some

28
00:01:42,670 --> 00:01:39,990
introductory comments but in fact the

29
00:01:46,550 --> 00:01:42,680
real introduction to the talk thank you

30
00:01:48,260 --> 00:01:46,560
is based on not my idea but a colleague

31
00:01:52,760 --> 00:01:48,270
of mine dr. o Morra

32
00:01:56,420 --> 00:01:52,770
who happens to be an MD in New York who

33
00:02:00,469 --> 00:01:56,430
did these experiments with laser beams

34
00:02:01,760 --> 00:02:00,479
and he published it in his journal which

35
00:02:03,140 --> 00:02:01,770
he's the editor when he set up his

36
00:02:05,780 --> 00:02:03,150
journal so he could publish some of his

37
00:02:09,740 --> 00:02:05,790
unconventional ideas where he's talking

38
00:02:11,809 --> 00:02:09,750

about molecular information and having

39
00:02:15,830 --> 00:02:11,819
biological effects so what this guy does

40
00:02:17,539 --> 00:02:15,840
is he takes a drug and he puts it you

41
00:02:19,550 --> 00:02:17,549
know on his hand he puts the laser beam

42
00:02:21,820 --> 00:02:19,560
oh I have a laser beam over the top of

43
00:02:23,410 --> 00:02:21,830
the drug and he points it at people

44
00:02:24,940 --> 00:02:23,420
now who would ever think to do such a

45
00:02:27,430 --> 00:02:24,950
thing well I thought that was a really

46
00:02:30,370 --> 00:02:27,440
cool experiment and I wanted to do it in

47
00:02:33,220 --> 00:02:30,380
a more scientific method so this is my

48
00:02:37,330 --> 00:02:33,230
experimental setup shifted to the left

49
00:02:39,300 --> 00:02:37,340
and I did an experiment another

50
00:02:42,010 --> 00:02:39,310
experiment we have here with nerve cells

51
00:02:45,100 --> 00:02:42,020
we heard about that earlier in this

52
00:02:47,380 --> 00:02:45,110
conference but in this case I'm shining

53
00:02:50,770 --> 00:02:47,390
a laser beam directly on the petri dish

54
00:02:54,310 --> 00:02:50,780
containing the nerve cells but here is a

55
00:02:57,250 --> 00:02:54,320
powder form of a drug which is an MAO

56
00:02:59,650 --> 00:02:57,260
inhibitor and there's no interaction

57
00:03:02,170 --> 00:02:59,660
between the beam and the chemical powder

58
00:03:04,660 --> 00:03:02,180
so it's just over the top of like just

59
00:03:06,820 --> 00:03:04,670
like Oh dr. Maura did and what I'm

60
00:03:11,740 --> 00:03:06,830
measuring in the nerve cells is the

61
00:03:13,450 --> 00:03:11,750
enzyme activity of monoamine oxidase so

62
00:03:15,760 --> 00:03:13,460
here's the actual experimental protocol

63
00:03:18,460 --> 00:03:15,770

nerve cells you split them in half you

64
00:03:19,720 --> 00:03:18,470
get six control six experimental three

65
00:03:22,900 --> 00:03:19,730
treatments one is the control

66
00:03:26,080 --> 00:03:22,910
unmodulated one is the modulated laser

67
00:03:27,490 --> 00:03:26,090
and one is the drug by itself you

68
00:03:29,620 --> 00:03:27,500
harvest the cells you measure the

69
00:03:31,960 --> 00:03:29,630
monoamine oxidase activity with a

70
00:03:34,150 --> 00:03:31,970
standard biochemical technique you

71
00:03:35,500 --> 00:03:34,160
express the enzyme activity as peak a

72
00:03:37,000 --> 00:03:35,510
moles per minute per milligram I know

73
00:03:39,190 --> 00:03:37,010
there's at least one other biochemist in

74
00:03:40,960 --> 00:03:39,200
here would would appreciate that so

75
00:03:43,090 --> 00:03:40,970
here's the results here's the control

76
00:03:45,370 --> 00:03:43,100
the laser by itself no statistical

77
00:03:48,100 --> 00:03:45,380
significant the drug as expected caused

78
00:03:51,070 --> 00:03:48,110
the large inhibition of the enzyme

79
00:03:53,590 --> 00:03:51,080
activity but the laser with modulated

80
00:03:56,830 --> 00:03:53,600
information caused an increase in the

81
00:04:00,820 --> 00:03:56,840
enzyme activity at the P equals 0.01

82
00:04:02,229 --> 00:04:00,830
level so here is an anomaly and I the

83
00:04:03,940 --> 00:04:02,239
reason I never really published this

84
00:04:06,760 --> 00:04:03,950
date or even thought about it since I

85
00:04:08,860 --> 00:04:06,770
did this experiment 10 years ago was cuz

86
00:04:10,570 --> 00:04:08,870
there was really no explanation that I

87
00:04:13,270 --> 00:04:10,580
could find in the scientific literature

88
00:04:18,729 --> 00:04:13,280

to explain how this might occur but

89
00:04:21,070 --> 00:04:18,739
nowadays with a modern quantum chemistry

90
00:04:22,870 --> 00:04:21,080
and quantum physics I think I have some

91
00:04:25,300 --> 00:04:22,880
sort of a explanation

92
00:04:26,680 --> 00:04:25,310
so before I look at the explanation

93
00:04:28,390 --> 00:04:26,690
let's look at the interpretation of

94
00:04:30,279 --> 00:04:28,400
what's happening or what I think is what

95
00:04:31,930 --> 00:04:30,289
happen what's happening there's some

96
00:04:33,790 --> 00:04:31,940
kind of information from the chemical

97
00:04:34,670 --> 00:04:33,800
which is transferred to the laser the

98
00:04:37,340 --> 00:04:34,680
laser then

99
00:04:40,010 --> 00:04:37,350
carries the information the laser is

100
00:04:41,990 --> 00:04:40,020
modulated the laser delivers the

101
00:04:45,680 --> 00:04:42,000
information to the biological system and

102
00:04:47,719 --> 00:04:45,690
the enzyme decodes or D modulates the

103
00:04:50,150 --> 00:04:47,729
information and causes a biological

104
00:04:51,740 --> 00:04:50,160
effect okay well there's a lot of stuff

105
00:04:53,600 --> 00:04:51,750
going on here and I really only have

106
00:04:56,629 --> 00:04:53,610
time I'm sure you've heard that before

107
00:04:58,129 --> 00:04:56,639
to talk about the first step let's so

108
00:05:00,379 --> 00:04:58,139
let's let's talk about chemical

109
00:05:03,290 --> 00:05:00,389
information what could possibly be

110
00:05:06,860 --> 00:05:03,300
coming from a chemical in a solid state

111
00:05:09,740 --> 00:05:06,870
in a powder form that might actually be

112
00:05:11,330 --> 00:05:09,750
picked up by the laser well so let's

113
00:05:14,570 --> 00:05:11,340

first look at the chemical structure

114
00:05:18,620 --> 00:05:14,580
this is the enzyme inhibitor it's a

115
00:05:20,180 --> 00:05:18,630
turns out to be a an antidepressant MAO

116
00:05:22,250 --> 00:05:20,190
inhibitors you've all heard of it at

117
00:05:24,890 --> 00:05:22,260
Mayo inhibitors and there are three

118
00:05:26,150 --> 00:05:24,900
particular chemical interactions that

119
00:05:28,870 --> 00:05:26,160
are going on here that I want to talk

120
00:05:32,409 --> 00:05:28,880
about first is the hydrogen hydrogen

121
00:05:35,450 --> 00:05:32,419
coupling then there's the hydrogen

122
00:05:37,159 --> 00:05:35,460
oxygen coupling and then there's the

123
00:05:40,850 --> 00:05:37,169
really interesting stuff that's going on

124
00:05:43,670 --> 00:05:40,860
inside the benzene ring itself I can

125
00:05:46,659 --> 00:05:43,680
divide chemical information into into

126
00:05:49,120 --> 00:05:46,669
four different categories charge

127
00:05:51,560 --> 00:05:49,130
three-dimensional charge information

128
00:05:54,320 --> 00:05:51,570
information from the chemical bonds that

129
00:05:57,379 --> 00:05:54,330
I just described quantum information and

130
00:05:59,649 --> 00:05:57,389
electronic information and if I have

131
00:06:04,040 --> 00:05:59,659
time I'll talk about all four of those

132
00:06:06,439 --> 00:06:04,050
so looking at the distribution of

133
00:06:09,170 --> 00:06:06,449
charges on the molecule because you know

134
00:06:10,790 --> 00:06:09,180
some some of these some of the a the

135
00:06:12,649 --> 00:06:10,800
nitrogen has got a positive charge

136
00:06:15,200 --> 00:06:12,659
oxygen has a negative charge so you do

137
00:06:19,460 --> 00:06:15,210
have an electrostatic field that's

138
00:06:21,710 --> 00:06:19,470

generated so it turns out that in some

139
00:06:24,279 --> 00:06:21,720
of the more sophisticated molecular

140
00:06:26,210 --> 00:06:24,289
modeling programs that are out there

141
00:06:28,550 --> 00:06:26,220
there is a particular one called

142
00:06:30,529 --> 00:06:28,560
comparative molecular field analysis

143
00:06:33,589 --> 00:06:30,539
where they look at exactly that the

144
00:06:35,060 --> 00:06:33,599
distribution of charges and they measure

145
00:06:37,700 --> 00:06:35,070
what your static potentials and they

146
00:06:40,070 --> 00:06:37,710
calculate all these parameters about a

147
00:06:43,820 --> 00:06:40,080
particular molecule of particular

148
00:06:46,750 --> 00:06:43,830
interest to me is the map of the

149
00:06:50,689 --> 00:06:46,760
electric field distribution

150
00:06:52,400 --> 00:06:50,699
which is of course used to correlate

151
00:06:54,170 --> 00:06:52,410
with a biological activity and the

152
00:06:56,090 --> 00:06:54,180
three-dimensional structure and

153
00:06:58,040 --> 00:06:56,100
structure-activity relationship it turns

154
00:07:00,290 --> 00:06:58,050
out that drug companies actually use

155
00:07:02,330 --> 00:07:00,300
this kind of chemical analysis to

156
00:07:06,710 --> 00:07:02,340
predict what structures would actually

157
00:07:09,140 --> 00:07:06,720
have what effects but the the results of

158
00:07:11,120 --> 00:07:09,150
these kind of experiments our analysis

159
00:07:13,400 --> 00:07:11,130
are shown with this particular molecule

160
00:07:15,439 --> 00:07:13,410
which is different than the one I use

161
00:07:17,840 --> 00:07:15,449
but it's got the benzene ring and it's

162
00:07:23,000 --> 00:07:17,850
got some carbons in a nitrogen so here's

163
00:07:26,000 --> 00:07:23,010

the the graphical data of the electric

164
00:07:28,400 --> 00:07:26,010
field emitted by such a molecule here's

165
00:07:31,760 --> 00:07:28,410
the benzene ring and here's the rest of

166
00:07:33,560 --> 00:07:31,770
the molecule so you can see that ok we

167
00:07:35,719 --> 00:07:33,570
have some kind of electrostatic field

168
00:07:37,850 --> 00:07:35,729
generated by the molecule which might

169
00:07:40,909 --> 00:07:37,860
couple with the laser ok that's

170
00:07:43,070 --> 00:07:40,919
reasonable next let's look at the

171
00:07:45,409 --> 00:07:43,080
chemical bond information well if you

172
00:07:48,110 --> 00:07:45,419
don't remember from chemistry 101 you

173
00:07:49,939 --> 00:07:48,120
know electron in formation of a chemical

174
00:07:53,450 --> 00:07:49,949
bond the electrons are shared by both

175
00:07:56,810 --> 00:07:53,460
atoms and you can measure the vibration

176
00:07:59,089 --> 00:07:56,820
of the of the bond the stretching the

177
00:08:00,830 --> 00:07:59,099
twisting and you get you get what's

178
00:08:03,260 --> 00:08:00,840
typically called a fingerprint if you

179
00:08:05,300 --> 00:08:03,270
look in the infrared spectra and this is

180
00:08:06,740 --> 00:08:05,310
kind of a typical infrared spectra for

181
00:08:08,990 --> 00:08:06,750
the people over there and you've seen

182
00:08:10,339 --> 00:08:09,000
infrared spectra before and each peak

183
00:08:14,110 --> 00:08:10,349
corresponds to a different kind of

184
00:08:17,390 --> 00:08:14,120
vibration or twisting mode Froelich

185
00:08:18,650 --> 00:08:17,400
actually proposed mathematically

186
00:08:20,839 --> 00:08:18,660
predicted that there would be

187
00:08:24,950 --> 00:08:20,849
longitudinal vibrations in addition to

188
00:08:27,320 --> 00:08:24,960

transverse vibrations and more recently

189
00:08:30,620 --> 00:08:27,330
they have gigahertz and even terahertz

190
00:08:31,939 --> 00:08:30,630
spectroscopy which measures this kind of

191
00:08:33,980 --> 00:08:31,949
information and the very very high

192
00:08:35,959 --> 00:08:33,990
frequency range of the spectra so you

193
00:08:39,010 --> 00:08:35,969
can get a lot of information about the

194
00:08:43,279 --> 00:08:39,020
chemical bond from this kind of

195
00:08:46,190 --> 00:08:43,289
spectroscopy in addition to the

196
00:08:50,210 --> 00:08:46,200
classical way of analyzing a chemical

197
00:08:53,600 --> 00:08:50,220
bond there is more recently the field of

198
00:08:55,640 --> 00:08:53,610
quantum chemistry and the fact that they

199
00:08:56,240 --> 00:08:55,650
predict that there's sort of information

200
00:08:58,400 --> 00:08:56,250
that can be

201
00:08:59,780 --> 00:08:58,410
obtain I talked these are the three

202
00:09:03,200 --> 00:08:59,790
kinds of bonds that we're going to talk

203
00:09:05,000 --> 00:09:03,210
about and in fact the quantum processes

204
00:09:07,330 --> 00:09:05,010
associated with these bonds are either

205
00:09:10,730 --> 00:09:07,340
spin coupling spin-spin coupling

206
00:09:12,260 --> 00:09:10,740
superposition or proton tunneling so we

207
00:09:14,000 --> 00:09:12,270
can look at that in a little more detail

208
00:09:16,670 --> 00:09:14,010
but let's first look at quantum

209
00:09:18,740 --> 00:09:16,680
chemistry something I haven't heard

210
00:09:22,790 --> 00:09:18,750
talked about at this conference for a

211
00:09:25,400 --> 00:09:22,800
while I mean ever rather sorry so

212
00:09:28,070 --> 00:09:25,410
quantum chemistry is like started back

213
00:09:30,590 --> 00:09:28,080

in in hidden in the late 20s when

214
00:09:32,240 --> 00:09:30,600
Schrodinger and Dirac of all people said

215
00:09:33,860 --> 00:09:32,250
hey we've got these quantum field

216
00:09:35,930 --> 00:09:33,870
theories let's see if we can apply it to

217
00:09:38,690 --> 00:09:35,940
a chemical let's let's see if we can

218
00:09:42,050 --> 00:09:38,700
develop a quantum theory of the chemical

219
00:09:44,960 --> 00:09:42,060
bond and shortly after that that you

220
00:09:47,420 --> 00:09:44,970
know they were perpetually Pauling Linus

221
00:09:50,390 --> 00:09:47,430
Pauling proposed that the electrical

222
00:09:53,510 --> 00:09:50,400
orbitals of a molecule can be considered

223
00:09:56,840 --> 00:09:53,520
a molecular wave function and then you

224
00:09:58,550 --> 00:09:56,850
know more recently and then algorithms

225
00:10:01,310 --> 00:09:58,560
were established for this wave function

226
00:10:04,100 --> 00:10:01,320
and more recently in modern quantum

227
00:10:06,710 --> 00:10:04,110
chemistry we have an amazing number of

228
00:10:08,270 --> 00:10:06,720
theoretical approaches to analyze this

229
00:10:09,950 --> 00:10:08,280
kind of problem with one that I

230
00:10:11,450 --> 00:10:09,960
particularly like is there's one called

231
00:10:14,450 --> 00:10:11,460
the quantum theory of atoms and

232
00:10:16,970 --> 00:10:14,460
molecules what an original name but QTA

233
00:10:18,860 --> 00:10:16,980
I am I mean it's in the believe it in

234
00:10:21,770 --> 00:10:18,870
the scientific literature and then we've

235
00:10:23,990 --> 00:10:21,780
got the phenomena called Boden's which

236
00:10:26,240 --> 00:10:24,000
was mathematically described and

237
00:10:29,930 --> 00:10:26,250
analyzed which considered the quantum

238
00:10:32,510 --> 00:10:29,940

particles of a chemical bond so indeed

239
00:10:34,250 --> 00:10:32,520
this is the mathematical modeling

240
00:10:37,850 --> 00:10:34,260
there's all kinds of experimental

241
00:10:40,070 --> 00:10:37,860
spectroscopic methods which you probably

242
00:10:41,750 --> 00:10:40,080
haven't heard of and then there's NMR

243
00:10:45,230 --> 00:10:41,760
which we've all heard of because NMR

244
00:10:46,700 --> 00:10:45,240
measures protons spin States so and they

245
00:10:50,150 --> 00:10:46,710
can measure it in a solid state I'm

246
00:10:53,000 --> 00:10:50,160
working in a solid state so if we look

247
00:10:56,750 --> 00:10:53,010
at some the NMR type of data we can see

248
00:10:59,780 --> 00:10:56,760
that proton proton coupling occurs

249
00:11:02,780 --> 00:10:59,790
because the nuclear spin is quantized

250
00:11:04,699 --> 00:11:02,790
it exists in two states all all this all

251
00:11:07,190 --> 00:11:04,709
the spins going up in one direction all

252
00:11:08,329 --> 00:11:07,200
the spins going down these two states

253
00:11:10,970 --> 00:11:08,339
can act as

254
00:11:13,670 --> 00:11:10,980
as like a quantum bit like a 0 and a 1

255
00:11:17,049 --> 00:11:13,680
in in the in the quantum information

256
00:11:20,540 --> 00:11:17,059
theory that we've talked about and these

257
00:11:23,449 --> 00:11:20,550
protons are spin 1/2 systems and in the

258
00:11:26,019 --> 00:11:23,459
NMR data and in the mathematical

259
00:11:30,049 --> 00:11:26,029
analysis of NMR data they talk about

260
00:11:33,259 --> 00:11:30,059
spin 1/2 systems as being qubits to

261
00:11:36,499 --> 00:11:33,269
define a quantum system and they talk

262
00:11:38,449 --> 00:11:36,509
about spin-spin coupling in molecules so

263
00:11:41,259 --> 00:11:38,459

there is a rather strong scientific

264
00:11:43,910 --> 00:11:41,269
support for proton proton coupling now

265
00:11:46,369 --> 00:11:43,920
quantum resonance is in the I was

266
00:11:48,799 --> 00:11:46,379
talking about the benzene ring very

267
00:11:51,019 --> 00:11:48,809
interesting molecule because actually if

268
00:11:53,660 --> 00:11:51,029
Karl talked to us about enantiomers well

269
00:11:55,970 --> 00:11:53,670
here's two structures which are mirror

270
00:11:58,220 --> 00:11:55,980
images of each other the carbon bonds

271
00:12:01,610 --> 00:11:58,230
you see are on opposite sides of a

272
00:12:04,249 --> 00:12:01,620
mirror these two structures could form

273
00:12:06,530 --> 00:12:04,259
the two qubits which make up a quantum

274
00:12:09,319 --> 00:12:06,540
system well I could propose that to you

275
00:12:12,319 --> 00:12:09,329
but in fact ironically enough in the

276
00:12:14,299 --> 00:12:12,329
chemistry literature they talked about

277
00:12:16,790 --> 00:12:14,309
the fact that neither of these two

278
00:12:18,410 --> 00:12:16,800
structures exist but what exists in the

279
00:12:19,999 --> 00:12:18,420
real world is a resonance hybrid

280
00:12:23,329 --> 00:12:20,009
structure which is a superposition

281
00:12:26,090 --> 00:12:23,339
between both structures and this is what

282
00:12:27,980 --> 00:12:26,100
what what is actually defined as you

283
00:12:30,949 --> 00:12:27,990
know resonance interaction between the

284
00:12:32,449 --> 00:12:30,959
different carbon bonds and and electrons

285
00:12:35,889 --> 00:12:32,459
are delocalized and all this stuff so

286
00:12:38,900 --> 00:12:35,899
benzene is a very interesting molecule

287
00:12:43,100 --> 00:12:38,910
chemical structure to look at within my

288
00:12:45,259 --> 00:12:43,110

molecule here hydrogen bonds are the

289
00:12:48,559 --> 00:12:45,269
electrostatic bonds between oxygen and

290
00:12:50,509 --> 00:12:48,569
hydrogen well-known to stabilize the

291
00:12:52,280 --> 00:12:50,519
tertiary structure of proteins and DNA

292
00:12:54,410 --> 00:12:52,290
and if anybody heard my talk several

293
00:12:56,960 --> 00:12:54,420
years ago about the conformational

294
00:12:58,970 --> 00:12:56,970
structures of DNA it turns out that the

295
00:13:01,610 --> 00:12:58,980
hydrogen which you know hydrogen bonds

296
00:13:03,079 --> 00:13:01,620
hold the DNA together it turns out

297
00:13:05,119 --> 00:13:03,089
hydrogen bonds are very sensitive to

298
00:13:07,009 --> 00:13:05,129
external energies including subtle

299
00:13:08,509 --> 00:13:07,019
energies oh and energies of

300
00:13:10,519 --> 00:13:08,519
consciousness I am talking about

301
00:13:11,360 --> 00:13:10,529
consciousness there we go I feel like

302
00:13:16,669 --> 00:13:11,370
I'm fitting right in

303
00:13:20,569 --> 00:13:16,679
ok so the hydrogen bond is is has been

304
00:13:22,340 --> 00:13:20,579
described as as a quantum process where

305
00:13:24,769 --> 00:13:22,350
delocalization

306
00:13:26,540 --> 00:13:24,779
of electrons occurs there's cooperative

307
00:13:28,790 --> 00:13:26,550
effects and this proton funneling all

308
00:13:31,220 --> 00:13:28,800
described in the conventional scientific

309
00:13:32,870 --> 00:13:31,230
literature okay so now we've looked at

310
00:13:34,730 --> 00:13:32,880
charge distribution chemical bonds

311
00:13:38,300 --> 00:13:34,740
quantum bonds now electronic information

312
00:13:41,090 --> 00:13:38,310
of course is information about the

313
00:13:42,470 --> 00:13:41,100

electronic structure and electrons can

314
00:13:44,600 --> 00:13:42,480
have some very unusual properties

315
00:13:47,210 --> 00:13:44,610
themselves they can exhibit tunneling

316
00:13:48,860 --> 00:13:47,220
they can exhibit coherent excitations

317
00:13:51,530 --> 00:13:48,870
they can be delocalized they can

318
00:13:53,900 --> 00:13:51,540
correlate so electrons themselves can

319
00:13:57,700 --> 00:13:53,910
have quantum properties so all of these

320
00:14:00,860 --> 00:13:57,710
different components of my chemical

321
00:14:05,090 --> 00:14:00,870
offer information which can be

322
00:14:08,030 --> 00:14:05,100
transferred to the laser beam so I like

323
00:14:09,769 --> 00:14:08,040
to propose that even in a hologram even

324
00:14:11,930 --> 00:14:09,779
in its art that proposed the existence

325
00:14:13,790 --> 00:14:11,940
of a quantum chemical hologram even in a

326
00:14:16,190 --> 00:14:13,800
chemical I guess you could say this

327
00:14:18,230 --> 00:14:16,200
chemical has a consciousness I'm even

328
00:14:20,720 --> 00:14:18,240
feeling more welcome at the moment by

329
00:14:22,940 --> 00:14:20,730
the moment so I'm going to propose the

330
00:14:26,300 --> 00:14:22,950
existence of a of a of a chemical

331
00:14:29,390 --> 00:14:26,310
hologram which is defined as the

332
00:14:31,519 --> 00:14:29,400
synergistic interaction between all the

333
00:14:33,019 --> 00:14:31,529
energetic levels comprising the physical

334
00:14:34,550 --> 00:14:33,029
substance which I've talked about moat

335
00:14:37,610 --> 00:14:34,560
all of these haven't talked about the

336
00:14:42,920 --> 00:14:37,620
subatomic but the conclusion is that

337
00:14:44,300 --> 00:14:42,930
this quantum chemical hologram which I

338
00:14:46,250 --> 00:14:44,310

should first mention I mentioned

339
00:14:48,079 --> 00:14:46,260
biological holograms were first proposed

340
00:14:50,000 --> 00:14:48,089
by Edgar Mitchell and Carl pre Broome to

341
00:14:53,210 --> 00:14:50,010
give credit where credit's due

342
00:14:54,470 --> 00:14:53,220
but chemical Holograms I guess that's me

343
00:14:56,449 --> 00:14:54,480
here I don't think anybody's talked

344
00:14:58,550 --> 00:14:56,459
about that but if anybody knows about

345
00:15:00,110 --> 00:14:58,560
that I'd be happy to hear it so in

346
00:15:03,050 --> 00:15:00,120
conclusion what we're saying is that

347
00:15:05,960 --> 00:15:03,060
that chemical hologram carries the

348
00:15:07,579 --> 00:15:05,970
information and transfers it to the

349
00:15:09,560 --> 00:15:07,589
laser the laser transfer its to a

350
00:15:12,170 --> 00:15:09,570
biological system and that the

351
00:15:13,790 --> 00:15:12,180
biological system then responds and can

352
00:15:15,740 --> 00:15:13,800
have either the same effect as the

353
00:15:16,760 --> 00:15:15,750
original chemical or in my case the

354
00:15:19,280 --> 00:15:16,770
opposite effect

355
00:15:21,800 --> 00:15:19,290
now as Carl was talking about earlier

356
00:15:26,510 --> 00:15:21,810
maybe this opposite effect is because

357
00:15:29,060 --> 00:15:26,520
the enantiomer of the molecule is the

358
00:15:32,060 --> 00:15:29,070
opposite it's like a left vs. a right

359
00:15:33,800 --> 00:15:32,070
structure that maybe only you know the

360
00:15:34,830 --> 00:15:33,810
other half got transferred to the

361
00:15:37,010 --> 00:15:34,840
hologram that in

362
00:15:39,180 --> 00:15:37,020
information got transferred to the laser

363
00:15:41,070 --> 00:15:39,190

transferred to the biological system and

364
00:15:44,700 --> 00:15:41,080
that cause the opposite biological

365
00:15:46,740 --> 00:15:44,710
offense effect but the the conclusion is

366
00:15:49,740 --> 00:15:46,750
that this kind of a mechanism could very

367
00:15:53,670 --> 00:15:49,750
well occur between two people it could

368
00:15:57,030 --> 00:15:53,680
occur via some form of a laser or light

369
00:15:59,040 --> 00:15:57,040
or other kinds of energies between two

370
00:16:01,230 --> 00:15:59,050
people so that the information whether

371
00:16:03,210 --> 00:16:01,240
it's bio information or chemical

372
00:16:05,310 --> 00:16:03,220
information could be transferred between

373
00:16:08,310 --> 00:16:05,320
two people and allow for the

374
00:16:16,410 --> 00:16:08,320
communication between two people that's

375
00:16:20,990 --> 00:16:16,420
it thank you so much thank you so much

376
00:16:23,910 --> 00:16:21,000
do we have some questions yes Julie

377
00:16:26,070 --> 00:16:23,920
tired audience everyone's falling asleep

378
00:16:28,020 --> 00:16:26,080
maybe not I wish all my chemistry

379
00:16:34,650 --> 00:16:28,030
professors would have been as dynamic as

380
00:16:38,760 --> 00:16:34,660
you go this is very interesting do you

381
00:16:42,260 --> 00:16:38,770
think that this may be the mechanism

382
00:16:45,450 --> 00:16:42,270
behind now I just forgot the word

383
00:16:47,610 --> 00:16:45,460
homeopathy homeopathy remedies where

384
00:16:49,470 --> 00:16:47,620
there's no actual chemical in the remedy

385
00:16:51,330 --> 00:16:49,480
and it often has the opposite effect of

386
00:16:54,000 --> 00:16:51,340
what yeah that's true

387
00:16:55,860 --> 00:16:54,010
and what we don't understand is is how

388
00:16:59,250 --> 00:16:55,870

to transfer the chemical information

389
00:17:03,300 --> 00:16:59,260
whether it's from into water or into a

390
00:17:05,760 --> 00:17:03,310
laser beam how to really negotiate and

391
00:17:09,210 --> 00:17:05,770
control the conditions so that we get

392
00:17:10,980 --> 00:17:09,220
the opposite effect or not but of course

393
00:17:13,380 --> 00:17:10,990
the application is that you don't have

394
00:17:15,330 --> 00:17:13,390
to deliver the drug to the person you

395
00:17:18,360 --> 00:17:15,340
can deliver the information homeopathy

396
00:17:20,490 --> 00:17:18,370
is a great example and obviously water

397
00:17:22,260 --> 00:17:20,500
is very different than a laser but this

398
00:17:24,060 --> 00:17:22,270
is a parallel to the talker gave two

399
00:17:25,860 --> 00:17:24,070
years ago about homeopathy and

400
00:17:28,620 --> 00:17:25,870
information and water I was not here

401
00:17:31,020 --> 00:17:28,630
okay I'm just reminded of that joke

402
00:17:32,940 --> 00:17:31,030
about my I want my martini so dry I just

403
00:17:38,240 --> 00:17:32,950
want is it vermouth I just want the word

404
00:17:43,520 --> 00:17:41,100
okay here comes a hard question from

405
00:17:50,630 --> 00:17:43,530
Chalmers himself

406
00:17:55,310 --> 00:17:50,640
uh no this is not so much a question as

407
00:17:58,190 --> 00:17:55,320
a suggestion and speculation the this

408
00:18:01,750 --> 00:17:58,200
opposite effects business seems very

409
00:18:04,280 --> 00:18:01,760
puzzling on your informational model

410
00:18:06,190 --> 00:18:04,290
neurons don't declare opposites day as

411
00:18:09,170 --> 00:18:06,200
far as we know

412
00:18:11,360 --> 00:18:09,180
however cells do normally exist in an

413
00:18:14,180 --> 00:18:11,370

electromagnetic environment as well as a

414
00:18:16,190 --> 00:18:14,190
chemical one and cells also have

415
00:18:19,250 --> 00:18:16,200
regulatory mechanisms to maintain

416
00:18:23,090 --> 00:18:19,260
homeostasis for basically all of the

417
00:18:25,370 --> 00:18:23,100
chemicals that they produce and use it

418
00:18:27,950 --> 00:18:25,380
seems to me a plausible explanation of

419
00:18:32,780 --> 00:18:27,960
the opposite effect is that your laser

420
00:18:34,790 --> 00:18:32,790
is conveying much less information than

421
00:18:37,310 --> 00:18:34,800
the full structure of the MAO inhibitor

422
00:18:41,440 --> 00:18:37,320
molecule but what it is passing along

423
00:18:44,750 --> 00:18:41,450
might be the kind of information that

424
00:18:47,590 --> 00:18:44,760
natural internal radiation would pass

425
00:18:51,320 --> 00:18:47,600
along in a living body which would

426
00:18:53,000 --> 00:18:51,330
signal neurons that hmm there's MAO

427
00:18:58,220 --> 00:18:53,010
inhibitor in the vicinity we'd better

428
00:19:00,170 --> 00:18:58,230
stock up that's quite feasible the

429
00:19:02,890 --> 00:19:00,180
purpose of the experiment was really

430
00:19:05,810 --> 00:19:02,900
just to see if I could affect

431
00:19:08,060 --> 00:19:05,820
specifically the the enzyme because

432
00:19:11,480 --> 00:19:08,070
remember there are thousand enzymes in

433
00:19:13,400 --> 00:19:11,490
in these nerve cells and the information

434
00:19:16,100 --> 00:19:13,410
was rather specific for this one

435
00:19:19,220 --> 00:19:16,110
particular molecule and I measured the

436
00:19:20,510 --> 00:19:19,230
one particular enzyme and in fact there

437
00:19:22,610 --> 00:19:20,520
was an effect so the fact that there

438
00:19:24,500 --> 00:19:22,620

wasn't affect at all to me means like

439
00:19:25,820 --> 00:19:24,510
yeah there's a perturbation going on and

440
00:19:27,830 --> 00:19:25,830
we just don't have the exact

441
00:19:30,980 --> 00:19:27,840
experimental conditions to figure out

442
00:19:33,230 --> 00:19:30,990
how to do it experimentally let alone

443
00:19:35,180 --> 00:19:33,240
how it's done in in the body because of

444
00:19:37,880 --> 00:19:35,190
the endogenous electromagnetic fields

445
00:19:39,800 --> 00:19:37,890
surrounding a cell but yeah this kind of

446
00:19:42,860 --> 00:19:39,810
information is probably passed on

447
00:19:45,470 --> 00:19:42,870
between two neurons and as I said in

448
00:19:49,970 --> 00:19:45,480
conclusion between two people so good

449
00:19:52,570 --> 00:19:49,980
point thank you hi this is probably a

450
00:19:54,860 --> 00:19:52,580
very stupid question but no such thing

451
00:19:56,880 --> 00:19:54,870
because everybody's so tired they won't

452
00:20:01,470 --> 00:19:56,890
remember this do

453
00:20:03,930 --> 00:20:01,480
anyway so I'm go ahead trying to break

454
00:20:05,850 --> 00:20:03,940
down your possible pathways for the

455
00:20:08,340 --> 00:20:05,860
information carrying so what what type

456
00:20:10,590 --> 00:20:08,350
of information is being carried whether

457
00:20:12,870 --> 00:20:10,600
its quantum electrochemical

458
00:20:16,500 --> 00:20:12,880
electromagnetic magnetical or what what

459
00:20:19,740 --> 00:20:16,510
not does it make would it make any sense

460
00:20:22,890 --> 00:20:19,750
for you to introduce a quantum

461
00:20:27,240 --> 00:20:22,900
interference let's say measurement /

462
00:20:29,430 --> 00:20:27,250
entanglement into the quantum

463
00:20:32,550 --> 00:20:29,440

information of your test chemical

464
00:20:34,320 --> 00:20:32,560
without actually trying to change the

465
00:20:36,990 --> 00:20:34,330
electromagnetic or electrochemical

466
00:20:38,610 --> 00:20:37,000
structure or the your test chemical and

467
00:20:39,990 --> 00:20:38,620
see whether that actually changes any

468
00:20:42,990 --> 00:20:40,000
other test results or not

469
00:20:44,400 --> 00:20:43,000
well in fact I didn't do that but doctor

470
00:20:46,620 --> 00:20:44,410
or Maura did it in his original

471
00:20:48,690 --> 00:20:46,630
experiments with his laser beam when he

472
00:20:51,540 --> 00:20:48,700
was projecting chemical information on

473
00:20:55,410 --> 00:20:51,550
to a person he discovered that if he put

474
00:20:57,990 --> 00:20:55,420
an aluminum foil aluminum aluminum foot

475
00:21:00,570 --> 00:20:58,000
would block the the information transfer

476
00:21:02,760 --> 00:21:00,580
so he would you know cover up the person

477
00:21:04,500 --> 00:21:02,770
and if he was treating the stomach he

478
00:21:06,420 --> 00:21:04,510
put a little hole in the aluminum foil

479
00:21:09,240 --> 00:21:06,430
in here and the laser would go gonna

480
00:21:10,860 --> 00:21:09,250
right in there so that at this point

481
00:21:14,070 --> 00:21:10,870
that's pretty much all we know what

482
00:21:16,020 --> 00:21:14,080
would interfere I think in fact to the

483
00:21:19,650 --> 00:21:16,030
previous question interference and

484
00:21:22,290 --> 00:21:19,660
quantum decoherence is probably going on

485
00:21:23,730 --> 00:21:22,300
here because the the if this is in fact

486
00:21:25,170 --> 00:21:23,740
quantum information that's being

487
00:21:26,430 --> 00:21:25,180
transferred because quite them

488
00:21:28,650 --> 00:21:26,440

information doesn't stick around very

489
00:21:30,110 --> 00:21:28,660
long it's not very stable and all kinds

490
00:21:32,640 --> 00:21:30,120
of things in the environment could

491
00:21:35,790 --> 00:21:32,650
interfere with it and perhaps even

492
00:21:38,580 --> 00:21:35,800
reverse the the the polarity of the

493
00:21:40,380 --> 00:21:38,590
information so that it goes produces an

494
00:21:44,270 --> 00:21:40,390
opposite biological effect that is yet

495
00:21:48,090 --> 00:21:44,280
another explanation that the the the

496
00:21:50,010 --> 00:21:48,100
inhibitory activity is transferred to

497
00:21:54,170 --> 00:21:50,020
the laser but by the time it ends up in

498
00:21:57,330 --> 00:21:54,180
the cell it it converts to a stimulatory

499
00:21:58,770 --> 00:21:57,340
activity so those are two good points to

500
00:22:01,860 --> 00:21:58,780
consider and thank you for the question

501
00:22:04,860 --> 00:22:01,870
I was just interject here that I

502
00:22:06,810 --> 00:22:04,870
remember dr. Morrison having also the

503
00:22:09,060 --> 00:22:06,820
aluminum foil and that he would charge

504
00:22:12,980 --> 00:22:09,070
the aluminum foil for healing

505
00:22:18,480 --> 00:22:16,919
wonderfully might invite him here well

506
00:22:22,259 --> 00:22:18,490
he die don't worry did all kinds of

507
00:22:24,840 --> 00:22:22,269
unconventional things and this was just

508
00:22:26,460 --> 00:22:24,850
one experiment that I did with him and I

509
00:22:30,029 --> 00:22:26,470
thought okay wow this is worth repeating

510
00:22:32,490 --> 00:22:30,039
and you know in a scientific way I just

511
00:22:35,279 --> 00:22:32,500
want to clarify my understanding of what

512
00:22:38,879 --> 00:22:35,289
you said basically and what I understood

513
00:22:41,519 --> 00:22:38,889

was a laser beam was passed nearby some

514
00:22:43,529 --> 00:22:41,529
material and information was somehow

515
00:22:46,369 --> 00:22:43,539
picked up by the photons in this laser

516
00:22:49,499 --> 00:22:46,379
beam and transmitted to the biological

517
00:22:52,320 --> 00:22:49,509
biological system do you have any idea

518
00:22:54,350 --> 00:22:52,330
how that information was carried by the

519
00:22:57,570 --> 00:22:54,360
photons and the laser beam was it

520
00:23:02,730 --> 00:22:57,580
polarization that changed exactly what

521
00:23:04,769 --> 00:23:02,740
changed I think the the laser carries

522
00:23:06,769 --> 00:23:04,779
the information in an analogous way to

523
00:23:10,320 --> 00:23:06,779
an electromagnetic field being modulated

524
00:23:12,749 --> 00:23:10,330
by frequency information what was the

525
00:23:14,789 --> 00:23:12,759
frequency information well the it that's

526
00:23:16,590 --> 00:23:14,799
what I its what I'm it's the frequency

527
00:23:18,119 --> 00:23:16,600
information is actually chemical

528
00:23:20,070 --> 00:23:18,129
information which I described as

529
00:23:24,269 --> 00:23:20,080
originating from the electronic and

530
00:23:26,190 --> 00:23:24,279
chemical bonds and all that stuff that

531
00:23:28,230 --> 00:23:26,200
was though I didn't have time to really

532
00:23:30,090 --> 00:23:28,240
talk about the the way the way the

533
00:23:31,860 --> 00:23:30,100
mechanisms that the laser would carry

534
00:23:34,019 --> 00:23:31,870
the information and I'm not even sure I

535
00:23:36,690 --> 00:23:34,029
even know but I'd love to hear from some

536
00:23:38,190 --> 00:23:36,700
of the physicists in the group how a

537
00:23:39,899 --> 00:23:38,200
laser might which is I guess your

538
00:23:41,879 --> 00:23:39,909

question how the laser might carry the

539
00:23:43,409 --> 00:23:41,889
information the information itself I

540
00:23:46,590 --> 00:23:43,419
think is the chemical information I had

541
00:23:49,590 --> 00:23:46,600
described how the laser carries it and

542
00:23:52,560 --> 00:23:49,600
how the biological system decodes it are

543
00:23:54,240 --> 00:23:52,570
two unknown questions thank you thank