- Retrocausation compatible with
  - ✓ Newton's laws
  - ✓ Conservation of Energy
  - ? 2nd Law of Thermodynamics (logic)
- Logic & bilking paradox ⇒ conditions for retrocausation
  Not all-or-nothing process
  Greater knowledge of previous outcome
  ⇒ smaller the information entropy
  ⇒ less effect agent can have
- Bilking paradox disappears if PK limited by uncertainty
  (information entropy ~ noise)

1
00:00:06,650 --> 00:00:03,770
today and so my question is how do you

2
00:00:09,950 --> 00:00:06,660
avoid bilking and the answer comes from

3
00:00:12,440 --> 00:00:09,960
information entropy entropy has two

4
00:00:15,560 --> 00:00:12,450
forms the classical form is

5
00:00:17,710 --> 00:00:15,570
thermodynamics and at a previous SS a

6
00:00:20,300 --> 00:00:17,720
meeting I talked about this

7
00:00:22,910 --> 00:00:20,310
thermodynamic entropy and discussed how

8
00:00:25,130 --> 00:00:22,920
it can be used with regard to Sian

9
00:00:26,720 --> 00:00:25,140
formation there's another form of

10
00:00:28,580 --> 00:00:26,730
entropy and that is information entropy

11
00:00:31,659 --> 00:00:28,590
and that is the entropy that I'm going

12
00:00:33,889 --> 00:00:31,669
to be using today and it has been shown

13
00:00:36,160 --> 00:00:33,899

pretty much conclusively that

14
00:00:41,030 --> 00:00:36,170
information entropy is in fact identical

15
00:00:43,880 --> 00:00:41,040
to thermodynamic entropy so again this

16
00:00:46,000 --> 00:00:43,890
is a measure of disorder this

17
00:00:48,110 --> 00:00:46,010
information entropy can be expressed

18
00:00:50,930 --> 00:00:48,120
quantitatively and you can express it in

19
00:00:53,689 --> 00:00:50,940
terms of how surprised you are to learn

20
00:00:56,299 --> 00:00:53,699
that an intended outcome has occurred

21
00:01:01,580 --> 00:00:56,309
and that's called surprise elitsa

22
00:01:03,470 --> 00:01:01,590
technical term so if you know little it

23
00:01:08,179 --> 00:01:03,480
really is I didn't make it up if you

24
00:01:10,730 --> 00:01:08,189
know little about the outcome and it

25
00:01:12,380 --> 00:01:10,740
occurs then you will be very surprised

26
00:01:16,460 --> 00:01:12,390
if you know a lot you'll be less

27
00:01:18,140 --> 00:01:16,470
surprised and so this surprise ille is a

28
00:01:22,340 --> 00:01:18,150
measure of uncertainty and it's

29
00:01:24,200 --> 00:01:22,350
quantified in terms of entropy and so if

30
00:01:26,840 --> 00:01:24,210
you know little beforehand the

31
00:01:29,030 --> 00:01:26,850
information entropy is large and it

32
00:01:31,760 --> 00:01:29,040
turns out that in this case the

33
00:01:35,780 --> 00:01:31,770
possibility of retro psychokinesis is

34
00:01:39,289 --> 00:01:35,790
large this has been described and can be

35
00:01:42,999 --> 00:01:39,299
described quantitatively using entropy

36
00:01:46,219 --> 00:01:43,009
and surprise ille in information entropy

37
00:01:47,960 --> 00:01:46,229
an information theory involving

38
00:01:52,039 --> 00:01:47,970

Shannon's famous formula I'm not going

39
00:01:55,160 --> 00:01:52,049
to go into that right now so what are

40
00:01:58,959 --> 00:01:55,170
the implications of this approach in

41
00:02:02,179 --> 00:01:58,969
which we say that in fact you can have

42
00:02:06,469 --> 00:02:02,189
retro causation it does not contradict

43
00:02:09,460 --> 00:02:06,479
physics under certain conditions well we

44
00:02:11,360 --> 00:02:09,470
can say that retro causation is

45
00:02:13,670 --> 00:02:11,370
compatible and I haven't gone into that

46
00:02:16,309 --> 00:02:13,680
here with Newton's laws and

47
00:02:18,679 --> 00:02:16,319
of energy and I can say that the real

48
00:02:22,670 --> 00:02:18,689
question is one of the second law of

49
00:02:25,160 --> 00:02:22,680
thermodynamics and entropy is a vector

50
00:02:27,170 --> 00:02:25,170
causation compatible with that and I

51
00:02:30,050 --> 00:02:27,180
think that really is the question and

52
00:02:32,179 --> 00:02:30,060
that's how it ought to be posed why the

53
00:02:35,330 --> 00:02:32,189
second law of thermodynamics because the

54
00:02:38,809 --> 00:02:35,340
second law of thermodynamics is really

55
00:02:43,270 --> 00:02:38,819
just a description of logic it describes

56
00:02:47,740 --> 00:02:43,280
logically how a multi-part system by a

57
00:02:52,399 --> 00:02:47,750
probability must evolve over time so

58
00:02:55,490 --> 00:02:52,409
what I've done is I've linked logic from

59
00:03:00,140 --> 00:02:55,500
the second law of thermodynamics and the

60
00:03:04,009 --> 00:03:00,150
bilking paradox to produce what are the

61
00:03:06,649 --> 00:03:04,019
conditions for retro causation and we

62
00:03:10,429 --> 00:03:06,659
find that it's not not an all-or-nothing

63
00:03:13,819 --> 00:03:10,439

process but in fact it's a it's a part

64
00:03:17,270 --> 00:03:13,829
as a somewhat process and the greater

65
00:03:20,319 --> 00:03:17,280
our knowledge of a previous outcome the

66
00:03:22,939 --> 00:03:20,329
smaller the information entropy is and

67
00:03:26,479 --> 00:03:22,949
the smaller the interim information

68
00:03:29,349 --> 00:03:26,489
entropy is the less of an effect we can

69
00:03:31,849 --> 00:03:29,359
have on the past the lower our

70
00:03:35,270 --> 00:03:31,859
psychokinesis efficiency if we can

71
00:03:39,830 --> 00:03:35,280
define such a quantity so the bilking

72
00:03:42,349 --> 00:03:39,840
paradox disappears if psychokinesis is

73
00:03:46,249 --> 00:03:42,359
limited by uncertainty and that

74
00:03:49,670 --> 00:03:46,259
uncertainty is measured by information

75
00:03:52,490 --> 00:03:49,680
entropy and looking at it a little bit

76
00:03:54,979 --> 00:03:52,500
more in terms of quantities that we deal

77
00:03:57,499 --> 00:03:54,989
with every day in life it's limited by

78
00:04:00,530 --> 00:03:57,509
noise because the more noise that a

79
00:04:02,629 --> 00:04:00,540
system has the greater the entropy the

80
00:04:07,550 --> 00:04:02,639
information entropy is and the greater

81
00:04:10,670 --> 00:04:07,560
the psychokinesis can be and it this is

82
00:04:13,670 --> 00:04:10,680
consistent with other musings and

83
00:04:16,009 --> 00:04:13,680
studies which have linked sigh phenomena

84
00:04:18,319 --> 00:04:16,019
to noise in a system if you have a

85
00:04:22,850 --> 00:04:18,329
perfectly defined system with no

86
00:04:25,200 --> 00:04:22,860
randomness associated with noise then we

87
00:04:41,790 --> 00:04:25,210
cannot have a sigh phenomena

88
00:04:49,469 --> 00:04:44,159

I was afraid of a question from York and

89
00:04:53,240 --> 00:04:49,479
here it comes some speculations by the

90
00:04:58,730 --> 00:04:53,250
late philosopher Robert Nozick about the

91
00:05:01,379 --> 00:04:58,740
the way truth values are related to time

92
00:05:05,430 --> 00:05:01,389
suggest an alternative scenario in which

93
00:05:07,890 --> 00:05:05,440
it is possible to win yesterday's

94
00:05:14,909 --> 00:05:07,900
lottery even after you already know the

95
00:05:17,279 --> 00:05:14,919
wrong ticket that if a retro PK can

96
00:05:20,100 --> 00:05:17,289
actually operate it would be in

97
00:05:23,700 --> 00:05:20,110
principle possible using Nozick's model

98
00:05:25,680 --> 00:05:23,710
that you make your PK effort you change

99
00:05:29,010 --> 00:05:25,690
this event in the past and then all

100
00:05:31,320 --> 00:05:29,020
causal carlitz change ah in which case

101
00:05:33,180 --> 00:05:31,330
you would find yourself completely

102
00:05:35,700 --> 00:05:33,190
forgetting everything that had happened

103
00:05:38,189 --> 00:05:35,710
before and you would simply have been

104
00:05:39,749 --> 00:05:38,199
holding the winning lottery ticket the

105
00:05:42,869 --> 00:05:39,759
whole time and there would be no point

106
00:05:45,839 --> 00:05:42,879
in this case of using the retro PK this

107
00:05:50,129 --> 00:05:45,849
is not a that this is not an internal

108
00:05:52,800 --> 00:05:50,139
contradiction because the of the way

109
00:05:55,890 --> 00:05:52,810
Nozick's truth values are handled and

110
00:05:59,040 --> 00:05:55,900
I'm wondering if you'd like to comment

111
00:06:01,969 --> 00:05:59,050
on this approach ok so that is one of a

112
00:06:04,350 --> 00:06:01,979
class of several philosophical

113
00:06:06,980 --> 00:06:04,360

descriptions of ways that you can

114
00:06:11,249 --> 00:06:06,990
uncaused something in the past to happen

115
00:06:13,860 --> 00:06:11,259
retro actively and I find them to be

116
00:06:16,140 --> 00:06:13,870
highly artificial and I see no

117
00:06:18,990 --> 00:06:16,150
experimental evidence for them it

118
00:06:21,089 --> 00:06:19,000
doesn't seem to relate in any way to

119
00:06:25,529 --> 00:06:21,099
what I understand is house I phenomena

120
00:06:28,920 --> 00:06:25,539
occur and although I think they're nice

121
00:06:30,510 --> 00:06:28,930
mind candy I don't think that they help

122
00:06:34,800 --> 00:06:30,520
us in understanding what's happening

123
00:06:37,529 --> 00:06:34,810
here so Garrett as a as a practical

124
00:06:39,480 --> 00:06:37,539
matter in doing this when you start

125
00:06:42,689 --> 00:06:39,490
thinking about picking the six numbers

126
00:06:45,689 --> 00:06:42,699
of the lottery out of the pool of 40 or

127
00:06:47,249 --> 00:06:45,699
so numbers doesn't I aren't those

128
00:06:49,350 --> 00:06:47,259
completely independent events and the

129
00:06:51,329 --> 00:06:49,360
knowledge of one really shouldn't have

130
00:06:52,950 --> 00:06:51,339
any effect on the on the others it just

131
00:06:55,350 --> 00:06:52,960
basically reduces the probability

132
00:06:58,740 --> 00:06:55,360
the of picking a one in 40 versus the

133
00:07:01,320 --> 00:06:58,750
next numbers of one and 39 so I'm not

134
00:07:04,529 --> 00:07:01,330
sure it's if you think about it as each

135
00:07:07,230 --> 00:07:04,539
each prediction or each information

136
00:07:10,260 --> 00:07:07,240
exchange is it is a independent event

137
00:07:12,570 --> 00:07:10,270
unless you're saying that you're at well

138
00:07:14,159 --> 00:07:12,580

those leave it there Darryl I think your

139
00:07:17,700 --> 00:07:14,169
point is well taken and particularly

140
00:07:19,830 --> 00:07:17,710
after my response to York and saying

141
00:07:22,290 --> 00:07:19,840
that York's examples were unrealistic

142
00:07:26,129 --> 00:07:22,300
you're pointing out that my example 2 is

143
00:07:28,499 --> 00:07:26,139
unrealistic and I agree with you

144
00:07:30,629 --> 00:07:28,509
actually the lottery example I put it up

145
00:07:33,570 --> 00:07:30,639
there because the numbers give us a good

146
00:07:35,939 --> 00:07:33,580
mechanism to kind of think how much of

147
00:07:37,890 --> 00:07:35,949
something do we know but I agree with

148
00:07:39,510 --> 00:07:37,900
you that there are problems with the

149
00:07:41,460 --> 00:07:39,520
lottery example and if we want to talk

150
00:07:42,900 --> 00:07:41,470
about a real example it would have to be

151
00:07:44,909 --> 00:07:42,910
some sort of a fuzziness of

152
00:07:46,770 --> 00:07:44,919
understanding an image or something like

153
00:07:49,230 --> 00:07:46,780
that where we've gotten certain parts of

154
00:07:51,629 --> 00:07:49,240
it so your point is well taken hey

155
00:07:53,249 --> 00:07:51,639
Garrett um I'm kind of going to ask a

156
00:07:56,060 --> 00:07:53,259
similar question to everybody else but

157
00:07:58,260 --> 00:07:56,070
then as everyone else but isn't there a

158
00:08:00,120 --> 00:07:58,270
can you always kind of have a broader

159
00:08:02,969 --> 00:08:00,130
system around the system that you're in

160
00:08:05,129 --> 00:08:02,979
where for example it turns out that your

161
00:08:07,140 --> 00:08:05,139
lottery information was a mistake or you

162
00:08:11,730 --> 00:08:07,150
misheard it or just kind of on and on

163
00:08:13,110 --> 00:08:11,740

and aren't those sort of things wouldn't

164
00:08:17,790 --> 00:08:13,120
they be governed by the same sorts of

165
00:08:20,640 --> 00:08:17,800
rules in a way so this mistake I I

166
00:08:24,300 --> 00:08:20,650
actually need a response from John this

167
00:08:26,820 --> 00:08:24,310
mistake is it part of the noise of a

168
00:08:32,519 --> 00:08:26,830
larger system or is it separate from the

169
00:08:34,500 --> 00:08:32,529
noise of a larger system you can always

170
00:08:35,519 --> 00:08:34,510
have a larger system effectively I mean

171
00:08:37,170 --> 00:08:35,529
at the end of the day you could keep

172
00:08:38,760 --> 00:08:37,180
working through these systems and then

173
00:08:40,920 --> 00:08:38,770
you could come upon an observation and

174
00:08:43,019 --> 00:08:40,930
say oh my god and then just wake up

175
00:08:46,019 --> 00:08:43,029
effectively so you know that's a silly

176
00:08:47,850 --> 00:08:46,029
philosophical way of looking at it but I

177
00:08:50,370 --> 00:08:47,860
don't know that we can talk about a

178
00:08:52,410 --> 00:08:50,380
system that's totally isolated including

179
00:08:54,720 --> 00:08:52,420
I agree with you and this is really a

180
00:08:56,340 --> 00:08:54,730
flaw of the law the second law of

181
00:08:58,410 --> 00:08:56,350
thermodynamics which says that you're

182
00:09:00,269 --> 00:08:58,420
dealing with a closed system and the

183
00:09:01,860 --> 00:09:00,279
entropy within that closed system act in

184
00:09:05,369 --> 00:09:01,870
a certain way and you're saying that

185
00:09:06,539 --> 00:09:05,379
really no system is closed and I agree