Compatibility with Physics: Why Significant?

- Correctness
  - Are Kaku & others correct?
  - Should retrocausation be rejected out of hand?
- Understanding
  - Does our current logic extend to retrocausation?
  - Can we model effect?
    - ⇒ Begin to understand mechanism?
- Limits
  - Where can we expect retrocausation to work?
  - Can we make use of it?

1
00:00:03,750 --> 00:00:01,670
a while

2
00:00:06,309 --> 00:00:03,760
garrett modell obviously is known to all

3
00:00:07,909 --> 00:00:06,319
of us he has graduate degrees in applied

4
00:00:10,310 --> 00:00:07,919
physics

5
00:00:12,790 --> 00:00:10,320
for the last 23 years he's developed new

6
00:00:14,629 --> 00:00:12,800
thin film technologies as a professor of

7
00:00:16,870 --> 00:00:14,639
electrical engineering at the university

8
00:00:19,590 --> 00:00:16,880
of colorado at boulder

9
00:00:22,630 --> 00:00:19,600
his non-mainstream interests

10
00:00:25,189 --> 00:00:22,640
he wants you to know are experimental

11
00:00:27,589 --> 00:00:25,199
but since the members of the ssc have

12
00:00:28,710 --> 00:00:27,599
been so malicious to him by electing him

13
00:00:30,470 --> 00:00:28,720

president

14
00:00:32,389 --> 00:00:30,480
he hasn't had time to do experiments in

15
00:00:34,310 --> 00:00:32,399
the past year and so he

16
00:00:37,270 --> 00:00:34,320
asked me to apologize in advance that

17
00:00:38,549 --> 00:00:37,280
this is a theory paper

18
00:00:41,270 --> 00:00:38,559
thank you

19
00:00:44,229 --> 00:00:41,280
uh so today i'm going to talk about the

20
00:00:46,549 --> 00:00:44,239
possibility of retro causation and the

21
00:00:49,029 --> 00:00:46,559
possibility of the sort of thing that

22
00:00:49,910 --> 00:00:49,039
courtney dramatically just pointed out

23
00:00:52,069 --> 00:00:49,920
to us

24
00:00:55,590 --> 00:00:52,079
so why am i asking about this

25
00:00:58,470 --> 00:00:55,600
possibility if we know it's happening

26
00:01:03,110 --> 00:00:58,480
and that has to do with a response to a

27
00:01:04,950 --> 00:01:03,120
recent book put out by michio kakou and

28
00:01:07,350 --> 00:01:04,960
he the book is called the collapse of

29
00:01:08,390 --> 00:01:07,360
the foundations of physics

30
00:01:11,350 --> 00:01:08,400
in it

31
00:01:14,550 --> 00:01:11,360
uh he's oh i'm sorry the the book is

32
00:01:18,469 --> 00:01:14,560
called physics of the impossible and in

33
00:01:21,350 --> 00:01:18,479
it he said that if a retrocausation

34
00:01:23,510 --> 00:01:21,360
occurred it would violate causality and

35
00:01:25,590 --> 00:01:23,520
the fundamental ordering of cause and

36
00:01:27,510 --> 00:01:25,600
effect and it ultimately it would

37
00:01:29,190 --> 00:01:27,520
produce a collapse of the foundations of

38
00:01:31,350 --> 00:01:29,200

physics

39
00:01:34,910 --> 00:01:31,360
so the purpose of this talk

40
00:01:36,550 --> 00:01:34,920
is to resolve this impossibility of

41
00:01:40,390 --> 00:01:36,560
retrocausation

42
00:01:42,550 --> 00:01:40,400
and i will do this using the paradox of

43
00:01:44,789 --> 00:01:42,560
bilking and we'll talk about that what

44
00:01:47,830 --> 00:01:44,799
i'm not going to be talking about in

45
00:01:50,789 --> 00:01:47,840
this presentation is how retro causation

46
00:01:52,830 --> 00:01:50,799
works or how psychokinesis works that's

47
00:01:56,149 --> 00:01:52,840
a a completely different

48
00:01:58,550 --> 00:01:56,159
subject so first i'll go over

49
00:02:00,709 --> 00:01:58,560
precognition and

50
00:02:03,190 --> 00:02:00,719
retro psychokinesis and describe what

51
00:02:04,149 --> 00:02:03,200
these phenomena are

52
00:02:05,990 --> 00:02:04,159
and

53
00:02:07,429 --> 00:02:06,000
very briefly talk about experimental

54
00:02:09,830 --> 00:02:07,439
evidence for it

55
00:02:11,750 --> 00:02:09,840
then we'll talk about

56
00:02:14,470 --> 00:02:11,760
the compatibility with physics what sort

57
00:02:16,710 --> 00:02:14,480
of physics are we talking about

58
00:02:19,589 --> 00:02:16,720
i'll introduce the bilking paradox and

59
00:02:21,350 --> 00:02:19,599
use it along with information entropy to

60
00:02:25,190 --> 00:02:21,360
come to a resolution about the

61
00:02:26,630 --> 00:02:25,200
impossibility or not of retrocausation

62
00:02:28,630 --> 00:02:26,640
and then finally talk about some

63
00:02:31,990 --> 00:02:28,640

implications

64
00:02:34,710 --> 00:02:32,000
so precognition is knowing about

65
00:02:36,710 --> 00:02:34,720
something in advance of its happening

66
00:02:38,390 --> 00:02:36,720
is there evidence for this the answer is

67
00:02:39,190 --> 00:02:38,400
yes there's a lot of evidence there are

68
00:02:41,110 --> 00:02:39,200
many

69
00:02:42,470 --> 00:02:41,120
published papers peer-reviewed and good

70
00:02:46,150 --> 00:02:42,480
journals

71
00:02:47,509 --> 00:02:46,160
uh without going into detail uh spotis

72
00:02:50,229 --> 00:02:47,519
wood and may

73
00:02:53,430 --> 00:02:50,239
recently described an experiment in

74
00:02:54,790 --> 00:02:53,440
which a randomly timed noise source was

75
00:02:56,470 --> 00:02:54,800
set off

76
00:02:57,830 --> 00:02:56,480
and the response of a listener was

77
00:03:00,630 --> 00:02:57,840
measured by measuring their skin

78
00:03:03,430 --> 00:03:00,640
conductance their galvanic skin response

79
00:03:05,670 --> 00:03:03,440
and through a series of

80
00:03:08,630 --> 00:03:05,680
uh experiments they found that the skin

81
00:03:11,270 --> 00:03:08,640
response actually started uh several

82
00:03:12,229 --> 00:03:11,280
seconds in advance of the noise going

83
00:03:14,790 --> 00:03:12,239
off

84
00:03:16,710 --> 00:03:14,800
another experiment was by dean raiden in

85
00:03:19,670 --> 00:03:16,720
which he uh

86
00:03:20,949 --> 00:03:19,680
looked at the eeg by measuring it

87
00:03:23,190 --> 00:03:20,959
between uh

88
00:03:25,750 --> 00:03:23,200

with electrodes on people's ears

89
00:03:28,550 --> 00:03:25,760
and found that

90
00:03:31,430 --> 00:03:28,560
within roughly a second before uh light

91
00:03:33,750 --> 00:03:31,440
was randomly flashed the person's eeg

92
00:03:36,630 --> 00:03:33,760
showed signs of that

93
00:03:40,949 --> 00:03:36,640
people have even imaged the brain

94
00:03:43,589 --> 00:03:40,959
using fmri biermann and schulte in 2002

95
00:03:45,750 --> 00:03:43,599
looked at the brain and found

96
00:03:47,030 --> 00:03:45,760
evidence in the brain parts of the brain

97
00:03:49,350 --> 00:03:47,040
lit up

98
00:03:50,949 --> 00:03:49,360
in advance of a stimulus and so there

99
00:03:52,550 --> 00:03:50,959
are many experiments like this that

100
00:03:55,270 --> 00:03:52,560
prove it

101
00:03:58,149 --> 00:03:55,280
regarding retro psychokinesis

102
00:04:00,869 --> 00:03:58,159
causing something to happen

103
00:04:04,789 --> 00:04:00,879
backwards in time there are many

104
00:04:07,030 --> 00:04:04,799
experiments on this a classic one was uh

105
00:04:08,550 --> 00:04:07,040
produced by schmidt in which he

106
00:04:11,509 --> 00:04:08,560
pre-recorded

107
00:04:14,470 --> 00:04:11,519
some blips on two channels of a tape

108
00:04:18,870 --> 00:04:14,480
and later played that tape to a listener

109
00:04:20,629 --> 00:04:18,880
who was asked to use their intention to

110
00:04:22,629 --> 00:04:20,639
make the blips go more to one side or

111
00:04:25,670 --> 00:04:22,639
the other and they were able to do that

112
00:04:28,550 --> 00:04:25,680
despite the fact that the recordings

113
00:04:31,270 --> 00:04:28,560

were made earlier

114
00:04:32,870 --> 00:04:31,280
the pair lab has done many many many

115
00:04:34,629 --> 00:04:32,880
experiments with random number

116
00:04:36,070 --> 00:04:34,639
generators and random mechanical

117
00:04:36,870 --> 00:04:36,080
cascades

118
00:04:38,550 --> 00:04:36,880
and

119
00:04:40,629 --> 00:04:38,560
they found that one could use

120
00:04:42,710 --> 00:04:40,639
psychokinesis to affect the output of

121
00:04:45,350 --> 00:04:42,720
these devices and it didn't matter

122
00:04:47,110 --> 00:04:45,360
whether it was done in real time before

123
00:04:48,950 --> 00:04:47,120
or after the event took place and there

124
00:04:51,110 --> 00:04:48,960
are many more experiments

125
00:04:53,030 --> 00:04:51,120
so these things exist

126
00:04:54,310 --> 00:04:53,040
yet we're being told that they cannot

127
00:04:57,189 --> 00:04:54,320
exist

128
00:04:59,110 --> 00:04:57,199
why am i asking the question is this

129
00:05:01,749 --> 00:04:59,120
compatible with physics is this just an

130
00:05:03,749 --> 00:05:01,759
idle intellectual exercise

131
00:05:05,430 --> 00:05:03,759
so there are a number of reasons one is

132
00:05:08,230 --> 00:05:05,440
just to be correct

133
00:05:09,510 --> 00:05:08,240
is kaku and other other people like that

134
00:05:12,150 --> 00:05:09,520
correct

135
00:05:14,550 --> 00:05:12,160
secondly should retrocausation be

136
00:05:16,070 --> 00:05:14,560
rejected out of hand well certainly not

137
00:05:17,830 --> 00:05:16,080
you can never reject something out of

138
00:05:19,990 --> 00:05:17,840

hand if you've got experimental evidence

139
00:05:21,510 --> 00:05:20,000
for it

140
00:05:24,070 --> 00:05:21,520
then second comes the question of

141
00:05:25,830 --> 00:05:24,080
understanding does our current logic

142
00:05:27,350 --> 00:05:25,840
extend to retro causation and in fact

143
00:05:29,990 --> 00:05:27,360
can we use the logic to help us

144
00:05:32,629 --> 00:05:30,000
understand retro causation and can we

145
00:05:34,629 --> 00:05:32,639
model the effect why is this important

146
00:05:36,550 --> 00:05:34,639
if we can model it we can start to

147
00:05:37,990 --> 00:05:36,560
understand the mechanism

148
00:05:40,150 --> 00:05:38,000
and finally what are the limits for

149
00:05:40,950 --> 00:05:40,160
retrocausation where can we expect it to

150
00:05:45,830 --> 00:05:40,960
work

151
00:05:47,909 --> 00:05:45,840
can we make use of it

152
00:05:50,310 --> 00:05:47,919
uh what sort of physics are we talking

153
00:05:52,550 --> 00:05:50,320
about which supposedly is incompatible

154
00:05:54,870 --> 00:05:52,560
with retrocausation i've listed

155
00:05:56,629 --> 00:05:54,880
three four categories of physics here

156
00:05:59,670 --> 00:05:56,639
i'm not going to talk about newton's

157
00:06:02,070 --> 00:05:59,680
laws and causality or quantum mechanics

158
00:06:04,230 --> 00:06:02,080
those are dealt with elsewhere and

159
00:06:06,469 --> 00:06:04,240
there's no incompatibility in these

160
00:06:07,590 --> 00:06:06,479
cases but as i say i'm not going to talk

161
00:06:09,909 --> 00:06:07,600
about it now

162
00:06:11,990 --> 00:06:09,919
what about conservation of energy

163
00:06:13,629 --> 00:06:12,000

well there are two types

164
00:06:15,270 --> 00:06:13,639
of psychokinesis there's

165
00:06:18,070 --> 00:06:15,280
macrocyclokinesis so those would be

166
00:06:19,270 --> 00:06:18,080
poltergeists moving large objects things

167
00:06:21,189 --> 00:06:19,280
like that

168
00:06:22,950 --> 00:06:21,199
all evidence that i know of for these

169
00:06:24,309 --> 00:06:22,960
type of events

170
00:06:27,350 --> 00:06:24,319
they are

171
00:06:29,590 --> 00:06:27,360
they occur locally close to the cause

172
00:06:31,430 --> 00:06:29,600
they occur in forward causality in the

173
00:06:34,230 --> 00:06:31,440
sense the cause seems to happen before

174
00:06:35,830 --> 00:06:34,240
the event and there is an energy

175
00:06:38,870 --> 00:06:35,840
transfer

176
00:06:41,110 --> 00:06:38,880
then in contrast to that there are micro

177
00:06:43,510 --> 00:06:41,120
psychokinesis events

178
00:06:46,150 --> 00:06:43,520
and the micro pk events are non-local

179
00:06:48,390 --> 00:06:46,160
they can be far away from the agent

180
00:06:51,270 --> 00:06:48,400
uh they're non-temporal it can the

181
00:06:53,189 --> 00:06:51,280
causality can be forward or retro

182
00:06:54,870 --> 00:06:53,199
and there appears to be no energy

183
00:06:57,670 --> 00:06:54,880
transfer it's simply a matter of

184
00:07:00,150 --> 00:06:57,680
information transfer it is these type of

185
00:07:02,469 --> 00:07:00,160
events microcyclokinesis events that i'm

186
00:07:04,070 --> 00:07:02,479
talking about along with precognition

187
00:07:06,550 --> 00:07:04,080
and these have no problem with the

188
00:07:08,550 --> 00:07:06,560

conservation of energy because there

189
00:07:12,070 --> 00:07:08,560
appears to be no energy involved in the

190
00:07:16,629 --> 00:07:14,469
then the other physical law which i

191
00:07:19,589 --> 00:07:16,639
think ends up being very insightful for

192
00:07:21,589 --> 00:07:19,599
us is the second

193
00:07:25,589 --> 00:07:21,599
law of thermodynamics

194
00:07:27,110 --> 00:07:25,599
tells us that entropy which is a measure

195
00:07:29,990 --> 00:07:27,120
of disorder

196
00:07:31,909 --> 00:07:30,000
in any closed system cannot decrease

197
00:07:33,670 --> 00:07:31,919
over time it can either increase or

198
00:07:36,150 --> 00:07:33,680
remain the same

199
00:07:39,189 --> 00:07:36,160
so we will be using the second law of

200
00:07:41,749 --> 00:07:39,199
thermodynamics to help us

201
00:07:43,350 --> 00:07:41,759
now the retro causation has often been

202
00:07:45,670 --> 00:07:43,360
posed in terms of the grandfather

203
00:07:47,749 --> 00:07:45,680
paradox this is based upon a novel

204
00:07:50,150 --> 00:07:47,759
written by renee bargevell

205
00:07:52,629 --> 00:07:50,160
called the imprudent traveler and in

206
00:07:56,230 --> 00:07:52,639
this novel the protagonist goes back in

207
00:07:58,950 --> 00:07:56,240
time to kill his grandfather before his

208
00:08:01,270 --> 00:07:58,960
grandfather met his grandmother

209
00:08:03,430 --> 00:08:01,280
this i believe is not a well-posed

210
00:08:05,350 --> 00:08:03,440
problem why well first of all it's

211
00:08:07,830 --> 00:08:05,360
unnecessarily vicious

212
00:08:10,150 --> 00:08:07,840
uh but secondly and more importantly

213
00:08:13,110 --> 00:08:10,160

perhaps is that there's no evidence for

214
00:08:15,350 --> 00:08:13,120
this sort of retrocausation instead i

215
00:08:18,550 --> 00:08:15,360
want to pose a problem in which it's not

216
00:08:21,749 --> 00:08:18,560
an all or nothing situation but there

217
00:08:23,589 --> 00:08:21,759
are degrees of retrocausation

218
00:08:26,550 --> 00:08:23,599
and so what i'm going to be talking

219
00:08:30,230 --> 00:08:26,560
about is a lottery and in this lottery

220
00:08:33,350 --> 00:08:30,240
yesterday a number was chosen by some

221
00:08:35,190 --> 00:08:33,360
random process and today you decide that

222
00:08:38,310 --> 00:08:35,200
you would like to be the winner and you

223
00:08:41,190 --> 00:08:38,320
use retroactive psychokinesis art retro

224
00:08:42,870 --> 00:08:41,200
pk to affect the result yesterday

225
00:08:44,710 --> 00:08:42,880
is this possible and that's the problem

226
00:08:46,470 --> 00:08:44,720
that i pose

227
00:08:49,590 --> 00:08:46,480
in general this is called the bilking

228
00:08:52,550 --> 00:08:49,600
paradox in which you have an early event

229
00:08:55,030 --> 00:08:52,560
b caused by a later event a

230
00:08:58,389 --> 00:08:55,040
and the bilking occurs if you after

231
00:09:00,310 --> 00:08:58,399
event b occurs you block a and then

232
00:09:02,150 --> 00:09:00,320
event b is built out of its cause so

233
00:09:03,829 --> 00:09:02,160
that's the general phenomena we're

234
00:09:07,030 --> 00:09:03,839
dealing with

235
00:09:09,190 --> 00:09:07,040
so let's take several cases in case one

236
00:09:11,910 --> 00:09:09,200
let's say that you know nothing about

237
00:09:13,910 --> 00:09:11,920
the lottery and its result

238
00:09:16,790 --> 00:09:13,920

that occurred yesterday

239
00:09:19,110 --> 00:09:16,800
in that case can you in principle use

240
00:09:22,870 --> 00:09:19,120
retropk to affect it and the answer is

241
00:09:24,870 --> 00:09:22,880
yes there's no bilking problem with that

242
00:09:26,150 --> 00:09:24,880
you certainly can the mechanism is

243
00:09:27,829 --> 00:09:26,160
another question

244
00:09:30,550 --> 00:09:27,839
let's take case b

245
00:09:32,550 --> 00:09:30,560
in this case you totally you know

246
00:09:35,350 --> 00:09:32,560
completely the lottery result of

247
00:09:36,470 --> 00:09:35,360
yesterday and you ask can you build

248
00:09:38,230 --> 00:09:36,480
uh that

249
00:09:41,269 --> 00:09:38,240
knowledge by

250
00:09:43,030 --> 00:09:41,279
affecting the lottery result yesterday

251
00:09:44,790 --> 00:09:43,040
to produce a different result than you

252
00:09:46,070 --> 00:09:44,800
know and the answer is no that's

253
00:09:48,630 --> 00:09:46,080
impossible

254
00:09:50,389 --> 00:09:48,640
so the interesting case is case three

255
00:09:52,150 --> 00:09:50,399
where you have partial knowledge

256
00:09:53,750 --> 00:09:52,160
of the lottery result you know some of

257
00:09:55,910 --> 00:09:53,760
the numbers but not all of the numbers

258
00:09:57,670 --> 00:09:55,920
maybe you heard some on the radio